

FLEXOGRAPHY

Principles and Practices 6.0



Additional Resources

ANILOX CELL VOLUMES		
LINE SCREEN (PER INCH)	LOW (BCM)	HIGH (BCM)
120	11.00	16.00
140	9.00	14.00
160	7.00	13.00
180	6.00	11.00
200	5.50	10.50
220	5.00	10.00
240	4.50	9.50
260	4.50	8.50
280	4.40	8.00
300	4.30	7.50
360	3.70	6.50
400	3.30	6.00
440	2.80	5.50
500	2.70	5.20
550	2.50	5.00
600	2.30	4.50
700	2.00	4.00
800	1.50	3.50
900	1.30	3.00
1000	1.10	2.20
1200	1.00	2.00
1400	0.90	1.90
1600	0.80	1.50
1800	0.70	1.20
2000	0.60	0.90
SUGGESTED USE:		
APPLICATION	LINE SCREEN	VOLUME
HEAVY LINES & SOLIDS	180 - 330	9 - 4 BCMs
LINE & TYPE	200 - 400	8 - 3 BCMs
VIGNETTES	360 - 500	3.6 - 2.8 BCMs
PROCESS	500 - 1200	2.8 - 0.9 BCMs

FFTA FIRST Press Operating Data Sheet - Flexo Printing Up To 6 Colors

Printer:		City / State / Prov:		Temperature (Units):	
Date:		Country / Time:		Humidity:	

Prepress:

Prepress Supplier:		Film Type:		Resolution:	
Imaging Device:		Laser Type:		Number of Lasers:	
RIP Software:		Dot Shape:		Micron Size:	
Device Curve:		Comp. Curve:		Plate Relief:	
Screen Family:		Line Screen:		Plate Processor:	
Plate Type:		Plate Caliper:			

Press Room Information:

Print Process:		Ink Vendor:		Blade Manufacturer:	
Press Manufacturer:		Ink System / Base:		Blade Material:	
Machine Age:		Viscosity Instrument:		Blade Edge/Bevel/Tip:	
Machine #:		pH Device:		Substrate:	
Maintenance:		Mounting:		Substrate Spec:	
Press Crew:		Mounting Tape:		Substrate lbs:	
Metering System:		Cylinder Repeat:		Substrate Lot:	

Station / Deck	1	2	3	4	5	6
Color:						
Density:						
Viscosity:						
pH:						
Dryer Temp:						
Anilox Roll Number:						
Anilox Count:						
Anilox Volume:						
Anilox Angle:						
Anilox Condition:						

Measurement Data

Absolute Value:	L*	a*	b*	C*	h	Run Time:
W:						# Samples Taken:
K:						# Samples Average:
C:						ICC Target:
M:						Test Form:
Y:						Measurement Device:
CMY:						Calibration Date:
CM:						Backing Sheet:
CY:						Measurement Method:
MY:						

Comments:



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FFTA FIRST Press Operating Data Sheet - Up To 8 Colors

Printer:		City / State / Prov:		Temperature (Units):	
Date:		Country / Time:		Humidity:	

Prepress:

Prepress Supplier:		Film Type:		Resolution:	
Imaging Device:		Laser Type:		Number of Lasers:	
RIP Software:		Dot Shape:		Micron Size:	
Device Curve:		Comp. Curve:		Plate Relief:	
Screen Family:		Line Screen:		Plate Processor:	
Plate Type:		Plate Caliper:			

Press Room Information:

Print Process:		Ink Vendor:		Blade Manufacturer:	
Press Manufacturer:		Ink System / Base:		Blade Material:	
Machine Age:		Viscosity Instrument		Blade Edge/Bevel/Tip:	
Machine #:		pH Device:		Substrate:	
Maintenance:		Mounting:		Substrate Spec:	
Press Crew:		Mounting Tape:		Substrate lbs:	
Metering System:		Cylinder Repeat:		Substrate Lot:	

Station / Deck:	1	2	3	4	5	6	7	8
Color:								
Density:								
Viscosity:								
pH:								
Dryer Temp:								
Anilox Roll Number:								
Anilox Count:								
Anilox Volume:								
Anilox Angle:								
Anilox Condition:								

Measurement Data

Absolute Value:	L*	a*	b*	C*	h	Run Time:
W:						# Samples Taken:
K:						# Samples Average:
C:						ICC Target:
M:						Test Form:
Y:						Measurement Device:
CMY:						Calibration Date:
CM:						Backing Sheet:
CY:						Measurement Method:
MY:						

Comments:

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FFTA FIRST Press Operating Data Sheet - Flexo Printing Up To 10 Colors

Printer:	City / State / Prov:	Temperature (Units):	
Date:	Country / Time:	Humidity:	

Prepress:

Prepress Supplier:	Film Type:	Resolution:	
Imaging Device:	Laser Type:	Number of Lasers:	
RIP Software:	Dot Shape:	Micron Size:	
Device Curve:	Comp. Curve:	Plate Relief:	
Screen Family:	Line Screen:	Plate Processor:	
Plate Type:	Plate Caliper:		

Press Room Information:

Print Process:	Ink Vendor:	Blade Manufacturer:	
Press Manufacturer:	Ink System / Base:	Blade Material:	
Machine Age:	Viscosity Instrument:	Blade Edge/Bevel/Tip:	
Machine #:	pH Device:	Substrate:	
Maintenance:	Mounting:	Substrate Spec:	
Press Crew:	Mounting Tape:	Substrate lbs:	
Metering System:	Cylinder Repeat:	Substrate Lot:	

Station / Deck:	1	2	3	4	5	6	7	8	9	10
Color:										
Density:										
Viscosity:										
pH:										
Dryer Temp:										
Anilox Roll Number:										
Anilox Count:										
Anilox Volume:										
Anilox Angle:										
Anilox Condition:										

Measurement Data

Absolute Value:	L*	a*	b*	C*	h	Run Time:
W:						# Samples Taken:
K:						# Samples Average:
C:						ICC Target:
M:						Test Form:
Y:						Measurement Device:
CMY:						Calibration Date:
CM:						Backing Sheet:
CY:						Measurement Method:
MY:						

Comments:

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VISCOSITY CONVERSION GUIDE							
NUMBERS FOR ZAHN AND SHELL CUPS ARE IN SECONDS							
CENTIPOSE	ZAHN			SHELL			
	#1	#2	#3	#1	#2	#3	#4
1				17			
2				21			
3				26			
5				35			
8	31			46	18		
10	32			57	22		
15	35				30		
20	38	18			39		
25	42	19			47	19	
30	45	20			56	22	
40	52	22				29	
50	60	25				35	
60	68	28				42	18
70		30				48	21
80		34				55	24
90		38					27
100		43	17				30
125		53	19				37
150		63	22				45
175		72	25				52
200			27				60
CAUTION: These numbers are guides only. Actual comparisons will differ.							

[illegible]

[illegible]

Standard Operating Conditions (SOC)

OPTIMIZATION RUN

Press:

Date:

Condition/Variable	1	2	3	4	5	6
Anilox Rolls						
Manufacturer						
ID Number						
Screen Ruling/Volume						
Ink						
Name/Color		Yellow	Magenta	Cyan		Black
Formula Number						
Batch Number						
Date of Manufacture						
Plates and Mounting Tape						
Plate Vendor						
Screen Ruling						
Screen Angle						
Mounting Tape Mfg.						
Product Number						
Batch Number						
UV Lamp Settings						
UV Lamp Setting Level						

Job and Misc. Details	Unwind	Rewind
Test Form Name	Brake	Exit Nip
Base Repeat	Infeed Nip	Lower Rewind Tension
Number of Gear Teeth	Unwind Pacer	Upper Rewind Tension
Substrate Info		
Substrate Width	Treater	
Roll Number	Web Guide	Doctor Blades:
Plate Thickness		
Backing Thickness		
Press Speed (FPM)		
Ambient Temp/RH		

EHS ACRONYMS			
BACT	Best Available Control Technology	NPDES	National Permit Discharge Elimination System
BLS	Bureau of Labor Statistics	NSR	New Source Review
CAAA	Clean Air Act Amendments of 1990	OSH	Occupational Safety and Health
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	OSHA	Occupational Safety and Health Administration
CESQG	Conditionally Exempt Small Quality Generator	PM	Particulate Matter
CFR	Code of Federal Regulations	POTW	Publicly Owned Treatment Works
CSHO	Compliance Safety and Health Officer	PPA	Pollution Prevention Act
CTG	Control Techniques Guidelines	PPE	Personal Protection Equipment
CWA	Clean Water Act	PSD	Prevention of Significant Deterioration
EB	Electron Beam	PTE	Potential to Emit
EPCRA	Emergency Planning and Community Right-to-Know Act	RACT	Reasonably Available Control Technology
HAP	Hazardous Air Pollutant	RCRA	Resource Conservation and Recovery Act
HMIS	Hazardous Materials Information System	SARA	Superfund Amendments and Reauthorization Act
LAER	Lowest Achievable Emission Rate	SBAP	Small Business Assistance Program
LQG	Large Quantity Generator	SBO	Small Business Ombudsman
MACT	Maximum Achievable Control Technology	SBREFA	Small Business Regulatory Enforcement Fairness Act
MSDS	Material Safety Data Sheet	SQG	Small Quantity Generator
NAA	Non-attainment Area	TRI	Toxic Substance Control Act
NAAQS	National Ambient Air Quality Standard	TSD	Treatment, Storage and Disposal
NEC	National Electric Code	TSCA	Toxic Substance Control Act
NESHAP	National Emission Standard for Hazardous Air Pollution	USEPA	United States Environmental Protection Agency
NOI	Notice of Intent	UV	Ultraviolet
NO_x	Oxides of Nitrogen	VOC	Volatile Organic Compound

APPENDIX: DENSITY-BASED MEASUREMENTS**TRANSMISSION:****DOT PERCENT****(MURRAY-DAVIES EQUATION):**

The equation shown is for the case of D-max greater than 3.0 with the densitometer zeroed on clear film. A black-and-white densitometer is used.

$$\% \text{ dot} = 100 \times (1 - 10^{-DT})$$

where

DT is the density of the tint

REFLECTION:

In all these calculations, the appropriate filter needs to be used for the process color (CMY) being measured.

DOT PERCENT**(MURRAY-DAVIES EQUATION):**

$$\% \text{ dot} = \frac{100 \times [1 - 10^{-(DT - DP)}]}{[1 - 10^{-(DS - DP)}]}$$

where

DS is the density of the solid

DP is the density of the paper or substrate

DT is the density of the tint

TRAP (use filter for second down ink)

$$\% \text{ Trap} = \frac{100 \times (D_{op} - D_1)}{D_2}$$

where

D_{op} is the density of the overprint

D₁ is the density of first down ink

D₂ is the density of second down ink

GRAYNESS

$$\% \text{ grayness} = 100 \times \frac{(D_L)}{(D_H)}$$

where

D_L is the density using the filter which gives the lowest reading

D_H is the density using the filter which gives the highest reading

HUE ERROR

$$\% \text{ hue error} = \frac{100 \times (D_H - D_L)}{(D_H - D_M)}$$

where

D_L is the density using the filter which gives the lowest reading

D_M is the density using the filter which gives the middle reading

D_H is the density using the filter which gives the highest reading

PRINT CONTRAST

$$\% \text{ contrast} = \frac{100 \times (D_s - D_T)}{D_s}$$

where

D_s is the density of the solid

D_T is the density of the shadow tint; typically 70%

DIAMETRIC PITCH 8					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
20	2.500	7.854	61	7.625	23.955
21	2.625	8.247	62	7.750	24.347
22	2.750	8.639	63	7.875	24.740
23	2.875	9.032	64	8.000	25.133
24	3.000	9.425	65	8.125	25.525
25	3.125	9.817	66	8.250	25.918
26	3.250	10.210	67	8.375	26.311
27	3.375	10.603	68	8.500	26.704
28	3.500	10.996	69	8.625	27.096
29	3.625	11.388	70	8.750	27.489
30	3.750	11.781	71	8.875	27.882
31	3.875	12.174	72	9.000	28.274
32	4.000	12.566	73	9.125	28.667
33	4.125	12.959	74	9.250	29.060
34	4.250	13.352	75	9.375	29.452
35	4.375	13.744	76	9.500	29.845
36	4.500	14.137	77	9.625	30.238
37	4.625	14.530	78	9.750	30.631
38	4.750	14.923	79	9.875	31.023
39	4.875	15.315	80	10.000	31.416
40	5.000	15.708	81	10.125	31.809
41	5.125	16.101	82	10.250	32.201
42	5.250	16.493	83	10.375	32.594
43	5.375	16.886	84	10.500	32.987
44	5.500	17.279	85	10.625	33.379
45	5.625	17.671	86	10.750	33.772
46	5.750	18.064	87	10.875	34.165
47	5.875	18.457	88	11.000	34.558
48	6.000	18.850	89	11.125	34.950
49	6.125	19.242	90	11.250	35.343
50	6.250	19.635	91	11.375	35.736
51	6.375	20.028	92	11.500	36.128
52	6.500	20.420	93	11.625	36.521
53	6.625	20.813	94	11.750	36.914
54	6.750	21.206	95	11.875	37.306
55	6.875	21.598	96	12.000	37.699
56	7.000	21.991	97	12.125	38.092
57	7.125	22.384	98	12.250	38.485
58	7.250	22.777	99	12.375	38.877
59	7.375	23.169	100	12.500	39.270
60	7.500	23.562			

DIAMETRIC PITCH 10					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
20	2.000	6.283	61	6.100	19.164
21	2.100	6.597	62	6.200	19.478
22	2.200	6.912	63	6.300	19.792
23	2.300	7.226	64	6.400	20.106
24	2.400	7.540	65	6.500	20.420
25	2.500	7.854	66	6.600	20.735
26	2.600	8.168	67	6.700	21.049
27	2.700	8.482	68	6.800	21.363
28	2.800	8.796	69	6.900	21.677
29	2.900	9.111	70	7.000	21.991
30	3.000	9.425	71	7.100	22.305
31	3.100	9.739	72	7.200	22.619
32	3.200	10.053	73	7.300	22.934
33	3.300	10.367	74	7.400	23.248
34	3.400	10.681	75	7.500	23.562
35	3.500	10.996	76	7.600	23.876
36	3.600	11.310	77	7.700	24.190
37	3.700	11.624	78	7.800	24.504
38	3.800	11.938	79	7.900	24.819
39	3.900	12.252	80	8.000	25.133
40	4.000	12.566	81	8.100	25.447
41	4.100	12.881	82	8.200	25.761
42	4.200	13.195	83	8.300	26.075
43	4.300	13.509	84	8.400	26.389
44	4.400	13.823	85	8.500	26.704
45	4.500	14.137	86	8.600	27.018
46	4.600	14.451	87	8.700	27.332
47	4.700	14.765	88	8.800	27.646
48	4.800	15.080	89	8.900	27.960
49	4.900	15.394	90	9.000	28.274
50	5.000	15.708	91	9.100	28.588
51	5.100	16.022	92	9.200	28.903
52	5.200	16.336	93	9.300	29.217
53	5.300	16.650	94	9.400	29.531
54	5.400	16.965	95	9.500	29.845
55	5.500	17.279	96	9.600	30.159
56	5.600	17.593	97	9.700	30.473
57	5.700	17.907	98	9.800	30.788
58	5.800	18.221	99	9.900	31.102
59	5.900	18.535	100	10.000	31.416
60	6.000	18.850			

DIAMETRIC PITCH 12					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
20	1.667	5.236	61	5.083	15.970
21	1.750	5.498	62	5.167	16.232
22	1.833	5.760	63	5.250	16.493
23	1.917	6.021	64	5.333	16.755
24	2.000	6.283	65	5.417	17.017
25	2.083	6.545	66	5.500	17.279
26	2.167	6.807	67	5.583	17.541
27	2.250	7.069	68	5.667	17.802
28	2.333	7.330	69	5.750	18.064
29	2.417	7.592	70	5.833	18.326
30	2.500	7.854	71	5.917	18.588
31	2.583	8.116	72	6.000	18.850
32	2.667	8.378	73	6.083	19.111
33	2.750	8.639	74	6.167	19.373
34	2.833	8.901	75	6.250	19.635
35	2.917	9.163	76	6.333	19.897
36	3.000	9.425	77	6.417	20.159
37	3.083	9.687	78	6.500	20.420
38	3.167	9.948	79	6.583	20.682
39	3.250	10.210	80	6.667	20.944
40	3.333	10.472	81	6.750	21.206
41	3.417	10.734	82	6.833	21.468
42	3.500	10.996	83	6.917	21.729
43	3.583	11.257	84	7.000	21.991
44	3.667	11.519	85	7.083	22.253
45	3.750	11.781	86	7.167	22.515
46	3.833	12.043	87	7.250	22.777
47	3.917	12.305	88	7.333	23.038
48	4.000	12.566	89	7.417	23.300
49	4.083	12.828	90	7.500	23.562
50	4.167	13.090	91	7.583	23.824
51	4.250	13.352	92	7.667	24.086
52	4.333	13.614	93	7.750	24.347
53	4.417	13.875	94	7.833	24.609
54	4.500	14.137	95	7.917	24.871
55	4.583	14.399	96	8.000	25.133
56	4.667	14.661	97	8.083	25.395
57	4.750	14.923	98	8.167	25.656
58	4.833	15.184	99	8.250	25.918
59	4.917	15.446	100	8.333	26.180
60	5.000	15.708			

DIAMETRIC PITCH 20					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
40	2.000	6.283	122	6.100	19.164
42	2.100	6.597	124	6.200	19.478
44	2.200	6.912	126	6.300	19.792
46	2.300	7.226	128	6.400	20.106
48	2.400	7.540	130	6.500	20.420
50	2.500	7.854	132	6.600	20.735
52	2.600	8.168	134	6.700	21.049
54	2.700	8.482	136	6.800	21.363
56	2.800	8.796	138	6.900	21.677
58	2.900	9.111	140	7.000	21.991
60	3.000	9.425	142	7.100	22.305
62	3.100	9.739	144	7.200	22.619
64	3.200	10.053	146	7.300	22.934
66	3.300	10.367	148	7.400	23.248
68	3.400	10.681	150	7.500	23.562
70	3.500	10.996	152	7.600	23.876
72	3.600	11.310	154	7.700	24.190
74	3.700	11.624	156	7.800	24.504
76	3.800	11.938	158	7.900	24.819
78	3.900	12.252	160	8.000	25.133
80	4.000	12.566	162	8.100	25.447
82	4.100	12.881	164	8.200	25.761
84	4.200	13.195	166	8.300	26.075
86	4.300	13.509	168	8.400	26.389
88	4.400	13.823	170	8.500	26.704
90	4.500	14.137	172	8.600	27.018
92	4.600	14.451	174	8.700	27.332
94	4.700	14.765	176	8.800	27.646
96	4.800	15.080	178	8.900	27.960
98	4.900	15.394	180	9.000	28.274
100	5.000	15.708	182	9.100	28.588
102	5.100	16.022	184	9.200	28.903
104	5.200	16.336	186	9.300	29.217
106	5.300	16.650	188	9.400	29.531
108	5.400	16.965	190	9.500	29.845
110	5.500	17.279	192	9.600	30.159
112	5.600	17.593	194	9.700	30.473
114	5.700	17.907	196	9.800	30.788
116	5.800	18.221	198	9.900	31.102
118	5.900	18.535	200	10.000	31.416
120	6.000	18.850			

CIRCULAR PITCH 0.125"					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
40	1.592	5.000	81	3.223	10.125
41	1.631	5.125	82	3.263	10.250
42	1.671	5.250	83	3.302	10.375
43	1.711	5.375	84	3.342	10.500
44	1.751	5.500	85	3.382	10.625
45	1.790	5.625	86	3.422	10.750
46	1.830	5.750	87	3.462	10.875
47	1.870	5.875	88	3.501	11.000
48	1.910	6.000	89	3.541	11.125
49	1.950	6.125	90	3.581	11.250
50	1.989	6.250	91	3.621	11.375
51	2.029	6.375	92	3.661	11.500
52	2.069	6.500	93	3.700	11.625
53	2.109	6.625	94	3.740	11.750
54	2.149	6.750	95	3.780	11.875
55	2.188	6.875	96	3.820	12.000
56	2.228	7.000	97	3.860	12.125
57	2.268	7.125	98	3.899	12.250
58	2.308	7.250	99	3.939	12.375
59	2.348	7.375	100	3.979	12.500
60	2.387	7.500	101	4.019	12.625
61	2.427	7.625	102	4.058	12.750
62	2.467	7.750	103	4.098	12.875
63	2.507	7.875	104	4.138	13.000
64	2.546	8.000	105	4.178	13.125
65	2.586	8.125	106	4.218	13.250
66	2.626	8.250	107	4.257	13.375
67	2.666	8.375	108	4.297	13.500
68	2.706	8.500	109	4.337	13.625
69	2.745	8.625	110	4.377	13.750
70	2.785	8.750	111	4.417	13.875
71	2.825	8.875	112	4.456	14.000
72	2.865	9.000	113	4.496	14.125
73	2.905	9.125	114	4.536	14.250
74	2.944	9.250	115	4.576	14.375
75	2.984	9.375	116	4.615	14.500
76	3.024	9.500	117	4.655	14.625
77	3.064	9.625	118	4.695	14.750
78	3.104	9.750	119	4.735	14.875
79	3.143	9.875	120	4.775	15.000
80	3.183	10.000			

CIRCULAR PITCH 0.25"					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
20	1.592	5.000	61	4.854	15.250
21	1.671	5.250	62	4.934	15.500
22	1.751	5.500	63	5.013	15.750
23	1.830	5.750	64	5.093	16.000
24	1.910	6.000	65	5.173	16.250
25	1.989	6.250	66	5.252	16.500
26	2.069	6.500	67	5.332	16.750
27	2.149	6.750	68	5.411	17.000
28	2.228	7.000	69	5.491	17.250
29	2.308	7.250	70	5.570	17.500
30	2.387	7.500	71	5.650	17.750
31	2.467	7.750	72	5.730	18.000
32	2.546	8.000	73	5.809	18.250
33	2.626	8.250	74	5.889	18.500
34	2.706	8.500	75	5.968	18.750
35	2.785	8.750	76	6.048	19.000
36	2.865	9.000	77	6.127	19.250
37	2.944	9.250	78	6.207	19.500
38	3.024	9.500	79	6.287	19.750
39	3.104	9.750	80	6.366	20.000
40	3.183	10.000	81	6.446	20.250
41	3.263	10.250	82	6.525	20.500
42	3.342	10.500	83	6.605	20.750
43	3.422	10.750	84	6.685	21.000
44	3.501	11.000	85	6.764	21.250
45	3.581	11.250	86	6.844	21.500
46	3.661	11.500	87	6.923	21.750
47	3.740	11.750	88	7.003	22.000
48	3.820	12.000	89	7.082	22.250
49	3.899	12.250	90	7.162	22.500
50	3.979	12.500	91	7.242	22.750
51	4.058	12.750	92	7.321	23.000
52	4.138	13.000	93	7.401	23.250
53	4.218	13.250	94	7.480	23.500
54	4.297	13.500	95	7.560	23.750
55	4.377	13.750	96	7.639	24.000
56	4.456	14.000	97	7.719	24.250
57	4.536	14.250	98	7.799	24.500
58	4.615	14.500	99	7.878	24.750
59	4.695	14.750	100	7.958	25.000
60	4.775	15.000			

CIRCULAR PITCH 0.5"					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
20	3.183	10.000	61	9.708	30.500
21	3.342	10.500	62	9.868	31.000
22	3.501	11.000	63	10.027	31.500
23	3.661	11.500	64	10.186	32.000
24	3.820	12.000	65	10.345	32.500
25	3.979	12.500	66	10.504	33.000
26	4.138	13.000	67	10.663	33.500
27	4.297	13.500	68	10.823	34.000
28	4.456	14.000	69	10.982	34.500
29	4.615	14.500	70	11.141	35.000
30	4.775	15.000	71	11.300	35.500
31	4.934	15.500	72	11.459	36.000
32	5.093	16.000	73	11.618	36.500
33	5.252	16.500	74	11.777	37.000
34	5.411	17.000	75	11.937	37.500
35	5.570	17.500	76	12.096	38.000
36	5.730	18.000	77	12.255	38.500
37	5.889	18.500	78	12.414	39.000
38	6.048	19.000	79	12.573	39.500
39	6.207	19.500	80	12.732	40.000
40	6.366	20.000	81	12.892	40.500
41	6.525	20.500	82	13.051	41.000
42	6.685	21.000	83	13.210	41.500
43	6.844	21.500	84	13.369	42.000
44	7.003	22.000	85	13.528	42.500
45	7.162	22.500	86	13.687	43.000
46	7.321	23.000	87	13.846	43.500
47	7.480	23.500	88	14.006	44.000
48	7.639	24.000	89	14.165	44.500
49	7.799	24.500	90	14.324	45.000
50	7.958	25.000	91	14.483	45.500
51	8.117	25.500	92	14.642	46.000
52	8.276	26.000	93	14.801	46.500
53	8.435	26.500	94	14.961	47.000
54	8.594	27.000	95	15.120	47.500
55	8.754	27.500	96	15.279	48.000
56	8.913	28.000	97	15.438	48.500
57	9.072	28.500	98	15.597	49.000
58	9.231	29.000	99	15.756	49.500
59	9.390	29.500	100	15.915	50.000
60	9.549	30.000			

MODULE PITCH 1					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
40	40.0	125.7	81	81.0	254.5
41	41.0	128.8	82	82.0	257.6
42	42.0	131.9	83	83.0	260.8
43	43.0	135.1	84	84.0	263.9
44	44.0	138.2	85	85.0	267.0
45	45.0	141.4	86	86.0	270.2
46	46.0	144.5	87	87.0	273.3
47	47.0	147.7	88	88.0	276.5
48	48.0	150.8	89	89.0	279.6
49	49.0	153.9	90	90.0	282.7
50	50.0	157.1	91	91.0	285.9
51	51.0	160.2	92	92.0	289.0
52	52.0	163.4	93	93.0	292.2
53	53.0	166.5	94	94.0	295.3
54	54.0	169.6	95	95.0	298.5
55	55.0	172.8	96	96.0	301.6
56	56.0	175.9	97	97.0	304.7
57	57.0	179.1	98	98.0	307.9
58	58.0	182.2	99	99.0	311.0
59	59.0	185.4	100	100.0	314.2
60	60.0	188.5	101	101.0	317.3
61	61.0	191.6	102	102.0	320.4
62	62.0	194.8	103	103.0	323.6
63	63.0	197.9	104	104.0	326.7
64	64.0	201.1	105	105.0	329.9
65	65.0	204.2	106	106.0	333.0
66	66.0	207.3	107	107.0	336.2
67	67.0	210.5	108	108.0	339.3
68	68.0	213.6	109	109.0	342.4
69	69.0	216.8	110	110.0	345.6
70	70.0	219.9	111	111.0	348.7
71	71.0	223.1	112	112.0	351.9
72	72.0	226.2	113	113.0	355.0
73	73.0	229.3	114	114.0	358.1
74	74.0	232.5	115	115.0	361.3
75	75.0	235.6	116	116.0	364.4
76	76.0	238.8	117	117.0	367.6
77	77.0	241.9	118	118.0	370.7
78	78.0	245.0	119	119.0	373.8
79	79.0	248.2	120	120.0	377.0
80	80.0	251.3			

MODULE PITCH 2					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
20	40.0	125.7	61	122.0	383.3
21	42.0	131.9	62	124.0	389.6
22	44.0	138.2	63	126.0	395.8
23	46.0	144.5	64	128.0	402.1
24	48.0	150.8	65	130.0	408.4
25	50.0	157.1	66	132.0	414.7
26	52.0	163.4	67	134.0	421.0
27	54.0	169.6	68	136.0	427.3
28	56.0	175.9	69	138.0	433.5
29	58.0	182.2	70	140.0	439.8
30	60.0	188.5	71	142.0	446.1
31	62.0	194.8	72	144.0	452.4
32	64.0	201.1	73	146.0	458.7
33	66.0	207.3	74	148.0	465.0
34	68.0	213.6	75	150.0	471.2
35	70.0	219.9	76	152.0	477.5
36	72.0	226.2	77	154.0	483.8
37	74.0	232.5	78	156.0	490.1
38	76.0	238.8	79	158.0	496.4
39	78.0	245.0	80	160.0	502.7
40	80.0	251.3	81	162.0	508.9
41	82.0	257.6	82	164.0	515.2
42	84.0	263.9	83	166.0	521.5
43	86.0	270.2	84	168.0	527.8
44	88.0	276.5	85	170.0	534.1
45	90.0	282.7	86	172.0	540.4
46	92.0	289.0	87	174.0	546.6
47	94.0	295.3	88	176.0	552.9
48	96.0	301.6	89	178.0	559.2
49	98.0	307.9	90	180.0	565.5
50	100.0	314.2	91	182.0	571.8
51	102.0	320.4	92	184.0	578.1
52	104.0	326.7	93	186.0	584.3
53	106.0	333.0	94	188.0	590.6
54	108.0	339.3	95	190.0	596.9
55	110.0	345.6	96	192.0	603.2
56	112.0	351.9	97	194.0	609.5
57	114.0	358.1	98	196.0	615.8
58	116.0	364.4	99	198.0	622.0
59	118.0	370.7	100	200.0	628.3
60	120.0	377.0			

MODULE PITCH 3					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
20	20.0	62.8	61	61.0	191.6
21	21.0	66.0	62	62.0	194.8
22	22.0	69.1	63	63.0	197.9
23	23.0	72.3	64	64.0	201.1
24	24.0	75.4	65	65.0	204.2
25	25.0	78.5	66	66.0	207.3
26	26.0	81.7	67	67.0	210.5
27	27.0	84.8	68	68.0	213.6
28	28.0	88.0	69	69.0	216.8
29	29.0	91.1	70	70.0	219.9
30	30.0	94.2	71	71.0	223.1
31	31.0	97.4	72	72.0	226.2
32	32.0	100.5	73	73.0	229.3
33	33.0	103.7	74	74.0	232.5
34	34.0	106.8	75	75.0	235.6
35	35.0	110.0	76	76.0	238.8
36	36.0	113.1	77	77.0	241.9
37	37.0	116.2	78	78.0	245.0
38	38.0	119.4	79	79.0	248.2
39	39.0	122.5	80	80.0	251.3
40	40.0	125.7	81	81.0	254.5
41	41.0	128.8	82	82.0	257.6
42	42.0	131.9	83	83.0	260.8
43	43.0	135.1	84	84.0	263.9
44	44.0	138.2	85	85.0	267.0
45	45.0	141.4	86	86.0	270.2
46	46.0	144.5	87	87.0	273.3
47	47.0	147.7	88	88.0	276.5
48	48.0	150.8	89	89.0	279.6
49	49.0	153.9	90	90.0	282.7
50	50.0	157.1	91	91.0	285.9
51	51.0	160.2	92	92.0	289.0
52	52.0	163.4	93	93.0	292.2
53	53.0	166.5	94	94.0	295.3
54	54.0	169.6	95	95.0	298.5
55	55.0	172.8	96	96.0	301.6
56	56.0	175.9	97	97.0	304.7
57	57.0	179.1	98	98.0	307.9
58	58.0	182.2	99	99.0	311.0
59	59.0	185.4	100	100.0	314.2
60	60.0	188.5			

MODULE PITCH 4					
NO.OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)	NO. OF TEETH IN GEAR	PRINTING/PITCH DIAMETER (IN)	REPEAT (IN)
20	40.0	125.7	61	122.0	383.3
21	42.0	131.9	62	124.0	389.6
22	44.0	138.2	63	126.0	395.8
23	46.0	144.5	64	128.0	402.1
24	48.0	150.8	65	130.0	408.4
25	50.0	157.1	66	132.0	414.7
26	52.0	163.4	67	134.0	421.0
27	54.0	169.6	68	136.0	427.3
28	56.0	175.9	69	138.0	433.5
29	58.0	182.2	70	140.0	439.8
30	60.0	188.5	71	142.0	446.1
31	62.0	194.8	72	144.0	452.4
32	64.0	201.1	73	146.0	458.7
33	66.0	207.3	74	148.0	465.0
34	68.0	213.6	75	150.0	471.2
35	70.0	219.9	76	152.0	477.5
36	72.0	226.2	77	154.0	483.8
37	74.0	232.5	78	156.0	490.1
38	76.0	238.8	79	158.0	496.4
39	78.0	245.0	80	160.0	502.7
40	80.0	251.3	81	162.0	508.9
41	82.0	257.6	82	164.0	515.2
42	84.0	263.9	83	166.0	521.5
43	86.0	270.2	84	168.0	527.8
44	88.0	276.5	85	170.0	534.1
45	90.0	282.7	86	172.0	540.4
46	92.0	289.0	87	174.0	546.6
47	94.0	295.3	88	176.0	552.9
48	96.0	301.6	89	178.0	559.2
49	98.0	307.9	90	180.0	565.5
50	100.0	314.2	91	182.0	571.8
51	102.0	320.4	92	184.0	578.1
52	104.0	326.7	93	186.0	584.3
53	106.0	333.0	94	188.0	590.6
54	108.0	339.3	95	190.0	596.9
55	110.0	345.6	96	192.0	603.2
56	112.0	351.9	97	194.0	609.5
57	114.0	358.1	98	196.0	615.8
58	116.0	364.4	99	198.0	622.0
59	118.0	370.7	100	200.0	628.3
60	120.0	377.0			

GLOSSARY

A

Abrasion Resistance

The ability to withstand the effects of repeated rubbing and scuffing. Also called scuff or rub resistance.

Abrasion Test

A test designed to determine the ability of a substrate to withstand the effects of rubbing and scuffing.

Absolute Density

The density measurement where the densitometer is calibrated on air for transmission and on a white standard supplied by the manufacturer for reflection.
See also relative density.

Absolute Humidity

The actual weight of water vapor contained in a unit weight of air.
See also Relative Humidity.

Absorption

Taking in or the penetration of one substance into another; taking in of liquids or vapors such as moisture by a porous material like paper.

Absorption

1. The selective removal of some of the wavelengths of white light, producing colored light.
2. The reduction that occurs when light incident on an object is not reflected.

Accelerate

To hasten or quicken the natural progress or process of ink drying or curing. Achieved by the addition of a faster drying solvent or by increasing the temperature or volume of hot air applied to the printed surface.

Accelerate

To speed rewind shafts during flying splices and to take up web slack.

Accelerator

A substance added, or method used, to hasten or quicken the natural progress or process of ink drying or curing.

Acceptance Inspection

The evaluation of a definite lot of material or product that is already in existence to determine its acceptability within quality standards.

Acceptance Sampling

See Acceptance Inspection.

Accumulate

To temporarily store hazardous waste at a place of business for a limited amount of time. The time allowed for storage depends on the amount of hazardous waste produced per month. Satellite accumulation allows a facility to completely fill a container over a longer period of time, as long as some simple, additional storage requirements are met.

Acetate

1. A family of solvents also known as esters; an example is normal propyl acetate. It can also refer to a particular cellulose acetate or film in general.
2. In multilayer artwork, it is often used as an overlay, often referred to as Mylar or clear layout base.
3. The material used for "overhead" transparency printing.

Acetone

A very active solvent used mainly in gravure inks. The fastest drying solvent in the ketone family.

ACFM

Actual cubic feet per minute of air flow; i.e., air flow in drying systems or catalytic/thermal oxidizers.

Achromatic Color

Colors that have no hue or chroma; i.e., black, white, and gray.

Acid

Any chemical that undergoes dissociation in water resulting in the formation of hydrogen ions. Acids have a pH less than 7.0; lower number indicating greater acidity. Among its properties: corrodes many materials, tastes sour, and turns litmus paper red. *See also pH.*

Acid Number

The amount of potassium hydroxide (in milligrams) required to neutralize free acids in one gram of oil, wax or resin.

Across Web

See Cross Direction.

Acrylic

A general chemical term for a particular family of thermoplastic resins based on acrylic acid and its derivatives.

ACT

Alternative Control Techniques.

Actinic Rays

The rays of light that cause the most intense chemical reactions.

Activated Carbon

A highly absorbent form of carbon used to remove odors and toxic substances from liquid or gaseous emissions.

Activator

A chemical solution used on exposed photographic paper or film emulsion to develop the image.

Acute Effect

An adverse effect on any living organism in which severe symptoms develop rapidly and often subside after exposure stops; a health exposure that is evident at time exposure takes place, i.e., irritation, rash, burn.

Additive Primaries

The colors red, green, blue. When the lights of these colors are added together in equal proportion, they produce the sensation of white light.

Additives

Ink components used during formulation and at press-side to manipulate chemical ink balance and performance properties.

Add-on Control Device

An air-pollution control device such as an oxidizer, solvent recovery or carbon absorption system that reduces the pollution in an exhaust gas.

Addressable Output Resolution

The maximum number of images positioned along a 1" straight line that can be addressed

by a bar code designer. This resolution would exclude further resolution-enhancing techniques performed by the imaging device or software that are beyond the control of the designer.

Adhesive

Any material that is applied to one or both surfaces to form a bond between the two.

Administrative Order

A legal document signed by a government agency directing an individual, business or other entity to take corrective action or refrain from an activity.

Adsorption

The accumulation of a material with which it has contact (typically gas-solid or liquid-solid), such as the adsorption of organic compounds onto activated carbon.

Afterburner

In incinerator technology, a burner located so that the combustion gases are made to pass through its flame in order to remove smoke and odors.

After-tack

The condition of an ink, whereby after it has been left to dry naturally or from a heat-drying operation, develops a stickiness.

Agglomerate

A cluster of undispersed particles of ink pigment.

Aggregate

A series of clusters of undispersed ink pigment.

Agitation

A stirring action; violent or irregular in motion.

Air Brush

1. A colorant sprayer, operating on compressed air, capable of producing subtle gradations of tone. It is used in rendering various types of artwork, in retouching photographs and for smooth backgrounds. 2. A method of creating continuous tone artwork using an airbrush.

Air Quality Standards

The level of selected pollutants set by law that may not be exceeded in outside air. Used to

determine the amount of pollutants that may be emitted by industry.

Air Stripping

A treatment system that removes volatile organic compounds from contaminated ground water or surface water by forcing an airstream through the water and causing the compounds to evaporate.

Air Toxics

Air pollutants for which a National Ambient Air Quality Standard (NAAQS) does not exist that may be reasonably anticipated to cause cancer, developmental effects, reproductive dysfunctions, neurological disorders, heritable gene mutations, or other serious or irreversible chronic or acute health effects in humans.

Alcohol

A family of volatile organic solvents, commonly used in flexographic inks, containing the grouping C-OH. The most common members of this group are methyl alcohol, ethyl alcohol, propyl, and isopropyl alcohols.

Alcohol/Solvent-based Ink

The main ingredient of this ink are volatile organic compounds (VOCs), organic chemical compounds that have high vapor pressures.

Aliphatic Hydrocarbons

Solvents obtained by fractionation of crude petroleum oil. Examples are textile spirits, VMP Naphtha, gasoline, and kerosene. Frequently used as part of the solvent mixture in co-solvent and polyamide-type flexo inks, in conjunction with Buna-N plate.

Alkali

Any chemical that undergoes dissociation in water with the formation of hydroxyl ions. Alkalis have a pH greater than 7.0, a higher number indicates greater alkalinity. Alkali properties include causticness, bitter taste and turning litmus paper blue.
See also pH.

Alkali Resistance

The relative ability to withstand the action of alkalis; to be distinguished from soap resistance.

Alkali Test

A test to evaluate resistance of printed packages, labels, etc. to alkali.

Alkalinity

In testing paper for alkalinity, the specimen is extracted with water at a definite temperature, and the extract is tested to determine its pH value. The condition that results in an alkaline solution when paper is extracted with water.

Alumina Hydrate

Also known as hydrate, it is a white, inorganic pigment used as an extender in inks and noted for its transparency.

Aluminum Coating

A coating composed of aluminum paste or powder and a mixing varnish or vehicle.

Aluminum Foil

A solid-sheet section of aluminum metal, rolled to a thickness of less than 0.006".

Ambient Conditions

A term used to denote the existing temperature, pressure, etc. of the surrounding air.

Amines

A nitrogen-containing component of water-based inks and coatings that, when mixed with acrylic resins, allows them to go into and remain in solution.

Anchor Coat

A coating (primer) applied to the surface of a substrate to effect or increase the adhesion of subsequent ink coatings.

Anchoring

The bonding or fusing of inks to the material on which they are printed.

Anhydrous

Free from water; i.e., anhydrous alcohol is free from water.

Aniline

The former term for flexography, the name was derived from aniline dyes obtained from coal tar (an obsolete technology).

Aniline Dyes

Derivatives of coal tar, classified by chemical composition. Basic dyes have extreme brightness, but are not lightfast, while acid dyes are less brilliant, but are lightfast.

Anilox Roller

An engraved ink-metering roller used in flexographic presses to provide a controlled

film of ink to the printing plates that print the substrate. The number of cells per linear inch and volume of the individual cells in the engraving affect the ink film.

Anilox Roller Impression

Anilox roller impression is the first pressure setting the press operator makes, as there is no indication of plate-to-substrate impression until the plate is inked. The pressure is adjusted by turning the ink deck screws.

Anode

A positively charged electrode.

Anti-aliasing

In a digitized image, diagonal lines are treated as short horizontal and vertical lines that approximate the path of the desired line, at lower resolutions; this will produce a stair-stepped effect known as aliasing. Anti-aliasing algorithms remove these “jaggies” to produce smoother lines.

Antifoaming Agent

An additive used in ink to prevent or break down foam that has already formed.

Antifriction Bearings

A bearing used to reduce frictional drag, by such means as the use of narrow wheels, rollers, balls or air to support the rotating shaft.

Antipenetrant

Any material that reduces penetration into the stock.

Antique

With reference to paper, a finish rougher than normally used on bond paper.

Anti-skid Compounds

Ink additives used to retard slippage factors during the stacking and handling of packaging.

Anti-skid Varnish

A generally clear, resin coating formulated and applied to large flexible packaging to retard slippage during stacking and handling.

Apparent Trap

See Ink Trap Percent.

Applicator Roll

Examples are coating roll, print roll, tint roll, lacquer or varnish roll.

AQL

Acceptable Quality Level.

Archival

Pertaining to the long-term storage of data.

Area Source

Smaller sources of air pollutants that emit less than 10 tons per year (TPY) of a single air toxic or less than 25 TPY of a combination of air toxics.

Aromatic Hydrocarbons

Petroleum-based solvents characterized by benzene or a closed-ring molecular configuration. Used sparingly in flexographic inks.

Artwork

The original design, including drawings, photos and text produced by the artist.

Artype

A mechanical way to make up lettering from prepared sheets of preprinted alphabets.

ASAP

Acronym for “as soon as possible.”

As Applied

The condition (formulation) of an ink after its dilution to proper viscosity, just prior to applying to the substrate.

ASCII

See American Standard Code for Information Interchange

ASCII File

A file encoded in the industry-standard representation for text, ASCII. An ASCII file contains only plain text and basic text-formatting characters such as spaces and carriage returns, but no graphics or special character formatting.

Ash

The inorganic or mineral filler used in paper. Determined by weighing the residue after the complete combustion of a weighted sample.

Asphaltum (asphalt)

A dark-colored, resinous substance, soluble in hydrocarbon solvents, and used as a moisture barrier in heavy laminations.

AST

Above Ground Storage Tank.

See also UST (Underground Storage Tank).

ATSDR

Agency for Toxic Substances and Disease Registry.

Axis

The line about which a rotating body such as a roller or cylinder rotates.

Azeotropic Mixture

A liquid mixture of two or more substances that behaves like a single substance, in that, the vapor produced by partial evaporation of the liquid has the same composition as the liquid. This means the mixture cannot be separated by distillation. An example is ethyl and methyl alcohol.

GLOSSARY

B

Backlash

When looseness in gear teeth or a screw mechanism causes movement of one or more components without corresponding movement in the connected mechanisms.

Back-side Printing

See *Reverse Printing*.

Backup Copy

A copy of a file or data set that is kept for reference in case the original file or data set is destroyed.

Backup Roll

See *Impression Cylinder*.

BACT

See *Best Available Control Technology*.

Balance

Even distribution of the mass or a cylinder or roll about its axis.

Balancing

A procedure to bring a cylinder or roll into balance.

Baler

A machine used to compress recyclables into bundles to reduce volume. Balers are used often on newspapers, plastic, corrugated cardboard and other sorted paper products.

Banding

The undesirable effect occurring in blends or gradients where the image exhibits bands when printing because the color transition is too long or has too many steps.

Bar Code

A symbol consisting of an alternating series of thick and thin lines and may also include human readable characters, used to encode product and other information. Bar codes are readable with an optical scanner.

Bare Cylinder Diameter

The diameter of the actual plate cylinder before the stickyback and plates are mounted.

Barrier

An obstructing agent serving to separate one element from another or limit the migration or infiltration of one into the other.

Bar Width Reduction

A prepress function of decreasing the bar code image width to compensate for normal image growth as predetermined by press fingerprinting and production monitoring; it is analogous to dot gain for halftone dots.

Base

See *Alkali*.

Base

1. A full strength ink or toner. 2. The major ingredient used in a clear lacquer, varnish or ink. May refer to either the solvent or the binder system. 3. A coating applied to a substrate to enhance subsequent application of inks or coatings.

Base

Film before the addition of a coating.

Base

1. The anilox roller before it is engraved. 2. The core of a design roll before the application of elastomer.

Base Alignment

On a typesetter or printer, a mode specifying that the lower reference edge of all letters in a line of mixed sizes or styles should be horizontally even; also called baseline alignment.

Base Cylinder

The cylinder used to accept a sleeve-mounting system.

Baseline Monitoring Report BMR

A report required to be submitted to POTWs by all CIUs within 180 days of the promulgation of new Categorical Standards, or 90 days prior to the commencement of discharge (for new sources), which defines the nature of the discharge and provides analytical data characterizing that discharge.

Basis Weight

The weight, in pounds, of a ream (usually 500 sheets) of paper at a given sheet size (usually the basic size for a given grade).

BCM/in²

The abbreviation for one billion cubic microns per square inch, which is the measurement of the volume of ink in an average engraved anilox cell.

Bearer

Type-high supports mounted around each end of a plate cylinder to help carry part of the impression load and to help prevent bounce.

Bearer

When vulcanizing rubber plates or matrices, the metal spacers used to separate the platens, in order to produce finished, molded and vulcanized plates or matrices of the desired thickness. In photoengraving, bearers are the dead metal remaining on a plate that support and protect the printing surface during molding operations.

Beater

A large mixer used to mix the pulp to make paper.

Beater Dyed

A paper produced from the pulp colored in the beater.

Ben Day

A system of dots or patterns used to effect shading.

Benchmark

A point of reference from which measurements can be made, such as the use of a program to evaluate the performance of a computer. It is any standard against which products can be compared.

Best Available Control Technology BACT

An emission limitation based on the maximum degree of emission reduction (considering energy, environmental and economic impacts) achievable through application of production processes and available methods, systems and techniques.

BACT does not permit emissions in excess of those allowed under any applicable Clean Air Act provision. Use of the BACT concept is allowable on a case-by-case basis for new or

modified emission sources in attainment areas, and applies to each regulated pollutant.

Best Management Practices BMP

Procedures or controls other than emission or effluent limitations to prevent or reduce pollution, e.g., ink management, inventory control and purchasing or cleanup procedures.

Binary

A coding or counting system with only two symbols or conditions, such as on/off or zero/one. It is the format for storing data in computers.

Binder

The adhesive components of an ink, normally supplied by the resin formulation.

Binder

In paper, an adhesive component used to bond inert filler, such as clay, to the sheet, or to affix short fibers firmly (securely) to paper or board stock.

Biochemical Oxygen Demand BOD

A measure of oxygen required to break down organic materials in water.

Biodegradability

The ability of a substance to be broken down physically and/or chemically by microorganisms.

Bit

A binary digit, the smallest information entity. It is expressed as 1 or 0, meaning on or off, yes or no, positive or negative, something or nothing.

Bit map

A computerized image consisting of dots. Images are "mapped" directly from corresponding bits in memory, whereby each dot is represented by a binary digit (bit) that is "on" (1) or "off" (0). Also referred to as a paint format.

Black

See Process Black.

Black Body

A term describing a well-defined, theoretical light source used to specify the spectral composition of light.

Black Heat

See Infrared Light.

Blanking

The process where each individual image or product is cut out of the press sheet before forming is done.

Bleach

The method of measuring the tinctorial strength of an ink or toner, usually by mixing a small portion of ink or toner with a large amount of white base, and then evaluating its tinctorial strength vs. a control standard.

Bleed

To print beyond the cut edge or score so that the design is either cut off or folded under, resulting in a printed area that extends to the edge.

Bleed

In certain substrates, when the ink is partially dissolved by the liquid or solvent plasticizers, it causes the ink to run or migrate into unwanted areas adjacent to the printed area. It can also describe the condition resulting from insufficient drying of the preceding printed color, causing the trapping color to lose its color value – such as red printing over a wet white, resulting in pink.

Block Test

A test to measure the tendency of surface-to-surface sticking.

Blocking

1. An undesired adhesion between touching layers of material caused by moderate pressure and/or temperature change. 2. The extent to which damage to at least one surface is visible upon their separation.

Bloom

A term describing the condition when solid materials migrate to the film's surface. *See also Exudation.*

Blueline

Proofs that are blue image photoprints made from film negatives or positives. They are used to check the position of image elements and to show color breaks (by varying exposure time to produce light and dark blue images) but not process color.

Blushing

A milky, foggy or flat appearance in an ink or coating caused by excessive moisture condensation or incompatibility of one of the ingredients.

BMP

See Best Management Practices.

BMR

See Baseline Monitoring Report.

Board

A heavy-weight, thick sheet of paper or other fiber substance, usually 0.012" in thickness or more. The distinction between board and paper is not definite.

BOD

See Biochemical Oxygen Demand.

BOD5

Five Day BOD.

Body

Refers to the viscosity or flow characteristics of an ink or vehicle.

Bodifying Agent

A substance added to an ink to increase its viscosity.

Body Type

The typeface used in the majority of the copy in reading matter, as opposed to headline or display type.

Bold Face

A heavy typeface, in contrast to a light typeface, used to create emphasis in the body text.

Bold Face

The original name of the paper used for printing stock and bond certificates. Bold face now refers to a paper grade that is free of fuzz.

Bounce

The abnormal reaction to compression, resulting from the cylinder's erratic, rotational movement, causing missed or imperfect impressions. These imperfections are evident as horizontal lines or bands of decreasing intensity on the leading edge. In extreme cases, the horizontal lines will also appear on the trailing edge.

Boundary Layer

A layer of saturated air that accumulates above the substrate surface as the ink's liquid components evaporate.

Bourges

A patented masking medium on a dimensionally stable base.

Boxboard

A paperboard of sufficient caliper and test to be used in the manufacture of paperboard boxes. Commonly used grades are news, filled news, chip, straw, jute, patent coated and clay-coated. Specifications for boxboard are designated by kind, finish, caliper, dimensions, regular number (for standard sizes 25" x 20") and count (for odd sized sheets).

Brass Mounted Plates

Printing plates, which are premounted onto thin gauge brass, ready to be clamped onto the plate cylinder.

Brayer

A hand-held roller used to apply ink to a mounted plate for proofing during the mounting process.

Bridging

A print defect of halftone or screen where the individual dots join or bridge together.

Brightness

The quality of whiteness and intensity as emitted from printed or unprinted surfaces.

British Thermal Unit BTU

A unit of energy, it is the quantity of heat required to raise one pound of water by 1° F. *See also Calorie.*

Brittleness of Ink

A condition where ink printed on foil decomposes or peels from folding the substrate.

Bronze

A metallic sheen characteristic of some printed inks where the appearance of the print depends on the viewing angle and illumination.

BTU

See British Thermal Unit.

Bubble

Existing sources of air pollution within a facility(ies), which may control air emissions for a number of different types of processes, where reduction in pollution can be more than is required at one emission point, or where control costs are higher or more difficult to achieve.

Buckle Folder

A folding unit consisting of moving tapes or belts to carry the substrate through fold-plates, where it buckles slightly. The buckle is pulled downward by rotating rollers, creating a fold. Buckle folders are often used for parallel folds.

Bulk

A term denoting the thickness (or the relative thickness) of a sheet, expressed as the number of pages (two pages per sheet) or the number of sheets (multiplied by two) needed to become 1" thick. It is an important factor where a volume of paper will be converted into a product, such as books, envelopes and business forms, and must fit into a specified shipping container.

Buna-N

A synthetic rubber, made from butadiene and acrylonitrile, used in the manufacture of flexographic plates and rollers. It is resistant to aliphatic hydrocarbons, alcohols, cellosolve and water, but not resistant to aromatic hydrocarbons and esters (acetate).

Burn

Exposure of uncured photopolymer to ultraviolet light during the plate production process.

Bursting Strength

Paper's resistance to rupture under pressure, indicated in pounds per square inch on a Mullen or pop tester.

Butt Register

The condition where two colors touch each other without an allowance for overprint trap.

Butt Splice

An end-to-end joining of two similar materials to achieve continuity of surface, design, etc. Butt splicing is also used to join sticky back, printing plates and webs of substrate in process, such as heavy papers and boards, at the unwind or rewind, in which case, the

thickness or the substrate prevents using the lap (overlap) splice.

BWR

See Bar Width Reduction.

GLOSSARY

C

C (° C)

Degrees Centigrade; $^{\circ}\text{C} = 5/9 \times (^{\circ}\text{F} - 32)$

CAAA

Clean Air Act Amendments of 1990.

Caking

When dried ink collects on the rollers and plates.

Calender

The equipment used in heat transfer printing where designs on the transfer paper are vaporized into the fabric.

Calender Stack

A group of rolls through which material is passed in the calendering operation.

Calendering

A process that increases density and improves surface smoothness and gloss in paper.

Calibration

The process of setting a device to conform to a standard or preset condition; often used to correct for drift or change in the device's performance characteristics and to bring it back to norm.

Caliper

The thickness measurement of a single sheet of paper as defined by TAPPI Method T411 and reported in mils or thousandths of an inch (1 mil = 0.001"). Multiply inches by 25.4 micrometers and round to the nearest whole number to find metric thickness. Also used to identify thickness of other printing materials such as plates, mounting tape, etc. See "gauge" for flexible film substrate thickness and "point" for paperboard thickness.

Caliper Gauge

A micrometer used to measure the thickness of a sheet of material.

Calorie

A unit of energy, described as the amount of heat required to raise one gram of water by 1° centigrade. See also British Thermal Unit.

Camera-ready

Copy and/or artwork that is ready for the photography step to make a film negative for platemaking in the printing process.

Canadian Environment Protection Act CEPA

A federal law, which regulates the release of pollutants into Canada's environment.

Cap

See Emission Cap.

Capillary Action

Surface tension, which causes liquid to rise or fall when it comes in contact with a solid. Examples are liquids rising in capillary tubes, blotting paper, wicks. In printing it is the force that transfers inks and coatings from engraved cells of an anilox roller to a contacting surface.

Capture Device

A drying system, hood, enclosed room, floor sweep or other method of collecting solvent or other pollutants into a duct. The pollutant can then be directed to a pollution control device such as an incinerator or carbon absorber, or to atmosphere.

Capture Efficiency

The fraction of organic vapors generated by a process that is directed to an abatement or recovery device. The percentage of air emissions that is removed during the transfer of ink and movement of the web by the drying system and exhausted out or to a control device.

Carbon Absorber

An add-on device using activated carbon to absorb volatile organic compounds from a gas stream.

Carbon Adsorption

A process of removing contaminants through a system containing activated carbon treated to attract the contaminants.

Carbon Monoxide (CO)

A colorless, odorless, poisonous gas produced

by incomplete burning of carbon-based fuels, including gasoline, oil and wood.

Carcinogenic or Carcinogen

A chemical capable of causing cancer.

CAS

See Chemical Abstract Service.

Casein

A protein usually obtained from milk used to make sizings, adhesive solutions and coatings. Also acts as the binder for aqueous dispersions of pigments for a variety of trades.

Catalyst

A substance that causes an increase in the rate of a chemical reaction without being permanently altered by the reaction.

Catalytic Incinerator

A control device that oxidizes volatile organic compounds by using a catalyst to promote the combustion process. Catalytic incinerators require lower temperatures than conventional thermal incinerators, thus saving fuel and other costs.

Categorical Industrial User (CIU)

A nondomestic discharger into a POTW that is subject to one of the National Categorical Discharge Standards found in 40 CFR 405-471; a facility that falls under the jurisdiction of regulations written to cover that specific process, i.e., photo processing.

Caustic

See Alkali.

CBEP

See Community-Based Environmental Protection.

cc

Cubic centimeter.

CCD

See Charged Coupled Device.

CCN

See Clay-coated News.

CEAA

Canadian Environmental Assessment Act.

Cell Count

The number of cells per linear inch (or centimeter) in either a laser or mechanically engraved anilox roller.

Cell Volume

The volume delivery capability of a single anilox cell or group of cells in a given area.

Cellophane

A transparent, flexible sheeting consisting of regenerated cellulose plus plasticizers, with or without functional coatings, such as moisture-proof, etc. Cellophane gained widespread use in the early 1930s and is credited with helping the flexographic printing process to flourish.

Cellosolve

Union Carbide Corp.'s trade name for ethylene glycol mono-ethyl ether, a retarding solvent in flexographic inks.

Cellulose Acetate

A clear, thermoplastic material, usually in film form, made from cellulose and acetic acid.

Cellulose Acetate Butyrate

A clear, thermoplastic material made from cellulose, reacted with both acetic and butyric acid. It is used as a packaging film and in coatings, such as lamination.

Cellulose Fiber

In paper-making, the fibrous material remaining after the non-fibrous components of wood have been removed by the pulping and bleaching operations.

CEMS

See Continuous Emission Monitoring Systems.

Center

To establish an equal amount of space on both sides of the type copy or image.

Center Line

A line added to indicate the center of an object.

Centipoise

A measure of viscosity, conveniently and approximately defined, relative to the viscosity of water at room temperature, which is 1.0. Higher values indicate a "thicker" liquid.

Central Impression (CI) Cylinder Press

A type of printing press. The web being printed is in continuous contact with a single large diameter impression cylinder and the color units are arranged around the circumference of the central impression cylinder.

CEPA

See Canadian Environmental Protection Act.

CEPS

See Color Electronic Prepress System.

CERCLA

See Comprehensive Environmental Response, Compensation and Liabilities Act; see also Superfund.

CD

See Cross Direction.

CFC

See Chlorofluorocarbon.

Chalking

Occurs when the pigment in the printed ink is not properly bound to the paper, becoming powdery and easily rubbed off.

Change Over

The process or processes that take place when the printer changes from one production order to the next. Often includes changing ink, anilox roller, printing plates, metering system, substrate and any in-line finishing equipment.

Character

Each individual letter, symbol or punctuation mark that makes up a full typeface.

Character Count

The number of characters included in a block of text. In graphic arts, spaces are counted but other nonprinting characters are not. In information processing, both printing and nonprinting characters are usually included.

Character Set

The entire set of characters that can be either shown on a monitor or used to code computer instructions. In a digital printer, it is the entire set of characters that the printer is capable of printing.

Characteristic Waste

Wastes that are defined as hazardous because they exhibit one or more of the

following general qualities: ignitable, oxidizing, corrosive, reactive, lethal and toxic.

Charged Couple Device CCD

Photosensitive CCD's are used in scanners, digital cameras, video cameras. The CCD basically reads the image by storing a group of charges based on the image that it is exposed to. These charges are analog charges, as opposed to simple digital on/off charges. Thus, you can grab degrees of light and color to transfer a visual image into a group of electrical charges, and then to your computer screen, videotape or printer.

Chattering

Horizontal lines or bands in printed solids or screens of varying color intensity.

Check Digit

Built into bar codes, an algorithm, which verifies the valid combination of characters.

Checking

The short, shallow cracks on the surface of a rubber product caused by exposure to extreme environmental conditions, such as exposure to ozone.

Chemical Oxygen Demand (COD)

The measure or capacity of oxygen consumption in inorganic and organic matter present in water.

Chemical Substance

Any inorganic or organic substance of a particular molecular identity; any element of uncombined radical.

Chill Roll

A metal roll or drum cooled internally with a solution, such as water or brine; these rolls are normally used after the press dryer to cool the printed web prior to rewinding.

China Clay

A natural, white, mineral pigment used for coating paper and extending ink.

Chipboard

A low-quality non-test paperboard made of waste paper used when specified strength or quality are not necessary.

Chlorofluorocarbons (CFCs)

A family of chemicals used in air conditioners and refrigerators as coolants, and also as

solvents and aerosol propellants. They drift into the upper atmosphere where their chlorine components destroy the ozone layer.

Choke Roll

The printing roll carrying the background or over-all pattern. See also Design Roll.

Choke Trap

The intentional overlap of a lighter background onto a darker object needed to ensure that a slight misalignment or movement of separations on press will not affect the final appearance of the job, i.e., color or white fringes or borders around image detail. Called trapping in digital imaging systems. See trapping.

Chroma

See Lch Value.

Chromatic Scale

The colors of the spectrum; red, orange, yellow, green, blue and violet.

Chrome Green

A fairly light-resistant, opaque-green pigment made by mixing freshly precipitated iron blue and chrome yellow.

Chrome Yellow

A light-resistant opaque yellow pigment composed essentially of lead chromate.

Chromium Plate

A thin covering of chromium, usually electroplated, over a copper or nickel base to increase the surface-wear properties.

Chronic Effect

An adverse effect on a human or animal in which symptoms recur frequently or develop slowly over a long period of time, i.e., medical conditions stemming from the ingestion of lead, nicotine and solvents.

CI Press

See *Central Impression Press*.

CIE

See *Commission International de l'Eclairage*.

CIELab

Adopted by CIE, it is a standard, objective color measurement system, widely used for quantitative color measurement and control. "L" represents the "lightness" of the sheet and

varies from 100 for a perfect white to 0 for absolute black; "+a" indicates redness; "-a" indicates greenness; "+b" indicates yellowness; and "-b" indicates blueness.

CIE'94

One of several methods for calculating color differences in CIELab Color Space.

CIE Standard Illuminant

Common lighting conditions used to evaluate color as defined by the CIE in terms of relative spectral power distributions, or color temperature; lower numbers are warmer/redder, higher numbers are colder/bluer.

CIE Standard Observer

A hypothetical, average human observer who sees color at a 2° viewing angle as defined in a 1931 CIE study. A supplementary observer for a larger viewing angle of 10° was adopted in 1964. The 2° standard observer should be assumed if not otherwise specified. If the field of view is larger than 4°, the 10° standard observer should be used.

Circumferential Register Control

See *Running Register*.

C1S

See *Coated One Side*.

CIU

See *Categorical Industrial User*.

Clamp Marks

Marks produced by clamps holding the stock in position for guillotine trimming.

Class I Area

Under the Clean Air Act, a Class I area is one in which visibility is protected more stringently than under the NAAQS; includes national parks, wilderness areas, monuments and other areas of special natural and cultural significance.

Clay-coated Board

A high quality paperboard whose surface is coated with pigment or pigment-like solids and appropriate binders.

Clay-coated News CCN

Paperboard made from recycled newsprint-based fiber with a clay-coated surface to improve printability.

Clean Air Act

The original Clean Air Act was passed in 1963, but the United States air pollution control program is actually based on the 1970 version of the law. The 1990 Clean Air Act Amendments are the most far-reaching revisions of the 1970 law.

Clean Water Act (CWA)

The basic federal law governing water pollution control in the United States.

Cling

The tendency of adjacent materials to adhere to each other, as in blocking, except that the surfaces can be separated without any visible damage. Also polar static attraction.

Clip Art

Copyright-free, raster or vector illustrations, figures and designs, commercially available in book format or in various file formats on disk.

CMYK

Denotes cyan, magenta, yellow, and black in that order. See Process Black, Process Cyan, Process Magenta, Process Yellow.

CMS

See Color Matching System.

CNK™

See Coated Natural Kraft.

CO

See Carbon Monoxide.

Coated Natural Kraft™ CNK™

Unbleached paperboard, usually clay-coated on the side to be printed for folding cartons.

Coated Recycled Board

Unbleached paperboard, usually clay-coated on the side to be printed for folding cartons.

Coating

The outer covering of a film or web. The film may be coated on one side or both.

Coating

A uniform layer of adhesives, varnishes or similar materials applied across the entire width of a web.

Cockling

A rippling effect occurring on surface of a sheet of paper that has not been properly

dried. Moisture pickup of the sheet can also cause the cockling or wavy edges.

COD

See Chemical Oxygen Demand.

Code 128

This bar code has the ability to encode the full 128-character ASCII set. It can encode variable-length data and permits numeric data to be encoded as two digits per symbol character. This “double-density” mode makes it one of the most efficient symbols used, especially in such industries as healthcare, retail, food/grocery and transportation.

Code 3-of-9

Also referred to as Code 39, a bar code consisting of nine elements—five bars and four spaces—with three of the nine elements always being wide for each character encoded. It has the ability to vary in length as required.

Code Color

The color used to differentiate select items in a product line of very similar packages.

Code of Federal Regulations CFR

A periodic publication of the regulations established by United States law.

Code of Management Practices CMP

The site-specific plan implemented by the individual processing facility for the purpose of controlling and reducing silver discharged to the POTW.

Coefficient of Friction COF

A measure of the slip resistance between two surfaces.

Coefficient of Friction Tester

A device consisting of inclined plane and block to measure the coefficient of friction of various flexible substrates.

Co-extrusions

Film that is produced by more than one extruder through a common die. Films have been made with as many as 13 layers.

Cohesion

That form of attraction by which the particles of a body are united throughout its mass.

Cold-Flow

See Creep.

Collateral Materials

Accompanying or auxiliary material such as advertising and promotional items.

Color

A visual sensation produced in the brain when the eye views various wavelengths of light. Light is transmitted, reflected and/or absorbed. For example, if a printed sheet of paper is sufficiently thick, all light will be either absorbed or diffusely reflected; there should be no significant amount of light transmitted. Color viewing is a highly subjective experience that varies from individual to individual. Lighting and viewing standards help ensure the accuracy of color reproduction in the graphic arts industry. TAPPI methods T524 and T515 are common sources of paper color measurement protocol.

Color Balance

See *Gray Balance*.

Color Burn-out

An objectionable color change of a printing ink that may occur in bulk or on the printed sheet. In bulk, it is associated primarily with tints and is caused by a chemical reaction between certain components in the ink formulation. In the printed sheet, it is generally caused by heat generated from the pile of printed material during the drying of an oxidizing type of ink.

Color Break

The designation of ink colors to be used for specific image areas.

Color Comprehensive

Design work, which illustrates in detail: size, layout, color, copy, copy positioning, type style, etc. of the proposed finished reproduction.

Color Correction

A photographic or electronic process used to alter the colors in an image, done to compensate for the limitations of the output device or to achieve the result desired by the customer. Colors can be altered globally or selectively in the image.

Color Difference

The degree of non-match between two colors, which can be calculated mathematically in CIE Lab color space. Also called ΔE .

Color Electronic Prepress System CEPS

A high-quality, proprietary computer-based system that may include equipment for page make-up, scanning color separations and making color corrections. PC-based color scanning and manipulation systems often referred to as desktop publishing systems (DTP), usually lack the capabilities and sophistication of CEPS.

Color Fastness

See *Lightfastness*.

Color Key

A proof consisting of acetate or polyester overlays attached in register to a backing substrate. Each overlay carries the colored image from a film negative. Color breaks and traps can be judged, but exact color match to the final printed product can not be made.

Color Matching

To duplicate the hue, chroma and lightness of a given color sample, usually by blending base mixing inks.

Color Matching System CMS

A system of managing color to achieve consistency between devices. Ideally, colors on the monitor should accurately represent the colors in a scanned image and the colors on the final output. This consistency is accomplished by creating ICC profiles of one device into a device-independent color model, and then mapping those colors to the color gamut of another device.

Color Model

See *Color Space*.

Color Monitor

An RGB or composite monitor, which uses separate video signals of red, green, and blue – the three primary additive colors. It uses these signals to display almost any number of hues, depending upon the computer software and calibration. This type of monitor usually produces clearer, sharper colors and images than can be reproduced by printing CMYK process inks. Composite monitors use one signal to combine the three primary colors.

Color Overlap

See *Trapping*.

Color Overlay

A transparent overlay, usually acetate, on a black and-white drawing on which each additional color is indicated as a guide for reproduction. A term sometimes used at press-side referring to the number of colors that overprint each other.

Color Proof

A printed or simulated printed image of each process color (cyan, magenta, yellow and black) using inks, toners or dyes to give a representation of the final printed reproduction.

Color Resolution

The number of different colors or gray-scale values a system can work with or present. The value is usually given in bits; each added bit doubles the number of available colors. For example, 8-bit color displays show 256 colors (or shades of gray).

Color Rendering Index CRI

An indexed number used to indicate the degree to which a real light source matches the ideal D50 source. The higher the number, the better the match – 100 denoting a perfect match. For color evaluating in a light booth, an index of 90 or higher should be used.

Color Saturation

A measure of the amount of white light in a hue. High saturation means there is no white-light component and the color is intense or of good quality.

Color Sequence

See Ink Rotation.

Color Scanner

See Scanner.

Color Separated Art

See Pre-separated Art.

Color Separation

The process of exposing an original color image through RGB filters to produce complementary images, which will be printed with CMYK inks. The final digital file includes masking (color modification) for specific inks and substrates, as well as halftone screening to enable printing a uniform tone scale with proper gray balance from extreme highlights through midtones and shadows to maximum solid color. This can be accomplished through

the use of a digital camera, digital or analog scanner, or photographically.

Color Space

Also known as color model; in graphics applications, the manner in which colors can be defined or modified. Common color spaces are RGB, HSB, CMY and spot (custom) colors. CIE Lab is the widely used perceptual color space.

Color Standard

A color sample which serves as the target for the color to be reproduced.

Color Stations

The individual section of the press or set of rollers used to print each individual color.

Color Strength

The effective concentration of colorant per unit weight or volume of ink.

Color Target Proof

A proof that is not profiled using the output source file; however, it represents the customer's color expectations.

Color Temperature

The temperature assigned to any light source by matching it against light radiating from a heated black body. The spectral distribution emitted by the heated black body depends on its Kelvin temperature. The higher the color temperature, the bluer the light; the lower the temperature, the redder the light. A standard viewing light, which should be neutral, is obtained with equal amounts of red, green and blue lights at a color temperature of approximately 5,000 °K (D50).

Color Theory

The systems and science of color usage (physical, chemical and emotional factors).

Color Transparency

A full-color photographic positive image on a transparent support, viewed with the aid of a backlit transparency viewer.

Colorant

That which renders color; it may be a pigment or dye or a combination of the two.

Colorimeter

An optical measuring device that responds to color in a manner similar to the human eye by

filtering reflected light into its dominant regions of red, green and blue. This determines a color's numeric CIELab value.

Colorway

A specific combination of colors in a pattern of a transfer type print design.

Combination Folder

A folding unit which incorporates the characteristics of both a knife and buckle folder.

Combination Plate

In flexography, the printing of halftones or screen tints and solid line or text copy using the same plate. It may compromise print quality because halftone dots require minimum impression and ink film thickness, whereas solids need maximum impression and ink film thickness for optimum printability. In offset litho, it is the ganging of several designs on the same plate with no concern about mixing halftone and line copy.

Combination Run

A common image that remains throughout a press run. Plate or color changes are made for different design elements such as weight marks, UPC codes, ingredients, nutritional labeling, etc.

Combustible

Any substance that will burn. Combustible liquids have a flash point of 100° F (73.8° C) to 200° F (93.9° C).

Comment Period

The time provided for the public to review and comment on proposed action or rulemaking after publication in a Federal or State Register.

Commercial Chemical Product

A chemical substance that is manufactured or formulated for commercial or manufacturing use but becomes hazardous waste when discarded. Examples include some pesticides and pharmaceutical products.

Commission International de l'Eclairage CIE

International standard body for color specifications.

Common Impression Cylinder Press

See Central Impression Cylinder Press.

Common Sense Initiative CSI

A program initiated by the USEPA to promote less environmental pollution by involving all parties that are affected by industrial activity. It represents fundamentally different system of environmental protection, replacing the pollutant-by-pollutant approach of the past with an industry-by-industry approach for the future. Its goal is to help industry operate "cheaper, cleaner and smarter."

Community-Based Environmental Protection CBEP

A holistic approach to environmental protection that is sensitive to local conditions and employs multi-level, cross-sector partnerships to achieve results; environmental pollution and control programs that respond to the health and safety needs of the surrounding community.

Comp

See Comprehensive Layout.

Compatible

Refers to the ability to mix differing solutions or materials together into a homogenous mixture, without kick-out or haziness.

Compliance Monitoring

The collection and evaluation of data, including self-monitoring reports and verification, to show whether pollutant concentrations and loads contained in permitted discharges are in compliance with the limits and conditions specified in a permit.

Complementary Colors

A pair of contrasting colors that, when mixed in proportions, produce a neutral hue.

Composite Art

Artwork, where all colors are drawn on one piece of copy (not color separated), indicated by white and different shades of black.

Composite Film

Complete separations ready for printing; usually created by a process called stripping.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA)

Enacted in 1980, CERCLA is a U.S. law that provides broad federal authority to respond to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Comprehensive Layout (Comp)

A mock-up of a printed piece showing all type and pictures in rough form but in the right size and in the correct position. It is used to evaluate a design before final type and artwork are produced.

Compression Set

The extent to which the rubber becomes distorted permanently, after subjecting a test sample to a known load, for a specified time. It is expressed as percentage of the original thickness.

Computer-to-Plate CTP

See *Direct-to-Plate*.

Computer-to-Sleeve CTS

A system where the plate is mounted on a sleeve and imaged in the round directly from a computer system using laser ablation.

Concentricity

A circle or sphere, one within another, having a common center. For example: When the outside diameter (O.D.) of a roller or cylinder and the diameters of journals, bearing steps, bore, etc., have a common rotational axis.

Concept Proof

A proof that is not profiled and is not used for matching color. It is used to show the design layout and type, but not the expected color.

Condensed Type

Proportionally narrow or slender typefaces.

Conditionally Exempt Generators

Small-quantity facilities that produce fewer than 220 pounds of hazardous waste per month that are not considered acute hazardous wastes.

Consent Decree

A legal document submitted by the Department of Justice on behalf of USEPA for approval by a federal judge to settle a case.

Consistency

The general body characteristics of an ink, (e.g., viscosity, uniformity) used to describe the rheological property of an ink – i.e., thick, thin or buttery.

Contaminant

Any physical, chemical, biological or radiological substance or matter that has an

effect on air, water or soil.

Continuous Emission Monitoring Systems CEMS

Machines that measure, on a continuous basis, pollutants released by a source.

Continuous Tone CT

An image, which has not been screened and contains a range of light to dark color tones, but must be converted to halftone dots in order to be printed.

Contract Analog Proof

A proof that is made to manufacturer's recommendations for exposing and processing by a specific analog proofing system, representative of what the finished product will look like before the design goes on press, and has been profiled according to *FIRST* specifications.

Contract Digital Proof

A proof that is profiled to a specific digital proofing system, representative of what the finished product will look like before the design goes on press, and has been made according to *FIRST* specifications.

Contract Proof

A proof output to *FIRST* specifications, using a press profile, and is representative of what the copy will look like when reproduced on press. For images, it does not have to be a dot-for-dot reproduction, but instead, must be an overall simulation of the expected print results. The subsets of a contract proof are defined: contract analog, contract digital and profiled contract.

Contrast

The difference between extreme highlight and shadow areas of continuous tone original or halftone reproduction. Image contrast is usually compressed to bring an original's density range to that can be reproduced on a printing press.

Control Chart

A visual record of quality performance in a statistical process, produced by plotting the value of each sample drawn from the process in graph form with the number of observations along the horizontal axis and the value of the observation along the vertical axis.

Control Target

The standard set of graphic elements placed outside the live area of each of the pieces of film, used to monitor makeready, and if possible, the entire production run. When printed, they superimpose to form a colored bar in various densities that enables the platemaker and printer to check by eye or instrument the nature of each ink film, the strength and evenness of ink and the registration of color. It is specifically defined in *FIRST* and available from the FTA. *See also Run Target.*

Control Technique Guideline CTG

USEPA documents designed to assist states in defining reasonable available control technology for sources of VOCs. The CTG for flexography is "Control of Organic Emissions from Existing Stationary Sources Volume VIII: Graphic Arts – Rotogravure and Flexography".

Converter

A manufacturer who takes raw materials – such as resin, polymer, paper pulp – to produce the final package (box, pouch, bag, envelope). Printing may or may not be included in the process.

Copolymer

A polymer produced from a combination of two or more dissimilar monomers. *See also Polymer.*

Copy

Manuscript, type, transparency, artwork or computer disk from which a printed piece is to be prepared. The term is also used to refer to the final printed result.

Copy Boards

The part of a process camera where the original artwork is placed on to be reproduced onto photographic paper or film.

Copy Range

See Dynamic Range.

Coquille Boards

Pattern-surfaced drawing boards that allow the artist to produce tone effects directly onto the original drawing.

Core

A tube on which paper, film or foil is wound for shipment.

Core

The metal body of a roller covered with rubber.

Core Holder

A device for affixing the core to shaft.

Corona Treatment

To improve a film surface's ink wettability, the dyne level or surface tension is increased by applying a concentrated electrical discharge.

Corrosive Waste

Water-based waste having a pH of 2.0 or less (strong acids) or 12.5 or more (strong bases); also any liquid able to corrode 3" of steel per year.

Corrugated Press

A sheet-fed in-line press used to print sheets of combined corrugated board. These presses often have folding, gluing, creasing and stacking equipment located in-line after the printing units.

Cosolvent

One of two or more solvents in a mixture, which together dissolve a solid.

Cost/Benefit Analysis

A quantitative evaluation of the costs that would be incurred by implementing an environmental regulation versus the overall benefit to society of the proposed action.

Cover Sheet

A clear overlay taped or laminated over artwork to provide surface protection.

Cover Sheet

In reference to liquid photopolymer, a thin sheet of clear film used to protect the negatives during platemaking. In reference to sheet photopolymer, a protective polyester sheet laminated to the image surface of the polymer sheet.

Coverage

The extent or degree a base material is covered, colored or hidden by an ink or coating; the hiding power.

CPS

See Computer to Sleeve.

Cradle-to-Grave System

A procedure in which hazardous materials are identified and followed as they are produced,

treated, transported and disposed of by a series of permanent, linkable, descriptive documents (e.g., manifests). Also a concept in which the generator of waste is reused or destroyed and no longer exists. *See also Manifest System.*

Crash

A halo or double outline effect caused by excessive plate impression to the stock or the transfer roller to the plate.

Crash Finish

A surface finish of paper similar to coarse linen.

Craters

See Pock Marks.

Crawling

An ink-film property. If surface wetting is very poor, it prevents the ink from contracting into drops, leaving an uneven covering. *See also Surface Energy.*

CRB

See Coated Recycled Board.

Creep

Cured or uncured rubber, which deforms over time and under stress. With rubber-covered rollers, the metal roller body is subject to creep, as well as the rubber. Creep can also occur when a roller is kept in storage without turning.

Creepage

The slight, continuous and cumulative tendency of a color to drift out of register or position in the running direction.

CRI

See Color Rendering Index.

Crimp Seal

A seal formed with a corrugated, pressure-type heat-seal mechanism. The seal has a wavy appearance.

Crinkle

To wrinkle or wad the printed film severely in order to determine ink flexibility.

Criteria

Descriptive factors taken into account by USEPA in setting standards for pollutants.

Criteria Air Pollutants

A group of very common air pollutants regulated by USEPA on the basis of criteria. Criteria air pollutants include ground level ozone, carbon monoxide, particulate matter, nitrogen dioxide, sulfur dioxide and lead.

Crop Marks

Marks made on the outer edges of artwork to designate the area to be printed or cut.

Cropping

To trim unwanted areas of an illustration, photo, or other artwork.

Cross Direction

The direction at a right angle to the paper grain or flow of material through a machine (paper machine, extruder, printing press, etc.). *See also Machine Direction.*

Cross Press

See Cross Direction.

Cross Web

See Cross Direction.

Crown

The difference in diameter between the center of a roller and reference points at or near the ends of the face.

Crushed Board

A condition where corrugated board is crushed on the edges.

CSI

See Common Sense Initiative.

CT

See Continuous Tone.

CTG

See Control Technique Guideline.

CT Merge

The function of combining two CT files in such a manner that they appear to vignette together smoothly without noticeable break between images.

CTP

See Computer to Plate.

CTS

See Computer to Sleeve.

Cumulative Impact

The combined effects of all chemical exposures on human health and the environment over time.

Cure

The process of hardening a heat-set or photoreactive material. For example hardening photopolymers requires exposing the photoinitiator to UV light.

Curl

Distortion of an unrestrained sheet due to differences in structure from one side of the sheet to the other. The curl side is the concave side of the sheet. It may occur in substrates and printing plates.

Curve Direction

The direction of web travel on a flexographic press.

Cut

An expression commonly used to designate an engraving.

Cut

To dilute or thin an ink, lacquer, varnish, etc. with solvents or with clear base.

Cut-back Curve

Data which indicates the halftone dot areas need to be compensated for normal dot gain throughout the entire tone scale during the printing process. The data is specific to particular materials and process conditions.

CWA

See Clean Water Act.

Cyan

See Process Cyan.

GLOSSARY

D

D50

A standard light source used in graphic arts for critical color evaluation, whose color temperature is 5,000° K.

D65

A standard light source used by the textile, paint and ink industries, whose color temperature is 6,500° K.

D-max

The highest measured density on a sample. This is not to be confused with the maximum density achievable by the material.

D-min

The lowest measured density on the clear/non-image area of a sample. This is not to be confused with the minimum density achievable by the material.

Damper

Usually a pivoted gate or valve used to control the flow of air or other gases, as in the dryer.

Dancer Roller

A web-tensioning device in the form of a roller that uses weights or springs which monitors web tension by controlling the unwind brake or rewind tension.

DCS

See Desktop Color Separation.

DDCP

See Direct Digital Color Proofs.

DDES

See Digital Data Exchange Standards.

Deep-relief Powder Molding DRPM

The rubber plate-making process where the finished plate relief is more than 0.125".

Deflection

Deviation from a straight line under load, e.g., metering-roller pressure against the anilox roller, causes both to bend, or bow slightly. Excessive bending of both or either one will result in uneven ink metering and subsequent non-uniform printing.

Delamination

The partial or complete separation of the layers in a laminate.

Deliquescence

The property of a material to absorb moisture from the air and to become a liquid. A best known example is calcium chloride.

Delist

Use of the petition process to have a facility's toxic designation rescinded, or a particular waste stream declared nonhazardous for disposal.

Delta (Δ) E

The calculated color difference between the highlights and shadows of an image. It is also the tonal, density and copy range.

De Minimis

A quantity that is small enough and with insignificant impact that it serves as a trigger to exempt firms/facilities with actual exposure below the specified level from one or more provisions of the various environmental and OSHA regulations.

Densitometer

A photoelectric instrument that measures the optical density of images or colors. A reflection densitometer measures the amount of incident light reflecting from the surface of a substrate, such as ink on paper or film. A transmission densitometer measures the amount of light transmitted through film from a measured light source.

Densitometer Response

The aim spectral response as contained in ISO 5- 3: 1995, Photography Density Measurements – Part 3: Spectral Conditions. The status responses pertaining to the graphic arts are Status E, Status I and Status T. *See also Spectral Response.*

Density

A measure of the amount of light reflected from the printed sheet or transmitted through a platemaking film.

Density

The mass per unit volume of a substance, commonly measured in g/cc.

Density, Absolute

The optical density referenced to a perfect reflecting diffuser through calibration procedures. Typically referred to as “density with paper/film included.”

Density, Reflection

The light-absorbing property of a material, expressed as the logarithm of the reciprocal of the reflectance. A higher density indicates more light is absorbed or a darker surface. Also referred to as print density.

Density, Relative

The absolute (optical) density of a sample minus the absolute (optical) density of the substrate. Typically referred to as “density minus paper.”

Density, Transmission

The light-absorbing property of a material, expressed as the logarithm of the reciprocal of the transmittance.

Density Range

See Dynamic Range.

Dermal Toxicity

Adverse effects resulting from skin exposure to a substance.

Desiccant

1. A dehydrating agent – absorbs moisture by physical or chemical means. 2. A drying agent.

Design for the Environment DFE

A cooperative effort between USEPA and industry to incorporate environmental consideration into the design and redesign of products, processes and technical and management systems for the purpose of promoting pollution prevention.

Design Motif

1. A distinctive feature, shape or figure or other thematic element in a work of art. A dominant idea or central theme. 2. A single or repeated design element or color.

Design

A printing cylinder with an elastomeric material affixed in position and engraved with a design. Used for seamless printing.

Desktop Color Separation DCS

A preprepared digital EPS file consisting of five files: one is the originally named file that is the PICT preview to be imported into page layout programs; the other four end with .C, .M, .Y and .K respectively. In OPI settings, the PICT image is replaced with the high resolution file during the RIPping process.

Destruction Removal Efficiency DRE

A percentage that represents the number of molecules of a compound destroyed in an oxidizer.

Detergent

A surface-active agent that, by lowering the surface tension of water and by its emulsifying action, increases the wetting power and cleansing ability of water.

Dew Point

1. The temperature at which air or other gasses become saturated with vapor, causing the vapor to deposit as a liquid. 2. The temperature at which 100% relative humidity is reached.

Dextrin

A carbohydrate derived from starch, usually by treatment with heat, acids or enzymatic action.

DFE

See Design for the Environment.

Dial Indicator

A watch-like instrument used to measure concentricity, run-out, deflection and the relative position of mechanical components.

Die Cut

1. To punch out with a sharp tool. 2. A cleft, gash, slit or notch left from a punching-out operation.

Dies

Any sharp cutting forms, rotary or flat, used to cut shapes from paper, paperboard or other stocks.

Diffusion

A spreading out or equalized dispersion of a material, force or condition into the surrounding medium; e.g., the diffusion of heat by conduction; the diffusion of light through a translucent material or reflection from a rough surface; the diffusion of gases, liquids or granular solids into the surrounding medium.

Digital Data Exchange Standards DDES

A body of standards developed for the graphic arts industry by the ANSI-accredited Image Technology Committee (i.e., ANSI IT8) and the ISO-accredited graphics technology committee (i.e., ISO TC130). DDES provides standardized exchange formats for the digital information developed and used in printing, design and production.

Digitizing

The process of converting graphic representations (images, line drawings, etc.) into digital data that can be processed by a computer system.

Dilatant

Having the property of an increase in viscosity with increase in shear. Dilatant liquids are solid or highly viscous when stirred, and fluid when undisturbed. The condition can occur in flexographic inks but is normally considered highly undesirable and one to be avoided through formulation.

Diluent

A liquid with no solvent action, used to dilute or thin an ink or lacquer.

Dimensional Stability

Indicates a material's resistance to dimensional change caused by ambient, atmospheric or other conditions.

Dimer

A dimer is a chemical entity consisting of two structurally similar monomers joined by bonds that can be either strong or weak, covalent or intermolecular.

DIN

German industrial standards (*Deutsche Industrie-Normen*).

DIN Cup

An efflux cup used to measure viscosity.

Direct Digital Color Proof DDCP

A prepress color proof that is imaged directly from digital data without the intermediate steps of film and contact exposure.

Direct-to-Plate

A system designed to image printing plates directly from computer data, eliminating the need for film production and the use of contact plates.

Dithering

A technique used by some input and output devices to simulate grays by varying the pattern and proximity of black pixels to each other.

Dirty Print

A print defect, characterized by the bridging of dots and dirty edges on a solid print. It can often be caused by dry ink accumulating on the printing plates, or by applying a very thick ink film to the printing plate, or by using too much impression.

Disc

See *Disk*.

Discharge

Any spilling, leaking, pumping, pouring, emitting, emptying or dumping of liquid wastes into a sewer, storm drain or body of water.

Disk

A magnetic device for storing information and programs accessible by a computer. A disk can be either a rigid platter (hard disk) or a sheet of flexible plastic (floppy disk).

Disperse Dye

A textile dyestuff, which is technically defined as a water insoluble dye.

Dispersion

A uniform distribution of solid particles in a vehicle by mixing or milling.

Display Type

See *Headline Type*.

Disposal Facility

A landfill, incinerator or other facility that receives waste for disposal.

Distillation

The act of purifying liquids through boiling, whereby steam condenses into a pure liquid and the pollutants remain concentrated in the residue.

Distorted

To Intentionally change width and/or height dimension in order to compensate for shrinkage, stretch, etc., of the printing plates.

Distortion Copy

Copy, which is intentionally distorted in preparation.

Distortion Factor

A multiplier which compensates for normal flexographic image-shrinkage with rubber plates and imagestretch when any type of flexographic plates are made flat and mounted around a cylinder for printing.

Distortion Plate

Plates made from distorted copy.

Dividing Head

Device put on a plate cylinder to mount jobs requiring multiple repeats around the cylinder.

Doctor Blade

A thin, flexible blade mounted parallel to and adjustable against an engraved, for the purpose of scraping off excess material.

Doctor Roll

The metering roller in a flexographic press which wipes against the anilox roller to remove excess ink.

Donut

A print fault where the impression pressure is so great that the ink of the printed dot is squeezed out from the center to the edges producing a ring-like print. The ink density is lighter in donut's center.

Dot

The individual printing element of a halftone.

Dot Area

1. The area of a printed halftone, expressed as a percent value, computed from the reflection densities of the printed element and its area of solid, continuous coverage using the Murray-Davies equation (or in special cases, the Yule-Nielson equation.) Also referred to as apparent dot area; 2. The area that will print as the final dot on the substrate. The film printing dot area for positive separations in that value measured as the opaque dot on the input film. The film printing dot area for negative separations is that value measured as the opaque dot in the input film subtracted from 100; 3. In ISO documentation, it is the "tone value."

Dot Gain

A physical and/or optical measurement and theoretical calculation of the apparent increase in dot area from one medium to another. Normally expressed as the difference between a midtone (nominal 50%) dot area on a film

negative and the printed dot area. For example, a 50% film dot area which prints as a 78% dot has a 28% dot gain. Dot gain (and loss) are normal and must be controlled throughout the prepress and printing process.

Dot Gain Curve

The graphic illustration of dot gain throughout the entire highlight (nonimage) to extreme shadow (solid image) tone scale.

Dot Percent

See *Dot Area*.

Dots per Inch

A measure of the resolution of a screen image or printed plate. Dots are also known as pixels. Screen displays are 72 dpi; laser printers 300-1,200 dpi; and imagesetters, up to 2,540 dpi.

Dot Growth

See *Dot Gain*.

Double Bump

The application of two layers of ink to achieve greater opacity or more intense color.

Double Face

The outside, or printing face, of combined corrugated board.

Double Inking

A specific corrugated print fault where too much ink is printed because a sheet was not properly fed, causing the next sheet to receive all of the ink from the plate.

Double-tone Ink

A printing ink that produces a two-color printing effect with a single impression. These inks contain a soluble toner that bleeds out to produce a secondary color.

dpi

Dots per inch.

Dragging

The removal and re-depositing of wet ink from the web by a stationary object in contact with the web. See *also Scratches*.

Draize Value

A system of rating a chemical's harmfulness to the human eye, on a scale of one to four. The higher the value, the more hazardous the material. Values

of two or less do not pose any major health and safety concerns, providing all handling and guidelines for that material are followed.

Drawdown

A swatch of color or coating made by spreading a small amount of coating across a sheet of stock. The purpose is for visual analysis or testing, to check the formulated ink color or coating before going on press.

DRE

See Destruction Removal Efficiency.

Drift

1. The continued deformation of rubber under strain; 2. The change in a given durometer reading after a specified period of time.

Drift

A gradual out-of-register movement.

Driving Side

That side of a flexographic press on which the main gear train(s) are located; also gear side; opposite of operating side.

Dropped Dots

The condition of missing print, related to missing dots. *See also Skipout.*

Dropout

A halftone in which the extreme highlights have been eliminated (dropped out) to produce more contrast, as in a specular highlight.

DRPM

See Deep-relief Powder Molding.

Drum Scanner

See Scanner.

Dry Color

A pigment in dry or powder form.

Dry Ink Film

The thickness or weight per unit area of dry ink or coating on a substrate.

Dryer

That auxiliary unit of a flexographic printing press through which the printed web travels and is dried prior to rewinding. Drying units are placed as required between color units.

Dummy

A preliminary mock-up showing the color, size, shape, general form, positioning of text and artwork on preparation and production of a printed piece.

Duotones

Two-color halftones.

Duplicate Transparency

A copy of an original transparency prepared from a special color film.

Durometer

A measure of hardness, by using a durometer gauge, either Shore A (for soft rubber) or Shore D (for harder, less resilient materials).

Dwell

The time interval during which elements remain in contact or in a static position; pause.

Dyes

The coloring material which is soluble in an ink vehicle. *See also Pigment.*

Dynamic Balance

The state when rotating masses are in equilibrium.

Dynamic Range

The density difference between highlights and shadows of an image, also known as tonal, density or copy range.

Dyne

The unit of force in the centimeter-gram-second system equal to the force that would give a free mass of one gram an acceleration of one centimeter per second per second. In printing, a unit of measure concerning surface tension.

GLOSSARY

E

EAN/UPC Symbol

See European Article Number Association.

EB

See Electron Beam.

EC

See Environment Canada.

Eccentricity

Off-center or out-of-round condition, such as a roller or cylinder, which does not rotate in a true concentric circle in relation to its axis. *See also Concentricity.*

Edge Guide

A device that detects and controls the position of substrate's edge as it passes through the press, maintaining the side-to-side register.

Editing

The process of reviewing original copy and making necessary changes or corrections before the type is finally set.

Efflorescence

A specific form of spontaneous desiccation (drying up). The property of a crystalline substance to become dehydrated or anhydrous when exposed to air and to crumble to a powder. Opposite of deliquescence.

Effluent

Waste water discharged from a point source, such as a pipe.

Effluent Guidelines

Technical USEPA documents that set effluent limitations for given industries and pollutants.

Efflux Cup

A cup of specific volume with an orifice in the bottom of specific size, used for comparing the viscosity of fluids. The length of time the volume of fluid runs out of the orifice is a measure of viscosity. Specific efflux cups are DIN Cup, Shell Cup or Zahn Cup.

Eggshell Finish

A paper finish similar to an eggshell in texture and color (light cream or off-white color).

EIS

See Environmental Impact Statement.

EJ

See Environmental Justice.

Elastic Elongation

The ability of a material to stretch without breaking. To describe this property as measured, it is more accurate to speak of ultimate elongation or elongation at break, since its value, expressed as percent of original length, is taken at the moment of rupture.

Elastic Modulus

See Modulus of Elasticity.

Elasticity

The property of a substance, which enables it to return to its original size or shape after being stretched or deformed.

Elastomer

Any rubber-like substance or polymer.

Electrolytic Silver Recovery

A method of recovering silver by applying a direct current across two electrodes immersed in a silver- rich solution. Silver plates onto the cathode and the thiosulfate is oxidized at the anode.

Electron Beam (EB) Curing

Converting a wet coating or printing-ink film to a solid film by using an electron beam. Electrons are small, negatively charged particles that penetrate the material; thus using EB for curing pigments is more efficient.

Electrophotography

See Xerography.

Elementary Neutralization Unit

A tank, tank system, container, transport vehicle or vessel (including ships) designed to contain and neutralize corrosive waste.

Elmendorf Test

A test to determine a paper's tear resistance.

Elongation

Longitudinal deformation resulting from an applied stress, i.e., stretching.

Embossed

A finish or design imparted by means of compressing a material between matched rigid surfaces or a rigid and a ductile surface having the desired raised or depressed surface pattern. The process usually occurs between rollers, although it may be done in the flat.

Emergency and Hazardous Chemical Inventory

An annual report by facilities having one or more extremely hazardous substances, or hazardous chemical above certain weight threshold limits, as specified in Section 311 and 312 of EPCRA, or by local regulatory agencies.

Emergency Planning and Community Right-to-Know Act

Title III of the Superfund Amendments and Reauthorization Act of 1986.

Emergency Response

Response from outside the immediate release area or by other designated responders to an occurrence that results, or may result, in an uncontrolled release of a hazardous substance, i.e., spills, explosions or fire.

Emission Cap

A limit designed to prevent projected growth in emissions from existing and future stationary sources from eroding any mandated reductions.

Emission Inventory

A listing, by source, of the amount of air pollutants discharged into the atmosphere; used to establish emission standards.

Emission Reduction Credit (ERC)

Certified reductions of air emissions that are over and above the amount required by regulatory standards. The amount of reduction that is in excess is credit. While the concept is part of the CAAA of 1990, each state passed its own enabling legislation.

Emission Trading

The transfer of ERCs between facilities or industries that require the offsets to establish new sources of air transmissions.

EMS

See Environmental Management System.

Emulsifying Agent

A material, which is added to hold two or more immiscible materials in suspension, forming an emulsion.

Emulsion

A type of mixture wherein two or more immiscible (or unmixable) materials are held together in a homogenous mixture by the action of a third, the emulsifying agent. Differs from a solution in which one material is dissolved in another.

Encapsulated PostScript EPS

A file format that carries both a description of an image in the PostScript page-description language and an optional bitmap equivalent for screen display. EPS is commonly used for image interchange on the Macintosh.

Endprinter

Printing section(s) added to an in-line process. *See also In-line Press.*

End Product

The final package or printed piece, after all blanking, folding, gluing or heat sealing is done, ready for customer use.

Enforcement Response Plan ERP

A USEPA-mandated plan, developed by the local control authority, that details the procedures a POTW will use to investigate and respond to industrial user non-compliance.

English Finish

A paper finish that falls between machine and supercalendered finish by degree of smoothness.

Engraved Roll

A roll having a mechanically or laser engraved surface. *See also Anilox Roller, Design Roll.*

Engraving

A general term normally applied to any pattern, which has been cut in or incised in a surface by hand, mechanical, laser, or

chemical etching processes.

Environmental Accounting

An approach to the financial analysis of business decisions which recognizes that many environmental costs are often overlooked.

Environmental Audit

An independent assessment of a facility's compliance policies, practices and controls.

Environmental Impact Statement EIS

A document prepared by or for USEPA that identifies and analyzes, in detail, environmental impacts of a proposed action.

Environmental Indicator

A measurement, statistic or value that provides a proximate gauge or evidence of the effects of environmental management programs or of the state or condition of the environment.

Environmental Justice

A government policy that provides for the fair treatment to all people with respect to the development and enforcement of environmental laws, regulations and policies.

Environmental Management System EMS

A management approach, through policy and procedure, that serves to reduce exposures to liability, manage environmental affairs with the elimination of duplicative efforts, improve employee and community relations, partner with regulatory staff, and offers the very real possibility of bottom-line savings.

EPA

See USEPA.

EPA I.D.

See Identification Code.

EPCRA

See Emergency Planning and Community Right-to-Know Act.

Epoxy Resins

Plastic or resinous materials used for strong, fast-setting adhesives, as heat-resistant coatings and binders, etc.

EPS

See Encapsulated PostScript.

Equalizer Rod

See Meyer Rod.

Equivalent Method

Any method of sampling and analyzing for an air pollutant that has been demonstrated to the administrator's satisfaction to have a consistent and quantitatively known relationship to the reference method under specific conditions.

Equivalent Weights

Indicates weights of papers of different dimensional sizes and different ream weights of identical basis or substance weights, e.g., 25 x 38@50/R is equivalent in substance to 32 x 44@74/R.

ERC

See Emission Reduction Credit.

ERP

See Enforcement Response Plan.

Ester

A group of solvents made by reacting an acid with an alcohol, e.g., ethyl acetate, isopropyl acetate; acetate solvents.

Etch

To dissolve the nonprinting areas of a metal plate by the action of an acid, as in the engravings used to mold the matrix.

Ethyl Cellulose

A cellulose ether, soluble in most organic and hydrocarbon solvents, available as a transparent, flexible packaging film. Also used as an ingredient in inks, coatings and adhesives.

European Article Association EAN

A standards organization, which together with the UCC, manage the UPC product identification system.

Evaporation

The changing from the liquid to the gaseous or vapor stage, as when the solvent leaves the printed ink film.

Exempt Solvent

Specific organic compounds not subject to regulation because they are deemed by USEPA to be of negligible photochemical reactivity.

Expose

To subject (a sensitive film, plate, etc.) to light.

Exposure

The state of being open and vulnerable to a hazardous chemical by inhalation, ingestion, skin contact, absorption or any other course; includes potential (accidental or possible) exposure.

Extenders

Any material added to an ink to reduce its color strength and/or viscosity.

Extensible

Stretchable packaging materials, such as polyethylene, which elongate during processing.

Extreme

A category of nonattainment where sources of NO_x or VOCs of 10 TPY (tons per year) or more are affected.

Extremely Hazardous Substance

Any of 406 chemicals identified by USEPA as toxic and listed under SARA Title III.

Extrusion

Continuous sheet or film (or other shapes not connected with flexography) produced by forcing thermoplastic material through a die or orifice.

Extrusion Coating

This process uses an extruder to apply plastic coating (i.e., polyethylene) at elevated temperatures to a moving web of paper.

Exudation

When solid material migrates to the film's surface. *See also Bloom.*

Eye Mark or Eye Spot

A small, rectangular printed area usually located near the edge of a web or design, to activate an automatic electronic position regulator for controlling register of the printed design with subsequent equipment or operations.

GLOSSARY

F

F (° F)

Degrees Fahrenheit; $^{\circ} F = (9/5 \times ^{\circ} C) + 32$.

Face Printing

Printing on the outer surface of a transparent film, contrary to printing on the back (reverse) of the film.

Face Stock

In label printing, it is the part of the substrate which is printed opposed to the disposable release liner that carries the face stock through the press.

Facility

All buildings, equipment, structures, and other stationary items located on a single, contiguous or adjacent site and which are owned or operated by the same person (or by any person who controls, is controlled by, or is under common control with such person). A facility shall include man-made structures, as well as natural structures, in which chemicals are purposefully placed or removed by human means, such that it functions as a containment structure for human use. For purposes of emergency release notification, the term includes motor vehicles, rolling stock and aircraft.

Fade

See *Vignette*.

Fade-o-meter

An instrument that measures light fastness or resistance to fading.

Fading

The change in hue from exposure to light, heat or other influences.

False Body

See *Thixotropic*.

Fast Solvent

A solvent that has a low boiling point, allowing rapid evaporation; a fast-drying solvent.

Fastness

A term denoting the stability or resistance of stock or colorants to influences such as light,

alkali, etc.

Feathering

Irregular edges around a print, often undesirable.

Feathering on Trailing Edges

Marks made on the image's trailing edges, generally caused by excessive ink buildup.

Federal Register FR

A publication of proposed U.S. regulations. The final regulations are then codified in the Code of Federal Regulations.

Feet per Minute FPM

A measure of surface speed.

Felt

A fabric used to carry the web of paper between press and dryer rolls on the paper machine.

Felt Mark

An imperfection in a paper's surface caused by a coarse felt or the warp of a felt, leaving a textured impression in the surface.

Felt Side

That side of the paper web which has been in contact with the felt during manufacture. It is the top side of the sheet.

Fiberboard

1. Fibered sheets produced or laminated a certain thickness, providing stiffness. Fiberboard used for container production may be corrugated board, or solid board of 0.060", 0.080", 0.100", 0.0120", or 0.140". 2. A generic name applied to many products made of fiberboard.

Fiberboard, Solid

A heavy, solid board, usually 3 or 4 ply, comprised of two liners and a chipboard filler, used in shipping containers.

File Server

A computer on network with special software so that all the network users can access the applications and documents stored on it.

Filler

An inert substance in a composition to increase bulk, strength and/or lower cost, etc.

Fill-in

Generally used to refer to the open portions of small type and half-tones filled by ink.

Film

Unsupported, basically organic, nonfibrous, thin, flexible material, 0.010" thick (maximum), is usually called sheeting. A variety of special designation, such as gusseted film, J film, U film, W film, etc. refer to film wound with a single or double fold or gusset on one or both sides; the designations describing the shape of a cross-section.

Film Former

A type of resin with qualities of forming a tough continuous film. Usually refers to such plastics as nitrocellulose, vinyl, etc.

Film Gauge

1. A number indicative of the thickness of films. 2. A micrometer for measuring film thickness.

Film Treatment

The surface oxidation of film to increase ink adhesion.

Film, Cast

Generally refers to films made by coating, or casting, a solution of a film former on an endless belt, drying the solvents, stripping the film from the belt and winding it up. Polyethylene cast film refers to the film made by extruding the molten polyethylene.

Film, Tubular

Generally used to mean polyethylene tubular film produced by extruding the molten polyethylene through a round die, cooling the plastic and flattening the tube so formed by means of nip rollers, and winding it up.

Fineness of Grind

The degree of grinding or dispersion of a pigment in a printing ink or vehicle. The extent to which particle size has been reduced to the finest granular structure.

Fingerprint

See Press Characterization.

Finish

The degree of a surface's gloss or flatness.

Finish, Calender

A finish obtained by passing a material through the calender stack.

Finish, Dry

A paper or paperboard finish that has not been dampened or steamed before going through calender stack.

Finish, Matte

A dull finish; flat.

Finish, Satin

A type of dull finish, somewhat finer than matte.

Finish, Supercalender

A smooth, high finish applied to paper by running it through a calender stack. This finish provides a better printing surface, finer than a calender finish.

Finish, Water

A very high finish produced by passing paper and paperboard through the calender stack and applying water on one or both sides.

FIRST

Flexographic Image Reproduction Specifications & Tolerances. A set of specifications and communication protocols for the industry developed by the *FIRST* Committee and the FTA Consumer Advisory Council. This platform should establish common communication and identify the responsibility of the provider(s). These are not standards, but when adhered to, are meant to produce a predictable, consistent result.

First-down Color

In multicolor printing, it is the initial color printed on the substrate and overprinted by other colors.

Fish-eyes

A print defect. A pinhole in the ink film looks like an eye. It is often the result of dirt on the surface of the printing plate; or the result of too much defoamer added to the ink causing de-wetting.

Fixer

The chemical used to stop the developed photographic image from developing further.

Flag

A small piece of paper or board inserted in a of stock being run, so that it extends beyond the edge, to indicate the location of a splice, imperfection, etc., or to designate some change from the standard of quality, speed, condition. It serves as a warning to the operator in the converting process.

Flame Resistant

The capability to burn when in contact with a flame, but not to continue burning when the flame is removed.

Flame Retardant

A chemical used in treating a material so that it will not support combustion.

Flameproof

Not readily ignited and does not propagate flame under test conditions. Flameproof materials are usually combustible materials treated or coated to modify its burning properties.

Flammable

Describes any material that can be ignited easily and that will burn rapidly.

Flammable Liquid

Liquids which have a flashpoint of less than 100°F.

Flashpoint

The lowest temperature at which evaporation of a substance produces enough vapor to form an ignitable mixture with air.

Flat

1. Lacking in contrast and definition of tone. Opposite of glossy; dull, matte. 2. A full-size sheet of engraving metal.

Flat-bed Press

A press-like piece of equipment used in transfer printing to transfer the design by sublimation from paper to fabric.

Flat-bed Scanner

See Scanner.

Flat Seal

A heat seal characterized by being flat, compared to a crimp seal.

Flex

Another term for roller or cylinder deflection in

press. Also, describes the bending qualities or characteristics of any material including printing substrates.

Flexible Glue

Animal glue, plasticized to enable permanent flexible films to be formed. Commonly used to denote any flexible adhesive.

Flexing Strength

The ability of a sheet or film to withstand breakage by folding. Flexing strength may be measured and tested by determining the number of folds required to cause failure.

Flexographic Printing

See Flexography.

Flexography

A method of direct-rotary printing, using resilient raised-image printing plates, affixed to variable repeat plate cylinders, inked by a roller or doctor blade- wiped engraved metal roller carrying fluid or paste type inks to virtually any substrate.

Flocculation

Pigment particles collecting together in the ink to form clusters or chains that can cause loss of color strength and a change of hue.

Flooding

The growth of a print area from the master copy on the printed sheet, caused by excessive ink applied to the substrate.

Floppy Disks

See Disk.

Flow

1. The property of an ink causing it to level out as would a true liquid. Inks of poor flow are classified short in body, while inks of good flow are said to be long. 2. The rheological properties of an ink.

Flow Chart

A graphical diagram used to show the key steps in a process. Special symbols are used to show inputs, outputs, decisions and process steps.

Fluidity

The ease in which an ink flows. Opposite of viscosity, the greater the viscosity the less the fluidity.

Fluorocarbons

Organic compounds in which fluorine atoms are bonded to carbon atoms.

Flying

Ink thrown off the press by the inking rollers, causing splashing.

FM Screening

See Stochastic Screening.

Foil

An unsupported, thin metal membrane, less than 0.006" thick. Above 0.006" thick, it is called a sheet.

Folder

A unit that creases and scores the substrate to preset specifications. *See also Buckle Folder, Combination Folder, Knife Folder.*

Font

A complete set of characters in one design, size, and style. In traditional typography usage, a font may be restricted to a particular size and style or may comprise multiple sizes, or multiple sizes and styles, of a typeface design.

Form Roll

The obsolete reference to an inking roller. *See also Transfer Roll, Anilox Roller.*

Formation

An arrangement of the fibers in a sheet of paper. Irregular arrangement is wild, while uniform formation is close.

Fountain

A pan, trough or other ink-supply system on a flexographic press in which the fountain roller revolves. Sometimes loosely applied to the entire printing unit.

Fountain Roller

The roller that picks up the ink or coating material from the fountain and applies it to the transfer roller.

For Position Only

An image that will be replaced in production, (usually on the film imagesetter) with the high-resolution image.

Four-Color Process

Printing with yellow, magenta, and cyan color inks plus black by using screens to create all

other colors. *See Process Black, Process Cyan, Process Magenta, Process Yellow.*

Fourdrinier Wire

The wire belt on which a web of paper is initially formed from the liquid fiber pulp (furnish) on the paper machine.

FPM

See Feet Per Minute.

FPO

See For Position Only.

FR

See Federal Register.

Frequency Modulated Screening

See Stochastic Screening.

Fugitive

Refers to a dye or pigment having very poor permanence, and is likely to deteriorate, change or fade.

Fugitive Emissions

Air pollutants released to the air other than those from stacks or vents; typically released from open containers and ink fountains, as well as small releases from leaks in plant equipment.

Full-scale Black

Printing with black in all tonal areas of the reproduction from highlight to shadow. *See also Gray Component Replacement.*

Furnish

The ingredients that make up a particular paper.

Fusible

Capable of being melted or liquefied by action of heat.

Fuzz

Fibrous projections on the surface of a sheet of paper. Lint appears in much the same manner but is not attached to the surface.

GLOSSARY

G

gb

See Gigabyte.

g/cc

Grams per cubic centimeter.

g/cm³

Grams per cubic centimeter.

g/kg

Grams per kilogram.

g/m²

Grams per square meter. *See Grammage.*

GACT

See Generally Available Control Technology.

Gamut

The range of colors available to a device. An input device, for instance, such as a scanner interprets color, using RGB; while an output device, such as a press, interprets colors with process inks.

Gas Chromatography

An analytical, instrumental method of accurately determining the composition of volatile solvents and oils, and of determining their residual presence in inert materials such as paper, board or film.

Gauge

The thickness of flexible packaging film. 100 gauge equals 1 mil (0.001").

GCR

See Gray Component Replacement.

Gear Chart

A handy reference, it is a compilation of the various printing lengths, or repeats, obtainable within the different gearing systems.

Gear Marks

A defect in flexographic printing appearing as uniformly spaced, lateral variations in tone corresponding exactly to the distance between the gear teeth.

Gear Selector

See Gear Chart.

Gear Side

Opposite to the operator side. *See also Driving Side.*

Generally Available Control Technology GACT

Controls for area sources that can be as stringent as MACT, but tend to be more flexible.

General Permit

A single permitting document that can cover a category or class of many similar sources.

General Requirements for Applications in Commercial Lithography (GRACoL)

Guidelines for sheetfed offset litho prepress, press and binding/finishing operations, introduced in 1996. The 1999 or third edition is available from the Graphic Communications Association, subsidiary of Printing Industries of America, Inc.

Generator

1. A facility or mobile source that emits pollutants into the air. 2. Any person who produces a hazardous waste listed by USEPA and therefore subject to regulation.

Generic Designs

Artwork not protected by trademark registration.

Ghosting

The presence of a faint image of a design in areas, which are not intended to receive that portion of the image. Usually a repeat pattern in the press machine direction.

GIF

See Graphic Interchange Format.

Gigabyte

A unit of measure, equal approximately to 1,048,576,000 bytes, or 1,024 megabytes. Commonly used to specify the capacity of computer memory.

Glassine

A type of translucent, flexible paper that is highly dense and resistant to the passage of oil, grease and air. Common uses are for envelopes, candy wrappers, liners for cereal and cookie boxes.

Gloss

A surface's ability to reflect light.

Gloss Finish

A finish of paper or paperboard that is smooth and shiny or lustrous in appearance.

Gloss Meter

An instrument used to measure gloss.

Goldenrod

A specially coated, yellow or orange, masking paper used by strippers to assemble and position negatives for exposure on plates.

GPD

Gallons Per Day.

GRACoL

See General Requirements for Applications in Commercial Lithography.

Grade

Paper classification based primarily upon end-use and brightness.

Gradient

A gradual transition or blending, linear or radial, from light to dark, or from one color to another.

Grain

The arrangement or direction of fibers in a fibrous material such as paper or wood, or the direction of molecular orientation in a nonfibrous material.

Grain Direction

The direction of paper parallel with the direction of movement on the paper machine.

Grammage

A term in the metric system for expressing the basis weight of paper as the weight (in grams) of a square meter of the paper – g/m².

Graphic Arts

The technology and practice of converting ideas and originals (i.e., photographs, drawings, computer-generated images and

designs) into visual form. Not restricted to, but often associated with, printing in its various forms.

Graphic Interchange Format GIF

A widely used bitmap-image format that originated on the CompuServe network and supports black, white and color.

Gravure

A printing process in which the image area is etched below the surface of the printing plate. The ink is carried below the printing surface in small wells or lines etched or scribed into a metal plate. The surface of the plate is wiped clean so non-image areas carry no ink and the image is transferred directly to the paper by means of pressure.

Gravurescope

A type of microscope designed for inspecting and measuring the engraved cells on an anilox roller or a gravure cylinder. Measures both vertically for depth and horizontally for width.

Gray Balance

The proper combination of cyan, magenta and yellow ink dot area, hue/density, trap, transparency and register on a specific substrate under normal printing conditions, which reproduce as a neutral gray.

Gray Component Replacement GCR

1. The replacement of an unwanted color (i.e., cyan in reds, magenta in greens, yellow in blues) in whole or in part by black; 2. The system to reduce overprinted halftone dot sizes of C, M or Y when it acts as a graying component by increasing the appropriate black halftone dot sizes to achieve a color parity with less process ink and improved printing conditions.

Grayness

See Hue Error.

Grayscale

A tonal scale, printed in steps of no-color through to black, used for quality control in both black-and-white and photographic processing.

Grease Proofness

A material's resistance to grease.

Groundwater

Subsurface sources of water that comprise a

large percentage of the water supply.

Groundwood Papers

A general term applied to a variety of papers made of mechanical wood pulp.

Guard Bars

The start-and-stop pattern in bar codes, particularly UPC-A, EAN-13 and EAN-8 versions of the EAN/UPC symbol family. Formed by twin narrow elements at the beginning, center and end of the symbol, they divide the symbol into left and right decodable segments that are then combined by the scanner into a single symbol.

Guillotine

A cutting machine in which the cut is made by a long knife that descends vertically on the material to be cut.

Gum

1. A water-soluble, amorphous substance exuded by or prepared from plants, which is sticky when moist but hardens upon exposure to air; 2. Any material having the above properties, natural or synthetic, regardless of source. Loosely used in reference to unvulcanized rubber.

Gusset

The bellows fold or tuck on the side or bottom of a bag. The bag's capacity is measured with the gusset unfolded.

GLOSSARY

H

Halftone

A pictorial which has been converted from a continuous tone original image, such as a photograph, into dots of appropriate size which, when printed, give the visual illusion closely resembling the original over a gradation range from highlight to shadow.

Halftone Dot

The small image element in a halftone placed in a regular pattern with set spacing, angle and shape. Flexography uses a round-shaped dot.

Halftone Screen

1. The specific pattern of halftone dots; 2. Originally, the engraved glass through, which continuous-tone copy is photographed to produce a halftone.

Halftone Tint

An area of approximately equal-sized halftone dots producing a uniform optical density.

Halo

An undesirable peripheral outline of the printed image.

HAP

See Hazardous Air Pollutant.

Hard-sized

Refers to a type of paper, which has been treated with considerable sizing to resist water.

Hazard Communication Standard HCS

An OSHA regulation that requires chemical manufacturers, suppliers and importers to assess the hazards of the chemicals they make, supply or import, and to inform employers, customers and workers of these hazards through a material safety data sheet (MSDS). Users are required to inform, train and provide MSDSs and labels in the workplace.

Hazardous Air Pollutant HAP

Air toxics or hazardous air pollutants include chemicals that may cause serious health effects, such as birth defects and gene

mutations. Under Section 112 of the CAAA, 189 chemicals/chemical families were listed as toxic air pollutants, and according to USEPA, about 30 are used in the printing industry. These chemicals are managed under the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations. The following are sometimes used in the flexographic industry: methanol, toluene, hexane, ethylene glycol and methyl ethyl ketone. Some states have additional lists of HAPs.

Hazardous Chemical USEPA's designation for any hazardous material that requires a material safety data sheet (MSDS).

Hazardous Product Act HPA

A law restricting advertising, sale or import of products in Canada.

Hazardous Waste

A subset of solid wastes that pose substantial or potential threats to public health or the environment.

Hazardous Waste Codes

A four-digit classification system used by USEPA to identify hazardous waste on labels, shipping papers and other records. All federal hazardous waste codes begin with a letter and are followed by numbers. All listed wastes begin with the letters F, K, U or P, and all characteristic waste begins with the letter D.

Hazardous Materials Information System

A system developed under RCRA for the collection, maintenance and dissemination of data on hazardous material.

Hazardous Waste Minimization

Reducing the amount or toxicity of waste produced by a generator, either by source reduction or environmentally sound recycling.

HCFC

Hydrochlorofluorocarbon.

HCS

See Hazard Communication Standard.

HDPE

See High-density Polyethylene.

Header

An identifying line at the top margin of a document, it can appear on every page and can include text, pictures, page numbers, the date, and the time. Headers that are repeated throughout a document are called running headers or running heads.

Headline Type

In composition, type set larger than the main reading body text, to attract attention, e.g., a headline.

Heat Resistance

The ability to withstand the effects of high temperature exposure. Care must be exercised in defining degree.

Heat Seal

A method of uniting two or more surfaces by fusion, either of the coatings or of the base materials, under controlled conditions of temperature, pressure and time (dwell).

Heat-seal Lacquer

A lacquer, applied to a stock and then dried, is capable of softening under heat, causing the stock be sealed to itself or another surface.

Heat Sealing Paper

Any paper coated with heat-sealable materials.

Heavy Body

Having a high viscosity.

Heavy Metals

Metallic elements with high atomic weights, e.g., mercury, chromium, cadmium, arsenic and lead; can damage living things at low concentrations and tend to accumulate in the food chain.

Hickey

A common printing defect, visible as a spot surrounded by a blank halo, caused by a speck of dirt pushing the paper away from the printing plate.

High Bulking Groundwood

This term refers to low cost printing papers made primarily from mechanical pulps, characterized by relatively high bulk-to-weight ratios, high opacity, and high speed

printability.

High-density Polyethylene HDPE

Film that has excellent moisture barrier and stiffness, used in applications such as cereal and cracker packaging. It is frequently coextruded with heat-seal layers, such as Surlyn, to make a finished packaging material. Blown HDPE film has better stiffness and moisture barrier than cast HDPE, but is hazier. Extrusion-coated HDPE resins are generally used to improve grease resistance.

Highlight

The lightest or whitest parts in an image represented in a halftone reproduction by the smallest dots or no dots.

Histogram

A graphical representation, usually in the form of a bar graph, of a series of measurements. The horizontal axis represents small sub-ranges of the total range of the measured value, starting at the smallest value and progressing to the maximum value. The vertical axis represents the number of times the measured value is in that particular range.

HMIS

See Hazardous Materials Information System.

Holding Line

See Keyline.

Holland Cloth

The protective, starch-linen cover sheet used in rubber-plate molding to prevent the plate from sticking to the mold.

Homogeneous

Of the same uniform composition or construction throughout.

Homopolymer Polypropylene

Pure polypropylene.

Hot Type

When a casting method of melted metal is used to set type copy instead of using the original type characters or a photographic process.

HPA

See Hazardous Products Act (Canada).

Hue

*See $L^*C^*h^*$.*

Hue Error

A measure for the purity of process inks, how close they are to the ideal of absorbing light only one third of the spectrum.

Humidity

See Absolute Humidity and Relative Humidity.

Hydrocarbon

An organic compound containing exclusively the elements carbon and hydrogen.

Hydrometer

An instrument for measuring the specific gravity of a liquid or solution.

Hydrophilic

Having a strong affinity for water; hygroscopic.

Hydrophobic

Lacking affinity or attraction for water; opposite of hydrophilic.

Hygroexpansivity

The change in dimension of paper that results from a change in the ambient relative humidity. This property is of great importance in applications where the dimension of paper sheets are critical.

Hygrometer

An instrument for measuring the relative humidity of air.

Hygroscopic

See Hydroscopic.

Hysteresis

A loss of energy due to successive deformations and relaxation.

GLOSSARY

I

I.D.

Inside diameter.

ICC Profile

A complete description of a color space, specific to a particular device, by identifying or mapping the device-independent CIE Lab color values to the color values of that specific device. Used to characterize monitors; input devices, such as scanners; and output devices, such as proofers, presses, and ICC profiles match one device to another to achieve color consistency.

Icon

A tiny, on-screen symbol that simplifies access to a program, command, or data file. For example, a waste basket may represent the command to delete a file. It is activated by moving the cursor onto the icon and pressing a button or key.

Identification Code

The unique code assigned to each generator, transporter and treatment, storage or disposal facility by regulating agencies to facilitate identification and tracking of chemicals or hazardous waste.

Idler Rollers

Roller mechanisms on converting machines used to support, smooth or direct, not drive, the web in its course of travel through a machine.

Ignitable Waste

A liquid waste having a flash point of less than 140° F; or a nonliquid waste, under standard temperature and pressure, that is capable of igniting through friction, moisture absorption, or spontaneous chemical changes. When ignited, they burn so vigorously and persistently, creating a hazard or an ignitable compressed gas.

Image Areas

1. The area of the printing plate which transfers ink to the substrate; 2. The printed area of a receiving surface.

Image Capture

The process of acquiring live action or still life images and converting that into a digital file, so it can be displayed, edited, and possibly output from a computer. *See Scanning.*

Imagesetter

A high-resolution output device used to produce reproduction-quality copy for printing, either as camera-ready artwork on photographic paper or as film negatives or positives.

Imposition

The process of laying out pages in a press form so that they will be in the correct order after the printed sheet is folded.

Impression

The image transferred from the printing plate to the substrate and the adjustment required to achieve that.

Impression Bar

A small diameter rod or bar, supported by a backup member of sufficient rigidity, mounted in place of the impression cylinder for running certain types of work, such as porous tissue.

Impression Cylinder

The roller or cylinder, which backs up or supports the substrate at the point of impression.

Imprint

A secondary marking containing additional information imposed on a primary printing.

Inching

See Jog.

Incineration

The destruction of solid, liquid or gaseous wastes by controlled burning at high temperatures.

Industrial Pollution Prevention

The reduction of pollution in the workplace and environment by means of process design (machinery, materials and methods), substitution of safer chemicals and technology

and recycling of waste products for reuse.

Industrial Pretreatment Program IPP

The approved program of the Control Authority that monitors and controls industrial discharges.

Industrial Source Reduction Environment

Practices that reduce the amount of any hazardous substances, pollutants or contaminants entering any waste stream or otherwise released into the environment. Product and equipment design, chemistry requirements and working methods are typical.

Industrial Waste

Unwanted materials produced in, or eliminated from, an industrial operation, and categorized under a variety of headings, such as liquid wastes, sludge, solid wastes and hazardous wastes.

Infeed

A mechanism designed to control the forward travel of the web into the press.

Influent

The solution entering a process or piece of equipment.

Infrared Light

Radiation in the infrared part of the spectrum, the longer wavelengths beyond the visible red end of the spectrum. Also called black head because it is not visible yet produces a warm sensation suitable for use as a heat source.

Inhibitor

A chemical added to another substance to prevent an unwanted chemical change.

Ink, Flexographic

Fast-drying fluid or paste-type inks used in flexographic printing.

Ink Balance

The chemical relationship between the different ink components.

Ink Film

The wet layer of ink on the anilox, printing plate or substrate surface; its weight or volume per unit area; as opposed to dry ink film.

Ink Fountain

The ink pan or trough or other ink supply system on a printing press.

Ink Jet

A printing technology, which utilizes liquid ink, which is sprayed through miniature nozzles onto the substrate in dot matrix patterns, forming text and graphics. For color printing, several nozzles connected to containers of colored inks are used.

Ink Kickout

The condition where some of the ink's ingredients go out of suspension, causing loss of ink properties, such as color, fluidity, printability. Some causes: high pH, introducing additives without agitation.

Ink Laydown

The visual appearance of the ink on the substrate surface.

Ink-metering Roller

A roller that allows the amount of ink (or coating) to be applied to the plate in a thin, even layer.

Ink Rotation

The sequence in which inks are printed. For process colors, it is commonly Y, M, C, K.

Ink Souring

See Ink Kickout.

Ink Starvation

A print defect characterized by large vertical or irregular lines in what should be the solid print area. It can be caused by poor anilox cell rewetting, trapped air in chambered doctor-blade systems, and/or poor ink balance.

Ink Sump

An ink sump is a container serving as the reservoir for excess ink and provides the additional ink needed for longer production runs. An ink sump can be either a pail or a specifically designed container that houses both the viscous ink and pump.

Ink Trap Percent

A measure of how well one ink prints over another, calculated from measured print densities, using the filter for the second ink printed to form the overprint. Higher numbers are desirable, indicating the ink's ability to transfer equally to the unprinted substrate and

to a previously printed ink film. A “perfect” 100% trap is rarely achieved due to the inherent measuring geometry and data additivity failure.

Ink Trapping

Overprinting and adhering one ink over another to produce the desired secondary and tertiary colors required in process printing.

Inking System

In flexographic presses, the system consisting of an anilox roller, an ink supply and a doctoring system. Ink is flooded into the engraved cells of the metering roller, excess ink is doctored off by the wiping or squeezing action of the fountain roller, or a doctor blade, and what ink that remains in the cells of the anilox metering roller is transferred to the printing plates.

In-Line Press

1. A press coupled to another operation such as a bag making, sheeting, die-cutting, creasing, etc.; 2. A multicolor press in which the color units are mounted horizontally in a line.

In-Line Printing

Printing, as part of a continuous process of producing a finished product.

In-Line Processing

A continuous process of producing a finished product from basic materials.

Intaglio

An engraved or etched design, which is below the surface as cells in an anilox roller or gravure cylinder.

Intensity

See Saturation.

Interleave

To insert separate sheets of paper, etc., between foil, printed paper or other stacked sheet material to facilitate handling or to prevent blocking or smudging.

Interleaved 2-of-5 ITF

Commonly encountered as the bar code specified for UCC/EAN products when they are packaged about the unit level in corrugated case, each symbol character contains five data elements (bars or spaces) two of which are wide (2-of-5). The

“interleaved” reference comes from the way the symbology takes digit pairs and interleaves them into its symbol characters, one in the bars and one in the spaces. It is widely used in the airline industry.

Interpolation

The term describing the technique of recreating the color values of pixels in bitmapped images, which have been modified (i.e., dimension, resolution, orientation).

Inventory Form

Tier I and Tier II emergency and hazardous chemical inventory forms set forth in subpart D of EPCRA.

Inverted Pyramid Cell

The most commonly used engraved anilox roller cell formation in flexographic printing, it is literally an engraved, inverted-pyramid-shaped cell that carries the ink or coating within an anilox roller.

Ion Exchange

A reversible exchange of charged atoms between a solid and a liquid. When used with photo-processing solutions, ion exchange removes silver and replaces it with ionized salts.

IPA

Isopropyl Alcohol.

IPP

See Industrial Pretreatment Program.

Iridescent

The property where materials exhibit shimmering, rainbow-like colors.

Irradiation

To be treated with ultraviolet light or other high energy radiation.

Irritant

A noncorrosive chemical that causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.

Ishihara Charts

Color-vision sensitivity charts containing irregular and varicolored spots arranged in a way around numbers or shapes that can be read by the observer with normal color vision but not by an observer with a color-vision deficiency.

ISO

See International Standards for Organization.

ISO 9000

A set of standards on quality systems for companies with design, manufacturing and service capabilities. They were first developed by the International Organization for Standardization (ISO), subsequently, a similar approach was adopted by the American National Standards Institute (ANSI) and the American Society of Quality Control (ASQC).

ISO 14000

Similar to ISO 9000 except with a focus on environmental management standards.

ITF

See Interleaved 2-of-5.

GLOSSARY

J - K

Jelling

The thickening of an ink or other liquid which cannot be reversed by stirring.

Jet Black

A term used to describe the blackness or intensity of the mass tone of black or near black surfaces.

Jog

To intermittently operate a press for very short increments of web travel.

Journals

The end shafts on which a roller rotates.

JPEG

Joint Photographic Experts Group. A picture compression standard/algorithm developed by this group, designed for highly effective compression of either full color or gray-scale continuous-tone digital images. Not for compression of black and white (1-bit-per-pixel) images or moving pictures.

Jumbo Roll

A roll of web material, the outside diameter of which, is larger than standard diameter.

Justify

To justify copy means to letter or word space the type characters on each line so they will line up vertically on the left, right or both margins.

K (°K)

Degrees Kelvin; the absolute temperature scale. Absolute zero is -273.13°C .

K Film

The trade name of polymer-coated cellophanes manufactured by DuPont.

kb

See *Kilobyte*.

K.B. Value

See *Kauri-Butanol Value*.

Kaolin

See *China Clay*.

Kauri-Butanol Value

A measurement of the solvent strength of a hydrocarbon solvent.

Kelvin

See *K (°K)*.

Kerning

Modifying the normal space between letters during typesetting to achieve more readable and eye pleasing word forms. Traditionally, this meant reducing the space between only selected characters, such as the “L” and “Y” in “only”; 2. Adding or subtracting a small amount of space between each letter or character to adjust (justify) the length of a line of copy. See *Tracking*.

Ketones

A class of organic compounds, which are generally colorless, volatile liquids, such as acetone, methyl ethyl ketone, etc.

Keyline

1. An outline, usually in red, drawn on artwork, which may or may not form part of the artwork, indicating the shape, size and position for elements such as halftones, line art, UPC symbols; 2. The outline on artwork that, when transferred to a printing plate, will provide a registration guide for the other colors.

Keyline Art

The black-and-white production art for designs containing two or more colors, in which all color plates are shown on one surface in composite form. The trap width or overlapping colors is shown by white lines within black solids.

Key Plate

The plate of a set of color plates, which carries the major area of detail and to which the other plates are registered.

Kilobyte

Equivalent to 1,024 bytes.

Kiss Impression

The lightest possible impression which will transfer a film of ink from the anilox roller to

the entire print surface of the printing plate, or from the entire print surface of the printing plate to the material being printed.

Kiss Register

See Butt Register.

Knife Folder

A folding unit with moving tapes or belts that feed a sheet along a flat plane until it is stopped by a gauge and positioned against a side-guide. A metal knife presses at a right angle to the sheet, forcing it between two rollers to create a fold.

Knock-Out

See Reverse.

Knurled Roll

See Engraved Roll.

Kraft

1. A chemical-based wood pulp made by the sulphate process; 2. Paper or paperboard made from such pulp.

Kraft Linerboard

A paperboard made on a Fourdrinier or cylinder machine and used as the facing material in the production of corrugated and solid-fiber shipping containers.

Kromecote

A highly polished, mirror-like paper finish.

Kurtosis

A statistical measure of the abnormal amount of data around the mean. More data around the mean indicates a kurtosis of greater than 1; less data around the mean indicates a kurtosis of less than 1.

GLOSSARY

L

L*a*b* Value

Values that identify or define a color in three-dimensional CIELab color space. L=lightness, a=red/ green component, b=yellow/blue component.

Lacquer

Originally used to denote a nitrocellulose-type of fast-drying inks and varnishes, now used as a term for any fast-drying, clear varnish with a plastic film-former base.

Ladder Orientation

Positioning the UPC symbol, so that the bars in the artwork are printed running in the cross direction. *See also Picket Fence Orientation.*

LAER

See Lowest Achievable Emission Rate.

Lake

An insoluble compound of a dye colorant.

Lake

A depression or dishing in the surface of a rubber plate.

Laminant

An adhesive to combine and bond a combination of films, foils, plastics, papers or other material in sheet or web form.

Laminate

1. A product made by bonding together two or more layers of material or materials; 2.To unite layers of materials with adhesives.

Land Disposal Restrictions LDR

A set of regulations that prohibit the land disposal of untreated hazardous wastes.

Landfill

Disposal facilities where waste is placed in or on land. Properly designed and operated landfills are lined to prevent leakage.

Lap

The portion of a material, which covers or overlaps another portion, at which the two thicknesses of material are bonded together.

Large Commercial-imaging Facility

A facility that produces, on average, more than 20 gallons per day of silver-rich solution.

Large-quantity Generator LQG

Person or facility that generates more than 2,200 pounds of hazardous waste per month.

Layer

In some applications, a level to which you can consign an element of the design you are working on.

Layout

The preliminary arrangement of an artwork showing position, sizes, color and other details for the final design.

LCA

See Life Cycle Analysis.

L*C*h° Value

The perceptual values of a color in CIELab color space. It is an approach to describing color numerically, expressing the color in terms of L for lightness, C for chroma or saturation, and h for hue or shade.

LD 50/Lethal Dose

The dose of a toxicant that will kill 50 percent of the test organisms within a designated period. The lower the LD 50, the more toxic a compound.

LDPE

See Low Density Polyethylene.

LDR

See Land Disposal Restrictions.

Leading

The vertical spacing between base lines of type, measured in points or point units, but is referred to as leading or a given number of lead points. *See Point.*

Leafing

The process whereby the metal flakes contained in metallic inks float to the surface of the ink, causing metallic luster.

LEL

See Lower Explosive Limit.

LFL

See Lower Flammable Limit.

LEPC

See Local Emergency Planning Committee.

Letterpress

A method of printing that uses hard-relief plates as an image carrier. The image area of the plate, raised above the nonprinting area, receives the ink and is then transferred directly to the substrate.

Lettering Spacing

See Kerning.

Life Cycle Analysis LCA

The analysis of all energy resources and emissions used and produced in any and all of the processes of manufacturing, using, distributing and ultimately disposing of a product.

Light Fastness

That property which renders a material resistant to change in color. Depending upon its use, it may be required to show good resistance (fastness) to change in color after exposure to destructive influences such as light, acids and alkalines.

Lightness

*See $L^*C^*h^{\circ}$ Value.*

Light Stability

A measure of the ability of a pigment, dye or other colorant to retain its original color and physical properties, either alone or when incorporated into plastics, paints, inks and other colored surfaces, upon exposure to sun or other light.

Linear Blend

See Gradient.

Linear Low Density Polyethylene LLDPE

A film having the same features as LDPE but is stronger, with better hot-tack strength. The film resins are more expensive than LDPE, and extrusion coating grades are even more so.

Linear Medium Density Polyethylene LMDPE

A film similar to LLDPE, but provides improved stiffness, gloss and reduced flavor adsorption.

Line Art

See Line Copy.

Line Color

Any color that is not part of the process-color image, printed on a separate printing unit. Often, it is a special ink formulation, but it can be a second printing unit using process inks, especially black.

Line Copy

Copy made up of solids and lines in contrast to halftones or shadings made up of a series of dots.

Line Cut

An engraving made from line copy.

Line Drawing

See Line Copy.

Line Films

Photographic film that converts all tones of gray to just black or white granular solids.

Line Growth

The growth of a printed line as a result of pressure between the printing plate and the substrate.

Liner

One of the outer, smooth members of corrugated board.

Linerboard

Paperboard used for the flat facings in corrugated board.

Linear Medium Density Polyethylene LMDPE

Paperboard used for the flat facings in corrugated board.

Lines per Inch LPI

The number of dots per linear inch in a halftone. Dot size varies from very small highlight dots to large shadow dots. More lines per inch increases resolution detail and dot gain. Lines per centimeter are specified outside the U.S.A.

Linetone

A form of halftone composed of lines instead of dots.

Line Work

See Line Copy.

Liquid Photopolymer

See Photopolymer Plate.

Listed Waste

Contains any number of toxic constituents that have been shown to be harmful to human health and the environment. Listed wastes include waste solvents that are classified as “F” wastes, while unused, discarded, or off-specification materials may be classified as “U” wastes.

Lithography

A method of printing from a plane surface (as smooth stone or metal plate) on which the image to be printed is ink-receptive and the non-printing area ink repellent. *See also Planography.*

Live

Indicates a scan or illustration in an electronic document that is ready for production of the platemaking-film negative.

Livering

An irreversible increase in the body of inks as a result of gelation or chemical change during storage. *See also Jelling.*

LLDPE

See Linear Low Density Polyethylene.

LMDPE

See Linear Medium Density Polyethylene.

Load

1. The total weight supported by the journals of a roller; 2. The force exerted by one roller on another usually expressed in pounds per linear inch (PLI).

**Local Emergency Planning Committee
LEPC**

A committee appointed by the State Emergency Response Commission, as required by SARA Title III, to formulate a comprehensive emergency plan for its jurisdiction.

Local Limits

Discharge limits developed by the local control authority for non-domestic indirect dischargers designed to prevent interference with or pass through of the POTW.

Logo

A mark or symbol designed for an individual, company or product that translates the impression of the body it is representing into a graphic image.

Logo Color

Colors that signify a brand name or corporate identity. To ensure its consistency from package to package, press run-to-press run, logo colors should be treated as a line color.

Logotype

An alphabetical configuration designed to identify by name an individual, company or product. Also trademark.

Loose Color Proof

A process-color proof with no line copy or special (custom) ink colors.

Loupe

A small, hand-held magnifying device used to check the dot structure and line thickness of the film and printed piece.

LDPE

See Low Density Polyethylene.

Low Density Polyethylene LDPE

A low-cost resin, LDPE film has good moisture barrier, heat sealability and strength. Extrusion LDPE has an excellent bond to paper and varying bonds to other substrates.

Lower Explosive Limit LEL

The concentration of a compound in air above which the mixture will ignite; it relates to percentage of explosive vapors in air or around the press. Atmospheres with a concentration of flammable vapors at or above 10% of the LEL are considered hazardous.

Lower Flammable Limit LFL

See Lower Explosive Limit.

Lowest Achievable Emission Rate LAER

The most stringent emission limitation derived from either the most stringent emission limitation contained in the implementation plan of any state for such class or category of

source; or the most stringent emission limitation achieved in practice by such class or category of source. Required of new sources in nonattainment areas.

LPI

See Lines per inch.

LQG

See Large Quantity Generator.

LZW

(Lempel-Ziv-Welch). A lossless compression scheme that uses an algorithm to compress digital image files to save disk space without sacrificing any data in the image.

GLOSSARY

M

M2P2

See Multimedia Pollution Prevention.

Machine Direction MD

The flow or movement of material through a machine. Cellulose paper fibers are oriented somewhat parallel to the direction of flow through a papermaking machine. *See also Cross Direction.*

Machine Finish

A dry or wet finish obtained on a paper machine. It can be achieved as the sheet leaves the last dryer or the calendar stack.

Machine Glazed

The finish produced on a Yankee machine, where paper is pressed against a large, highly polished, steam-heated revolving cylinder, causing the sheet to dry with a highly glazed surface on the side next to the cylinder, leaving the other side rough.

Machine Guard

A device or method that prevents the equipment/ machine operator from placing any part of his/her body in a hazardous zone.

Machine Set

Type that is set by using a keyboard on a machine instead of setting each character by hand into a typeset.

Machine Wire

The continuous copper or bronze wire which is the traveling surface upon which the web of paper is formed. It is usually referred to as the Fourdrinier Wire.

MACT

See Maximum Achievable Control Technology.

Magenta

See Process Magenta.

Major Modification

This term is used to define modifications of major sources of emissions with respect to Prevention of Significant Deterioration and New Source Review under the Clean Air Act.

Major Source

Any source that emits or has the potential to emit 10 TPY of any hazardous air pollutant, 25 TPY of any combination of hazardous air pollutants or 100 TPY of any air pollutants. For ozone nonattainment areas, major sources are sources with the potential to emit 100 TPY or more of VOCs in marginal and moderate areas, 50 TPY or more of VOCs in serious areas, 25 TPY or more in severe areas, and 10 TPY or more in extreme areas.

Makeready

The preparation and correction of the printing plate before starting the print run, to ensure uniformly clean impressions of optimum quality.

Mandrel

A shaft upon which cylinders, or other devices, are mounted or affixed.

Manifest

A multicopy shipping form used to identify the type and quantity of waste, the generator, the transporter and the TSDF to which the waste is being shipped. The manifest includes copies for all participants in the waste shipment chain and is often obtained.

Manifest System

See Cradle-to-Grave System.

Marginal

A category of nonattainment where sources of NO_x or VOCs of 100 tons per year or more are affected.

Mark

A print fault characterized by a localized pattern that repeats. The mark can be in printed or non-printed areas, positive or negative.

Markets

Generally, a recycling business (i.e., a buyer) or municipal recycling facility that accepts recyclable materials for processing and final sale to an end user, either for their own use or resale.

Mask

To block out part of an image to prevent reproduction or to allow for alterations.

Mass Tone

The color of a bulk of ink.

Material Safety Data Sheet MSDS

Printed material concerning a hazardous chemical or extremely hazardous substance, including its physical properties, hazards to personnel, fire and explosion potential, safe handling recommendations, health effects, fire fighting techniques, reactivity and proper disposal.

Materials Exchange

A mutually beneficial relationship whereby two or more organizations exchange materials that otherwise would be thrown away. In some areas, computer and catalog networks are available to match up companies that wish to participate in exchanging their materials.

Matrix

An intermediate mold, made from an engraving or type form, from which a rubber plate is subsequently molded.

Matte Finish

A low-gloss, dull finish. Compared to coated box paper, a finish with a gloss test less than 55%.

Maximum Achievable Control Technology MACT

A standard for source categories that emit hazardous air pollutants. It is generally the best available control technology, taking into account cost and technical feasibility.

Maximum Uncontrolled

Emissions calculated at maximum operating capacity of source, based on 8,760 hours per year without control equipment.

mb

See Megabyte.

MDPE

See Medium Density Polyethylene.

Mean Quality

See Average.

Mean (Arithmetic)

The value or statistic that is the result of the

sum of the statistical observations in a sample divided by the number of observations in the sample.

Mechanical

Camera-ready paste-up of artwork and type on one piece of artboard; may be accompanied by overlays.

Media

Specific environments, air, water, soil, that are the subject of regulatory concern and activities.

Median

The value of the variable in a statistical sampling, which exceeds half of the observations and is exceeded by half.

Medium

The corrugated or fluted portion of combined corrugated board, supporting the outer linerboard.

Medium Commercial Imaging Facility

A facility that produces, on average, more than two but less than 20 gallons per day of silver-rich solution, and uses less than 10,000 gallons per day of process wash water.

Medium Density Polyethylene

A film that provides better barrier and chemical resistance than LDPE.

Medium-density Tape

A foam mounting-tape, more firm and resilient than the standard double-sided tape.

Megabyte Mb

A unit of measure equivalent to 1,024 kilobytes or 1,048,576 bytes, commonly used to specify the capacity of computer memory.

Metallic Inks

Inks composed of aluminum or bronze powder in varnish to produce gold or silver color effects.

Metallic Replacement

A method of recovering silver from silver-rich solutions by an oxidation-reduction reaction with elemental iron and silver thiosulfate to produce ferrous iron and metallic silver.

Metamerism

When two colors match under one source of illumination but not under another.

Method 24

See *Test Method 24*.

Method 24A

See *Test Method 24A*.

Method 25

See *Test Method 25*.

Method 25A

See *Test Method 25A*.

Methyl Ethyl Ketone MEK

A relatively fast drying, organic solvent of the ketone family. A good solvent for nitrocellulose and vinyl lacquers. Small amounts will swell natural rubber. Its boiling point is 175°F. Highly flammable – its flash point is 24°F.

Metric ton

Unit of weight equivalent to 2,204.6 pounds.

Meyer Rod

A metal rod wound with fine wire around its axis so that liquids can be drawn down evenly at a given thickness across a substrate.

Mezzotint

An irregular, random dot halftone.

mg/kg

Milligrams per kilogram.

mg/L

Milligrams per liter; equivalent to ppm.

MIBK

See *Methyl isobutyl ketone*.

Micro Dot

Typically used in video-mounting devices, they are 0.010" diameter dots placed on the left and right side of the printed material, and in the center of the web direction. When printed, the dots will overprint each other and appear to be an almost perfect dot.

Micrometer

An instrument (caliper) for measurement in terms of small dimensions, usually in 0.001" and 0.0001".

Mil

1. Military specifications; 2. 1/1000 of an inch; 0.001".

Mileage

The usage factor of any ink, referring to the amount of ink used to cover a certain area of printed surface.

Mill Roll

A roll of paper, film or foil as received by the converter from the mill.

Min/Max Rule

The minimum and maximum type or line width a press is capable of reproducing, usually determined by press characterization data.

Mineral Spirits

Hydrocarbon petroleum distillates having a boiling range of approximately 300° F to 350° F.

Minimum Dot

The smallest dot size a press is capable of reproducing, usually determined by press characterization data.

Misregister

A condition where printing is out of or not in register. See *Register*.

Misting

A mist or fog of tiny ink droplets thrown off the press by the rollers. See also *Flying*.

Mixing White

A white ink, either transparent or opaque, used in making tints.

Mixture

Any combination of two or more chemicals if the combination is not, in whole or part, the result of a chemical reaction.

mmHg

Millimeters (mm) of mercury (Hg); a unit of measurement for low pressures or partial vacuums.

Mode

The value of the variable in a set of statistical data at which the greatest concentration of observations occur.

Mode Quality

The value in a series of measurements which occurs most frequently.

Moderate

A category of nonattainment where sources of

NO_x of VOCs of 100 TPY or more are affected.

Modulus of Elasticity

The ratio of stress produced in a material corresponding to the strain producing the stress, within the elastic limit of the material.

Moiré

An interference pattern caused by the out-of-register overlap of two or more regular patterns such as dots or lines. In flexographic printing, it can be caused by incorrect relative screen of the anilox rollers and halftone plate. Screen angles are selected to minimize this pattern.

Moisture-proof

Not affected by the moisture. A barrier to moisture. Although materials which resist passage of moisture are often called moisture-proof, their preferable designation is moisture barrier.

Molding Bearing Bars

See Bearer.

Mold

1. A female form used for production of desired shapes; 2. To form a matrix or rubber plate, using heat and pressure. *See Matrix.*

Molding Press

A platen press in which matrices or rubber plates are formed.

Monochrome

Consisting of a single color or hue. In printing, this refers to imaging in shades of gray, used interchangeably with black and white.

Monomer

A chemical combination of molecules corresponding to the individual units of a polymer. It is capable of being incorporated (polymerized) into polymers.

Mottle

A non-uniform ink lay resulting in a speckled or indistinctly spotted appearance, also known as orange peel, flocculation, striations.

Mounting

The process of affixing plates on a cylinder or base in proper position to register color to color as well as to the product form to be printed.

Mounting and Proofing Machine

A device for accurately positioning plates to the plate cylinder and for obtaining proofs for register and impression, off the press.

MSDS

See Material Safety Data Sheet.

msi

One thousand square inches.

Mullen Bursting Strength

The measure of a material's strength to resist burst, expressed in pounds per square inch. The test is made on a motor-driven Mullen tester.

Mullen Tester

The equipment which tests bursting strength of paper.

Munsell Color System

A proprietary color system where color is defined in terms of h (hue), c (chroma), and v (lightness).

Multicolor Overprinting The technique of overprinting a given number of transparent colors to produce additional colors without using halftones. For example, to produce orange, green, purple and brown, cyan, magenta and yellow are overprinted to make seven colors from three.

Multimedia Pollution Prevention M2P2

Actively identifying equipment, processes and activities that generate excessive wastes or use toxic chemicals, and then making substitutions, alterations or product improvements, taking into account the impact on all media.

Murray-Davies Equation

A formula for calculating dot area based on density measurements. This measurement approximates the total of physical dot size plus optical dot gain due to insufficient light absorption of the ink and extra light absorption of the substrate, thus the term "apparent dot area." Under visual examination with a 10X magnifying glass, the printed dot would appear smaller than the calculated apparent dot area which correlates well with visual perception when holding the printed piece at normal viewing distance. *See also Dot Area, Yule-Nielson Equation.*

MVT Rate

Moisture vapor transmission rate. *See Water Vapor Transmission Rate.*

Mylar

A DuPont® trade name for a tough, polymeric polyester produced in the form of a clear film.

GLOSSARY

N - O

NAA

See Nonattainment Area.

NAAQS

See National Ambient Air Quality Standards.

NAFTA

North American Free Trade Agreement.

NAICS

See North American Industrial Classification System.

Naphtha

An aliphatic hydrocarbon solvent, characterized by low K.B. values, derived from petroleum, such as hexane, V M & P naphtha, etc. It swells natural or butyl rubber and has slight effect on Buna-N or Neoprene.

National Ambient Air Quality Standards

NAAQS

Maximum air pollutant standards that USEPA set under the Clean Air Act for attainment by each state.

National Emission Standards for Hazardous Air Pollutants NESHAP

Emission standards set by USEPA for an air pollutant not covered by NAAQS that may cause an increase in deaths or serious, irreversible or incapacitating illness.

National Environmental Policy Act NEPA

A U.S. federal law that ensures that public officials consider the environmental effects of proposed actions, to foster better decision-making and to encourage public participation. It also requires environmental impact statements for any major federal action that may significantly affect the quality of the human environment.

National Pollution Discharge Elimination System NPDES

The primary federal permitting program under the Clean Water Act that regulates discharges to surface waters.

Native File Format

The process in which an application program

saves data.

Natural Drying Time

The amount of time it takes the ink to dry as it leaves the last printing unit and before the web dryer temperature begins rising.

Negative

A photographic image of originals on paper, film or glass in reverse from that of the original copy. Dark areas appear light and vice versa.

Neoprene

A synthetic, chlorinated butadiene rubber used in making flexographic rollers, that are resistant to alcohols, cellosolve, water, aliphatic hydrocarbons and to a limited extent, esters (acetates), but not resistant to aromatic hydrocarbons.

NEPA

See National Environmental Policy Act.

NESHAP

See National Emission Standards for Hazardous Air Pollutants.

Neutral

The absence of acid or alkaline activity in a material. The presence of an equal concentration of hydrogen and hydroxyl ions; a pH of 7.

Neutral Tone

The absence of color. An achromatic tone produced by balancing the ink densities of yellow, magenta and cyan.

New Source

Any stationary source built or modified after publication of final or proposed regulations that prescribe a given standard of performance.

New Source Review NSR

Clean Air Act requirement that State implementation plans must include a permit review that applies to the construction and operation of new and modified stationary sources in nonattainment areas to assure attainment of NAAQS.

N Factor

See *Yule-Nielson Factor*.

Nigrosin

A deep blue or black aniline, or coal tar dye-stuff.

Nip

The line of contact between two rollers.

Nitrocellulose

A film formerly widely used in flexography and with gravure inks, also known as nitrated cellulose. See also *Pyroxylin*.

nm

Nanometer. A unit measure of length, equivalent to one billionth (10⁻⁹) of a meter.

Nodule

A small lump, round or irregular shaped, such as chrome projections on an anilox roller, needing additional polishing for removal.

Nonattainment Area

An area that does not meet one or more of the NAAQS for the criteria air pollutants designated in the Clean Air Act.

Nonferrous Metals

Metals not containing any sizable proportion of iron.

Nonfogging Film

A film that does not become cloudy from moisture condensation caused by temperature and humidity changes.

Nonhazardous Industrial Waste

Wastes and waste waters from manufacturing facilities regulated under Subtitle D that are not considered to be MSW, hazardous waste or other waste under Subtitle C and D.

Nonincrement Press

A flexographic press capable of printing infinite variable repeats, and is not dependent on standard gear pitch increments.

Nonpoint Source

Any source of pollution not associated with a distinct discharge point.

Nonscratch

Inks which have high abrasion and mar-resistance when dry.

Nonspecific Source Wastes Environment

This list identifies wastes from common manufacturing and industrial processes. These include solvents that have been used in cleaning or degreasing operations.

Nonvolatile

That portion of a material which does not evaporate at ordinary temperatures.

North American Industrial Classification System NAICS

Updated change to the standard industrial classification (SIC) code system which began phase-in during 1997.

Notice of Violation NOV

A formal notification by a government agency to an emission source indicating violation of a regulation.

NOV

See *Notice of Violation*.

NOx

See *Oxides of Nitrogen*.

NPDES

See *National Pollution Discharge Elimination System*.

NSR

See *New Source Review*.

Nylon

A synthetic resin, part of the polyamide family.

O**O.D.**

Outside diameter.

Object-oriented

An approach in drawing and layout programs that treats graphics as line and arc segments rather than individual dots. Also referred to as vector-oriented.

OCC

Old Corrugated Containers, used for recycled pulp.

Occupational Safety and Health Act (OSH Act)

A Federal law that provides protection to employees by specifying requirements for

industry to safeguard the worker from accidents, exposure and other health endangering conditions. According to this Act, inspectors may at any time or when requested by employee examine any company for violations of occupational safety and health standards set by the Act."

OCR

See Optical Character Recognition.

Off-press Proof

A simulation of the printed job produced directly from digital information or photographic films.

Offset

The transfer of printing inks, or coatings, from the surface of a printed sheet to other surfaces.

Offset

A method used in the 1990 Clean Air Act Amendments to give companies that own or operate large (major) sources in nonattainment areas, flexibility in meeting overall pollution reduction requirements when changing production processes. If the owner or operator of the source wishes to increase release of a criteria air pollutant, an offset must be obtained either at the same plant or by purchasing offsets from another company.

Off-spec

A chemical that does not meet specifications to perform a particular function.

Opacity

1. Having the quality of being impervious to light rays. 2. The degree of light unable to transmit through a material.

Opaque

1. A paint exhibiting light obstructive qualities used to block out areas on a photographic negative not wanted on the plate; 2. To apply opaque materials.

Open Prepress Interface OPI™

An extension of the PostScript page-description language, it is a workflow where the high-resolution images are stored in a central location on a file server, and the low-resolution files with the same name are sent to the individual workstations to be used for layout. When the completed file is sent for output, the high-resolution images are

automatically swapped out with the low-resolution images.

Operating Side

That side of a flexographic press on which the printing unit adjustments are located, opposite of driving side or gear side.

Operation and Maintenance Plan

A plan describing the planned/scheduled maintenance of equipment.

OPI™

See Open Prepress Interface.

OPP Substrates

See Oriented Polypropylene.

Optical Character Recognition OCR

A means of inputting copy, without the need to key it in, by using software which, when used with a scanner, converts the type into editable computer text.

Optical Density

The light-stopping ability of a photographic film or printed image; it is mathematically expressed as the logarithm of opacity.

Optical Disk

A high-density storage device that uses a laser to burn a pattern of holes into a tellurium film on the disk's surface. A single optical disk can hold billions of bytes of data. In fact, one optical disk storage system can store the entire Encyclopedia Britannica if necessary.

Optical Distortion

To change an object's appearance when viewed through a transparent material, adding certain defects such as waviness of surface, etc.

Optical Scanner

A device that analyzes the light reflected from or transmitted through copy, art, or film and produces an electronic signal proportional to the intensity of the light or color.

Orange Peel

See Mottle.

Organic

Refers to the compounds in the field of chemistry containing carbon.

Organosol

A suspension of particles in an organic solvent mostly made with vinyl resins, solvents and plasticizers.

Oriented Polypropylene

A clear, stiff film with good heat resistance and good moisture barrier. Coated grades also have good oxygen barrier or good heat sealability.

Original

The material that is required to be reproduced in the printing process, such as a photograph, transparency, artist's drawing or merchandise sample.

Ortho Response

Specified as Type 2 in ISO 5-3:1995: Photography, Density measurements, Part 3: Spectral conditions. This is generally used for measuring densities when printing to orthochromatic (blue/green sensitive) materials with sensitivities between 350 nm to 520 nm, with a peak at approximately 435 nm.

OSH Act

See Occupational Safety and Health Act.

OTR

See Ozone Transport Region.

Out-of-Gamut

The condition where the gamut of one device is less than that of another device. For example, many colors that are displayed on a monitor cannot be reproduced on a press using C, M, Y, K process color inks.

Overlay

The transparent sheet attached to copy used to indicate changes, color separation, etc.

Overprint

The printing of one ink impression over another.

Overtone

Modifying the hue or tone of a color.

Overwrap

A wrapper applied over a product, package, carton, box, etc.

Oxidation

The use of heat to burn VOCs in a solvent-laden gas stream.

Oxides of Nitrogen (Nox)

A criteria air pollutant that is produced from burning fuels.

Ozone

The three oxygen molecule compound (O₃) found in two layers of the earth's atmosphere. One layer, beneficial ozone, occurs seven to 18 miles above the surface and shields the earth from UV light. Ozone also concentrates at the surface as a result of reactions between volatile organic compounds, oxides of nitrogen and UV light.

Ozone Depleter

A type of air pollutant regulated by the Clean Air Act that includes the emissions of substances that deplete the upper (stratospheric) ozone layer.

Ozone Transport Region OTR

Encompasses the east coast of the United States, including Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, New Jersey, Pennsylvania, Rhode Island and the District of Columbia. All existing sources in the ozone transport region with potential emissions greater than 50 TPY have to adopt RACT even if they are located in a less severely polluted area.

GLOSSARY

P

P2

See Pollution Prevention.

PAL

See Plant-wide Applicability Limit.

Pantone Matching System® PMS®

The brand name of a system for specifying colors, a standard in the printing industry.

Paper Direction

The direction that the paper web is produced.
See also Machine Direction.

Paperboard

The distinction between paperboard and paper is not clear, but generally, paperboard is heavier in basis weight, thicker and more rigid than paper. Sheets 12 pts. (0.012") thick or more are classified as paperboard. There are a number of exceptions based upon traditional nomenclature. For example, blotting paper, felts and drawing paper are classified as paper while corrugating medium, chipboard and linerboard less than 12 pts. are also classified as paperboard. Paperboard is made from a wide variety of furnishes on a number of types of machines, principally cylinder and fourdrinier.

Pareto Analysis

A graph of the number of occurrences of different items, usually problems or faults and used as a tool to analyze and pinpoint the significant few from the insignificant many.

Particulate Matter PM

A criteria air pollutant that includes dust, soot and other tiny bits of solid materials that are released and move around in the air.

Parity Checking

Built into bar codes, a method of error checking the graphic design of the symbology itself, such as an odd number of narrow bars in every properly encoded character or an even number of dark modules for each character.

Pastel

A tint or mass tone to which white has been

added.

Pattern or Pattern Plate

The engraving or combination of plates used for making the matrices from which rubber plates are made.

PCB

See Polychlorinated biphenyls.

PCE

See Perchloroethylene.

PDF

See Portable Document Format.

PE

See Polyethylene.

PEL

See Permissible Exposure Limit.

PFL

See Permissible Flammable Limit.

Penetration

The ability of a liquid (ink, varnish or solvent) to be absorbed.

Perc

See Perchloroethylene.

Percent Volatile

The percentage of a liquid or solid (by volume) that will evaporate at an ambient temperature of 70° F.

Perceptual Color Space

A color space or model based on how people see color. *See also CIELab.*

Perchloroethylene PCE

A colorless, nonflammable liquid. It is an irritant, and extended exposure can adversely affect the human nervous system.

Perfumed Ink

A printing ink with a small percentage of concentrated scents to impart a desired aroma or fragrance to the printed sheet.

Permanent Total Enclosure PTE

An enclosure that completely surrounds an emission source, as defined by USEPA guidelines, such that all VOC emissions are discharged to a control device, resulting in a capture efficiency of 100%.

Permissible Exposure Limit PEL

An occupational exposure limit established by OSHA's regulatory authority. It may be a timeweighted average (TWA) limit or a maximum concentration exposure limit.

Permit

A legal document issued by state and/or federal authorities containing a detailed description of the proposed activity and operating procedures as well as appropriate requirements and regulations.

Permit to Construct

May be required before any new facility can be built or before any new piece of equipment can be installed or modified (contact your state regulatory agency).

Permit to Operate

Contains all applicable and enforceable control requirements and has a definite period of effectiveness.

PET

See *Polyethylene Terephthalate*.

pH

(Potential Hydrogen) The measure of acidity or alkalinity of an aqueous solution; 7 on the scale is neutral; less than 7 is acidic and greater than 7 is alkaline. Strong acids have a pH of 1–3; weak acids about 6. Strong bases have a pH of 12–13, weak bases about 8.

Phenolic

The generic name for phenol-formaldehyde plastic.

Photo Composition

The process of setting type copy photographically, as opposed to using the method of inking and proofing lead-type characters.

Photoengraving

A metal plate prepared photochemically, from which the matrix or rubber mold is reproduced.

Photoinitiator

A substance which, by absorbing light, becomes energized into forming free radicals, which promote radical reactions and polymerization.

Photomultiplier Tube PMT

A light-detection device traditionally used in high-end drum scanners. PMTs are highly light sensitive, and are physically larger in size compared to CCDs. See *also* *CCD*.

Photopolymer Plate

A flexible, relief-printing plate, used in flexography, made of either precast sheet or liquid light-sensitive polymers. Photopolymer plates require exposure to UV light during the platemaking process.

Photopolymers

The generic name for a mixture of materials, which are sensitive to UV or visible light exposure. With image-wise exposure, they are used extensively in off-press proofing materials and printing plates.

Photostat

See *Stat*.

Physical Hazard

A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable or water-reactive.

Pi (π)

The ratio of a circle's circumference to its diameter. The value, rounded to four decimal places, is equal to 3.1416.

Pica

A unit of type measure equivalent to 1/6". One pica equals 12 points.

Picket Fence Orientation

The positioning the UPC symbol, so that the bars in the artwork are printed running in the machine direction. See *also* *Ladder Orientation*.

Pick Resistance

The ability of the paper's surface, i.e., the coating, film or fibers, to resist lifting from the surface when struck during printing.

Picking

The lifting of any portion of a surface during the printing impression.

PICT

A standard file format for storing object-oriented images. PICT data can be created, displayed on screen, and printed by routines incorporated in the Macintosh system, so a program need not contain graphics-processing routines in order to incorporate PICT data generated by other software.

Pigment

An insoluble coloring material dispersed in a liquid vehicle to impart color to inks, paints and plastics. *See also dyes.*

Pigment Load

The amount of pigment in an ink formulation as a percentage of the total liquid volume.

Pigments, Inorganic

A class of pigments consisting of various metallic compounds, e.g., titanium oxide, iron blue.

Pigments, Organic

A class of pigments, which are manufactured from coal tar and its derivatives. These pigments are generally stronger, brighter and more transparent than inorganic pigments.

Piling

The buildup of ink on a roller, plate or blanket.

Pinholing

When a printed ink fails to form a complete, continuous coverage, evident by the random formation of small holes in the printed area.

Pinion Gear

A pinion is a round gear used in several applications. Usually the smallest gear in a gear drive train.

Pin-on Temperature

The temperature when an ink adheres to the substrate.

Pitch Diameter

The measurement of a gear, determined by dividing the tooth pitch line circumference by pi (π).

Pitch Line

An imaginary circle on the gear at the point of true mesh with the mating gear. The circumference of the pitch line determines the repeat of the gear on the print cylinder.

Pixel

The abbreviation for picture element. It is the smallest unit (cell, dot, square) on a color monitor display screen grid that can be displayed, stored or addressed. An image is typically composed of a rectangular array of pixels.

Pixels per Inch PPI

The unit used to measure the resolution of a digital image.

PPI

See Pixels per Inch.

Planography

See Lithography.

Plasticizers

Materials, usually liquid but sometimes solid, that impart flexibility to an ink or lacquer.

Plastisol

Particle suspension of in an organic liquid, similar to an organosol, but containing no solvents.

Plate Break

The nonprint area where the two ends of a flexographic plate butt together after being wrapped around the plate cylinder on the printing press.

Plate Cylinder

The press cylinder on which the printing plates are mounted. There are two types. Integral, the shaft is a permanent part of the body. Demountable, the shaft is removable to receive a multiple of bodies of varying diameters and, in some cases, face widths.

Plate Impression

The operator sets the plate-to-substrate impression taking care to never apply too much impression pressure to the plate package. Pressure must be sufficient to provide a proper transfer of ink, but light enough to prevent distortion of image areas or excess squeeze of the ink film, which causes halos, and other print defects. Anilox-to-plate impression is then reset for best image fidelity.

Platen

1. The heated plates of a printing plate vulcanizer that presses the engraving into the matrix or matrix into the rubber during the platemaking process. 2. The heated plate on a flatbed transfer-printing press, which presses the heat-transfer paper onto the fabric to produce the finished design.

Platesetter

See Imagesetter.

Plate Staggering

A mounting technique whereby multiple plates are staggered or offset with respect to each other on the plate cylinder, usually done to prevent plate and cylinder bounce.

Ply

Each layer in a multilayered structure.

PM

See Particulate Matter.

PM 10

Particulate matter greater than 10 microns in diameter.

PMS

See Pantone Matching System®.

PMT

See Photomultiplier Tube.

Pock Marks

A print defect, also referred to as craters or volcanoes, often caused by solvent retention.

Point

A unit of type measurement, equivalent to 0.0139". There are 12 points to a pica and 72 points to the inch.

Point

A unit of measure to specify paperboard thickness, equivalent to mils or 0.001"; i.e., 20 pt. equals 0.20".

Point Source

A stationary location or fixed facility (such as an industry or municipality) that discharges pollutants into the air or water surface through pipes, ditches, lagoons, wells or stacks.

Points

Measurement of caliper; 0.001".

Pollution

Any substance in water, soil or air that degrades the natural quality of the environment, offends the senses of sight, taste or smell or causes a health hazard.

Pollution Prevention P2

Actively identifying equipment, processes and activities that generate excessive wastes or use toxic chemicals, and then making substitutions, alterations or product improvements.

Pollution Prevention Act PPA

A law enacted in 1990, which establishes a U.S. national policy that pollution should be prevented or reduced at the source whenever feasible. Pollution that cannot be prevented should be recycled in an environmentally safe manner. Pollution, which cannot be prevented or recycled, should be treated in an environmentally safe manner and its disposal or release into the environment should be employed as the last resort.

Poly

See Polyethylene.

Polyamide

Polymers containing amide groups; for example nylon, versamid resins, etc.

Polychlorinated biphenyls PCBs

Mixtures of a certain class of carcinogenic, synthetic, organic chemical regulated by OPPT and other agencies.

Polyester

See Polyethylene Terephthalate.

Polyethylene

A polymerized ethylene resin used for packaging films or molded for a wide variety of containers, kitchenware and tubing. *See also HDPE, LDPE, LLDPE, LMDPE, MDPE.*

Polyethylene Terephthalate PET

An oriented PET film that has excellent stiffness, clarity, heat resistance and dimensional stability, good oxygen barrier, and some moisture barrier.

Polymer

A compound formed by linking simple and identical molecules having functional groups that permit their combination, to proceed to higher molecular weights under suitable conditions.

Polymerization

A chemical reaction in which the molecules of a monomer are linked together to form large molecules whose weight is a multiple of that of the original substance.

Polypropylene PP

A class of plastics which includes a wide variety of packaging, such as yogurt containers, shampoo bottles, margarine tubs, cereal box liners, rope and strapping, combs and battery cases.

Polystyrene

A class of plastics which includes Styrofoam® coffee cups, food trays and “clamshell” packaging, as well as some yogurt tubs, clear carry-out containers and plastic cutlery. Foam applications are sometimes called Expanded Polystyrene (EPS). Some recycling of polystyrene is taking place, but is limited by its low weight-to-volume ratio and value as a commodity.

Polyvinylidene Chloride PVDC

A film that has excellent water, oxygen and flavor barriers. In emulsion form, it can be used as a barrier coating.

Pop Test

The slang term for the bursting test, originating from the popping sound when the paper bursts. *See also Mullen Tester.*

Population

In statistics, the total of all possible observations of the same kind from which the statistical sample is drawn.

Porosity

A property of paper that allows the permeation of air, an important factor in ink penetration.

Portable Document Format PDF

A file format invented by Adobe Systems as a solution to transporting digital files cross-platform. PDFs are independent of the original application software, hardware, and operating system used to create those documents, capturing all the elements of a printed document as an electronic image, which can then be forwarded, viewed, navigated and printed. PDFs are also device-independent, resolution independent and page independent. Manipulation and page routing can occur, which characterize the editable component of the PDF file. Files in this format are based on

the same imaging model as PostScript, but are optimized and compressed for transport and delivery (portability).

POS

Point of Sale.

Positive

A photographic image on paper, film or glass, which exactly corresponds to the original subject in all details.

PostScript

A computer language created by Adobe® Systems, Inc., which allows a programmer to create complex pages using a series of commands. Text and graphics can be controlled with mathematical precision and image output to laser printers and high-resolution imagesetters.

Potential to Emit PTE

The maximum capacity of an air contamination source to emit any air contaminant under its physical and operational design, operating every hour of the year.

POTW

See Publicly Owned Treatment Works.

Powdering

See Chalking.

PP

See Polypropylene.

PPA

See Pollution Prevention Act.

ppb

Parts per billion.

ppm

Parts per million.

PPO

See Pollution Prevention Officer.

Preflight

A process of determining the completeness and correctness of an electronic design file prior to commencement of production.

Precipitate

An insoluble substance that forms in a solution.

Premakeready

Varying the surface height of printing plates before going to press in order to achieve better printability.

Preseparated Art

Artwork in which the basic layout, register marks and major color is prepared on illustration board and each additional color plate is drawn on a separate sheet or film overlay.

Press Characterization

The procedure to quantify and document the printing process and use the data to adjust upstream systems and provide data to monitor the printing process for consistency.

Press Direction

The direction of paper parallel to its forward movement on the press. The direction at right angles to this is called the cross press direction.

Press Proofs

Printed sections of substrate material made on a press to allow for approval or final corrections before the production-printing run is made.

Pretreatment

Methods used by industry and other non-household sources of water to remove, reduce or alter the pollutants in a waste water before discharge to a POTW.

Preucil

See Ink Trap Percent.

Prevention of Significant Deterioration PSD

USEPA program in which state and/or federal permits are required to restrict emissions from new or modified sources in places where air quality already meets or exceeds primary and secondary air quality standards.

Primary Colors

Those from which all other colors may be derived, but which cannot be produced from each other. The additive primaries (light) are blue, green and red. The subtractive primaries (colorant) are cyan, magenta and yellow.

Primary Standards

To set limits to protect public health, including the health of people sensitive to air pollution,

such as young children, the elderly and those with asthma.

Prime Coat

The initial base coating applied to enhance subsequent printing.

Printability

The collective term used to describe the substrate properties required for acceptable print-image quality.

Print Contrast

A ratio of the difference between the printed solid area density and a printed shadow tint area (traditionally 75% as measured on the platemaking file or film negative for offset lithography; 70% for flexography) to the density of the solid, expressed as a percentage. This indicates the printing system's capability to hold image detail in the upper tone region. Most desirable (highest) print contrast occurs with the simultaneous highest solid print density and the lowest dot gain.

Printed Dust

A print fault where dust appears on the solid areas. It is more common on thin substrates, such as film.

Printing, Flexographic

See Flexography.

Printing Unit

The individual section of the press or set of rollers used to print each individual color.

Printouts

A facsimile, from an output device such as a laser or ink-jet printer, of the copy programmed into the computer for review.

Print Voids

A print defect resulting from the nontransfer of ink to the substrate.

Process Black

One of the four ink colors used in four-color process printing. Like all process inks, this ink must be a transparent. This will allow for the blending of varying amounts of each of the process colors, to achieve the visual appearance of the many thousands of shades capable of being printed by flexography.

Process Color

Cyan, magenta, yellow, and black inks used in four-color process printing; hue may be modified to meet specific needs.

Process Cyan

One of the four ink colors used in four-color process printing. Like all process inks, this ink must be a transparent. This will allow for the blending of varying amounts of each of the process colors, to achieve the visual appearance of the many thousands of shades capable of being printed by flexography.

Process Magenta

One of the four ink colors used in four-color process printing. Like all process inks, this ink must be a transparent. This will allow for the blending of varying amounts of each of the process colors, to achieve the visual appearance of the many thousands of shades capable of being printed by flexography.

Process Yellow

One of the four ink colors used in four-color process printing. Like all process inks, this ink must be a transparent. This will allow for the blending of varying amounts of each of the process colors, to achieve the visual appearance of the many thousands of shades capable of being printed by flexography.

Process Control

That procedure for examining a process, which aims at evaluating future performance through the use of statistical quality control methods.

Process Inks

A set of transparent inks for high reproduction illustrations by halftone color separation process. Colors are yellow, magenta, and cyan with or without black. *See Process Black, Process Cyan, Process Magenta, Process Yellow.*

Process Printing

Printing from a series of two or more halftone plates to produce intermediate colors and shades. In the four-color process, yellow, magenta, cyan, and black are used.

Production Run

The final printing requested by the customer from the original artwork.

Programming

To establish such things as type styles, point sizes, spacing, etc. in a computer application.

Profile

See ICC Profile.

Progressive Color Bar

See Control Target.

Progressive Proofs (Progs)

Prints of individual color plates of a multicolored design or illustration, applied to color separation negatives or as individual plate cylinder print repeats from a plate proofer or a printing press, to evaluate color balance and printability.

Progs

See Progressive Proofs.

Proof

A prototype of the printed job that is made from plates, film, or electronic data, for in-house quality control and/or for customer inspection and approval.

Proof, Color Target

See Color Target Proof.

Proof, Concept

See Concept Proof.

Proof, Contract

See Contract Proof.

Proof, Contract Analog

See Contract Analog Proof.

Proof, Contract Digital

See Contract Digital Proof.

Proof, Profiled Contract

A proof that is profiled on a specific date using a specific color management system and is prepared based upon profiles provided by the proofing system's manufacturer.

Proofing Paper

A white paper with a machine glaze or finish, commonly 0.003" thick, such as 50# supercalendered paper, used during the proofing and mounting process.

Proprietary Alcohol

Denatured ethyl alcohol.

PSD

See Prevention of Significant Deterioration.

PTE

See Potential to Emit and Permanent Total Enclosure.

Publicly Owned Treatment Works POTW

A municipal or public service district sewage treatment system.

Pulldown Ink

See Drawdown.

PVDC

See Polyvinylidene Chloride.

Pyroxylin

The name given to the more soluble types of cellulose nitrate and confined roughly to those containing less than 12.4% nitrogen. Also called nitrocellulose.

GLOSSARY

Q - R

Quality

Those characteristics of a product that allow manufacture at a given cost-price relationship; uniformity to meet parameters of customer specifications; and caliber of competitive performance.

Quality Control

The systematic planning, measurement and control of the combination of personnel, materials and machines with the objective of producing a product, which will satisfy the quality and profitability of the enterprise.

Quiet Zone

Print-free zones or areas in a bar code that are used to separate the bars and spaces from any surrounding graphics or text; used to help the scanner locate the symbol.

Rack-jobber

One who displays items on a vertical rack with pins, hooks, etc.

RACT

See Reasonably Available Control Technology.

Radiation-cured Inks

These inks consist of mixtures of low-molecular weight polymers or oligomers dissolved in low-molecular-weight acrylic monomers. They typically do not contain organic solvent carriers. Electron beam or ultraviolet light sources are used to cure these inks.

Random Copolymer Polypropylene

A small percentage of ethylene added to HDPE while being polymerized.

Random Sample

In statistics, a sample of a population obtained by a process which gives each possible combination of "n" items in the population the same chance of being the sample actually drawn.

Range

In a statistical sampling, the amount of the values covered by the frequency distribution from the highest value to the lowest value.

Raster Display

A video display that sweeps a beam of light through a fixed pattern, building an image with a matrix of points.

Raster Graphics

The manner of storing and displaying data as horizontal rows of uniform grid or picture cells (pixels). Raster scan devices recreate or refresh a display screen 30 to 60 times a second in order to provide a clear image for viewing. Raster display devices are generally faster and less expensive than vector tubes and are therefore gaining popularity for use with graphics systems.

Raster Image File Format RIFF

A file format for paint-style graphics, developed by Letraset USA. RIFF is an expanded version of the TIFF format used by many scanner makers.

Raster Image Processor RIP

A computer device or program that translates digital information in the page description language to the pattern of dots to be delivered by the output unit of the system.

Rasterize

To convert images into a bitmap (raster) form for display or printing. All output of a display screen or printer is in raster format.

Raster Scam RIP

The generation of an image on a display screen made by refreshing the display area line by line.

RCF

See Refractory Ceramic Fibers.

RCRA

See Resource Conservation and Recovery Act.

Reaction

A chemical transformation or change. The interaction of two or more substances to form new substances.

Reactive

Potentially explosive or produces toxic gases when mixed with water, air or other incompatible materials.

Reactive Waste

Unstable or explosive waste; wastes which react violently in the presence of water; and sulfide- or cyanide-bearing wastes which liberate toxic vapors when exposed to pH conditions between 2.0 and 12.5. Printers do not normally generate reactive wastes.

Ream

The unit of quantitative measure used in the marketing of paper, consisting of a specified number of sheets of the basic size for a given grade. Generally, it is 500 sheets; wrapping tissue is 480 sheets, sometimes 1,000 sheets.

Reasonably Available Control Technology RACT

Control technology that is reasonably available and both technologically and economically feasible. Usually applied to existing sources in nonattainment areas, in most cases it is less stringent than new source performance standards. RACT is normally described in the CTGs for the process.

Reclaimed Material

Material that is regenerated or processed to recover a usable product. Examples are recovering lead values from spent batteries and the regeneration of spent solvents.

Recovered Material

A material or by-product that has been recovered or diverted from solid waste and does not include materials or by-products generated from, and commonly used within, an original manufacturing process.

Recycled Medium

Paperboard used in forming the fluted portion of corrugated board, made from recycled fiber, such as old corrugated boxes.

Recycled Paperboard

A term, which refers to paperboard manufactured using recycled paper, usually

old newspaper or waste paper, that has very little refining.

Recycling

Recovering and reusing materials and objects in original or changed forms rather than discarding them as waste.

Reducers

Materials used to alter the body, viscosity or color strength of ink.

Reflection Densitometry

The practice of characterizing the amount of light absorption of materials by measuring reflectance and calculating and reporting optical density.

Reflective Art

Art that must be photographed by the light reflected from its surface.

Reflective Copy

An opaque original that is photographed with reflected light.

Reflective Process Camera

A camera that is capable of reproducing an original image that has been prepared on an opaque substrate.

Refractive Index

The relative measure of the speed of light in a medium (air's refractive index is equal to one). The change in refractive index from one material to another causes light to change direction at the material interface. This property enables a glass prism (refractive index of about 1.5) to separate white light into its constituent colors.

Refractory Ceramic Fibers RCF

Manmade fibers produced from melting and blowing or spinning of kaolin clay or alumina and silica. They are used primarily for high temperature industrial insulation applications, most frequently as lining in high temperature furnaces, heaters and kilns.

Regenerated Cellulose

The basic ingredient used in the manufacture of cellophane.

Regenerative Thermal Oxidizer RTO

An air pollution control device that destroys organics by thermal oxidation. Heat from the

oxidation process is captured and reused to heat the influent vapor stream.

Register

In printing, the alignment of two or more images when printed sequentially on top of each other.

Regular Slotted Container

A container usually made from a single piece of corrugated board and shipped flat. All flaps are the same length and the outer flaps meet at the center of the box. RSC's are used more than any other style because they are more economical to manufacture and use.

Regulatory Agency

Federal, state/provincial or local agencies responsible for implementing, monitoring and enforcing regulations.

Related Colors

Neighboring colors in the spectrum.

Relative Density

The density measurement where the densitometer is calibrated on a clear film substrate for transmission and on an unprinted substrate for reflection. *See also absolute density.*

Relative Humidity

The ratio of actual humidity to the maximum humidity which air can retain without precipitation at a given temperature and pressure. *See also Absolute Humidity.*

Release

Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment of a hazardous or toxic chemical or extremely hazardous substance.

Releases to Air (Point and Fugitive Air Emissions)

Includes all air emissions from industry activity. Point emissions occur through confined airstreams as found in stacks, ducts or pipes. Fugitive emissions include losses from equipment leaks or evaporative losses from impoundments, spills or leaks.

Releases to Land

Includes disposal of toxic chemicals in waste to on-site landfills, land treatment or

incorporation into soil, surface impoundments, spills, leaks or waste piles. These activities must occur within the facility's boundaries.

Releases to Water (Surface Water Discharges)

Encompasses any releases going directly into streams, rivers, lakes, oceans or other bodies of water. Any estimates for storm water runoff and non-point losses must also be included.

Remedial Action

The actual construction or cleanup phase of a Superfund site cleanup.

Rendering

Producing or the finished production of a design drawing, painting, etc. by hand using any of various tools, i.e., pencils, pens, knives, brushes, air brushes, etc.

Repeat

The printing length (circumference of the printing surface) of a plate cylinder, determined by one revolution of the plate cylinder gear. The pitch circle circumference of the plate cylinder gear.

Reportable Quantity RQ

Amount of a hazardous or extremely hazardous substance that, if released into the environment, must be reported under EPCRA.

Resins

Generic name for photopolymers.

Resins

Natural or synthetic complex organic substances with no sharp melting point which, in a solvent solution, form the binder portion of flexo inks.

Resource Conservation and Recovery Act RCRA

Environmental law in the U.S aimed at controlling the generation, treating, storage, transportation and disposal of hazardous wastes.

Release Agents

Solutions and sprays applied to the back of photopolymer and rubber plates to facilitate their removal from the stickyback. These should only be used with great care by experience personnel.

Release Liner

In printing labels, the part of the substrate, which carries the facstock through the press and is ultimately discarded.

Resample

To change the digital image's resolution while keeping its pixel dimensions constant.

Resolution

A measure of sharpness in a digital image, expressed as dots per inch (or millimeter), pixels per inch or lines per inch.

Resource Recovery

The extraction of useful materials or energy from solid waste.

Retarders

Low-volatile solvents added to ink to slow the rate of evaporation.

Reticulation

A print fault where the ink runs into lines, possibly caused by over-thinning the ink with solvent.

Retrofit

The addition of a pollution control device or the modification of a piece of equipment on an existing facility without making major changes.

Reuse

The act of using a material over again for the same or some other beneficial purpose. *See also Recycling.*

Reverse

To change the tonal orientation of an image, making the darker elements lighter and the lighter darker. Note that physically reversing the spatial orientation of an image is known as "flopping" the image.

Reverse Printing

Printing on the underside of a transparent film.

Rewetting

The process of refilling the anilox cells with ink after they are emptied on the surface of the printing plate. It is also subsequent printed ink dissolving previously applied ink.

Rewind

After the substrate has been printed with the desired images, it is taped to a shaft and

wound back into the original roll form for further processing.

RGB

Red, green and blue, the primary additive colors, which are the backbone of computer color display monitors and prepress color separation. They also are the complementary or secondary subtractive ink colors which produce red by overprinting magenta and yellow, green by trapping cyan and yellow, and blue by overprinting cyan and magenta.

RH

See Relative Humidity.

RHEM Light Indicator

A test strip, which indicates whether or not a light source is D50. A version is available from GATF.

Rheology

1. The science dealing with the deformation and flow of matter. 2. The ability to flow or be deformed.

Rhodamine Reds

A class of clean, blue shade organic red pigment, possessing good light fastness and often called magenta in process printing.

RIFF

See Raster Image File Format.

Right Reading, Emulsion-Side Down RRED

The description of positive or negative paper/film on which the text, if any, can be read as normal, i.e., from left to right.

Right Reading, Emulsion-Side UP RREU

The description of positive or negative paper/film on which the text, if any, can not be read as normal, i.e., from left to right.

Ring Crush

A test to establish the amount of force required to crush a narrow specimen of paperboard that is inserted into a special holder with a circular groove. This test establishes a number corresponding to the on-edge stiffness of materials and is applicable to linerboard and corrugated medium.

RIP

See Raster Image Processor.

Risk

A measure of the chance that damage to life, health, property or the environment will occur.

Risk Assessment

A process to determine the increased risk from exposure to environmental pollutants, together with an estimate of the severity of the impact.

Risk Management

The process of identifying, evaluating, selecting and implementing actions to reduce risk to human health and the environment. The goal of risk management is to select scientifically sound, cost-effective, integrated actions that reduce or prevent risks.

Rollout

Fluid ink printed on a substrate using a Meyer rod applicator. Also known as bardown.

Ross Boards

Pattern-surfaced drawing boards, which permit the artist to obtain a variety of tones between pure white and black directly on the original drawing.

Rough Sketch

An artist's impromptu drawing of a picture or design, often in color, that can develop into comprehensive artwork.

Rounding Error

The process of allocating imaging-device dots to bar or space modules in an uneven manner.

RQ

See Reportable Quantity.

RRED

See Right-Reading, Emulsion-Side Down

RREU

See Right-Reading, Emulsion-Side Up

RSC

See Regular Slotted Container.

RTO

See Regenerative Thermal Oxidizer.

Rub Test

See Abrasion Test.

Rubber

An elastomer material capable of recovering from large deformations quickly and forcibly.

Rubylith

A hand-cut, red or orange, masking film.

Run Chart

A chart showing successive values of a measured variable. The horizontal axis represents successive measurements, usually but not always at equal time intervals. The vertical axis represents the value of the measurement.

Run Target

The minimal set of graphic elements placed, if possible, in the live image area, used to monitor the production run process. It is a specific target as specified by *FIRST*, available from the FTA. *See also Control Target.*

Running Register

That control on a flexographic press which accurately positions the printing of each color unit in the direction of the web travel. Also called circumferential register and longitudinal register.

Runout

See Total Indicated Runout.

GLOSSARY

S

Sampling

The statistical process of collecting data or observations.

Sans Serif

Letterforms or type that does not contain the short crossline or spiral-like terminals at the ends of the stroke.

SARA

Superfund Amendments and Reauthorization Act; *see Superfund*.

Satin Finish

A smooth finish of paper or paperboard, suggestive of satin.

Saturation

Purity of hue or the degree of hue as seen by the eye; color saturation.

Saturation

1. The extreme degree of concentration beyond, which a solute can no longer be dissolved into a solvent, or, similarly, in which a substance can no longer be absorbed into another medium; 2. The point beyond which air can no longer absorb water vapor.

SBAP

See Small Business Assistance Program.

SBO

See Small Business Ombudsman.

SBREFA

See Small Business Regulatory Enforcement Fairness Act.

SBS

See Solid Bleached Sulfate.

Scanner

An optical device, which uses a laser beam to “read” the encoded data in a bar code by optically detecting the bars and spaces.

Scanner

A digitizing device using light sensitivity to translate a picture or typed text into a pattern of dots, which can be understood and stored

by a computer. Some types of scanners are flatbed, sheetfed, hand-held, slide and drum scanners.

Scatter Diagram

A graph used to show the correlation between two measurements or variables. The value of one variable is plotted against the value of the second. Values plotted and falling in a straight line indicate a correlation, whereas values plotted randomly or scattered in the graph indicate no correlation.

Score

To make an impression or a partial cut in a material to facilitate it's bending, creasing, folding or tearing.

Score Cut

To make a cut by rotating a pressure-loaded blade against a smooth, hard backup surface.

Scratches

Ink that is removed by a stationary object in contact with the web. *See also Dragging.*

Scratchboards

Plain, white, coated boards which may be covered with India ink or some other black coating, to “draw”, a scratchboard tool is used to scratch through the ink, exposing white lines or areas.

Screen Angle

The angle of the rows of dots in a halftone.

Screen Printing

In flexography, refers to any tone printing work, whether halftone or Ben Day.

Screen Resolution

1. A measure of the number of colors that can be displayed on a monitor, such as 8-bit (256) or 16-bit (63,536); 2. The number of horizontal and vertical lines on a raster display.

Screen Ruling

The number of lines per inch in a halftone.

Screen Sizes

See Screen Ruling.

Screen Tint

See Halftone Tint.

Scribe Lines

The fine lines on the surface of the plate cylinder in an evenly spaced horizontal and vertical position to aid in mounting rubber plates accurately. Center lines or other positioning guide lines applied to the nonprinting areas of a rubber printing plate to facilitate mounting on a cylinder.

Scrubber

An air pollution device that uses a spray of water or reactant, or a dry process, to trap pollutants in emissions.

Scuff

1. The action of rubbing against with applied pressure. 2. The damage, which has taken place through a rubbing.

Secant Modula

A measure of stiffness used for polymeric films.

Secondary Colors

Those obtained by mixing any two of the primary colors in equal proportions. Subtractive secondary colors are red, green and blue. Additive secondary colors are cyan, magenta and yellow.

Secondary Standards

Limits set to protect plants, wildlife, building materials and cultural monuments.

Section 313 Toxic Chemical List

A list of approximately 320 specific chemicals and chemical categories subject to CERCLA requirements.

Sell Copy

The text on the package, which describes and promotes the product, opposed to bar code, and nutrition information.

Semichemical Medium

A corrugated medium made from a furnish, which is 75% or more of virgin wood pulp produced by a semichemical process.

SEP

See Supplemental Environmental Project.

Separations

A set of three or four continuous tone or halftone photographic films made photographically or electronically from an original subject. Each film represents one of the printer colors abstracted and are used to make printing plates in color process printing.

Serif

The short crossline or spiral-like terminals at the ends of the stroke of a Roman-style type face.

Serigraph

A color print made by the silk screen process, especially when printed by the artist.

Serious

A category of non-attainment where sources of NO_x or VOCs of 50 tons per year or more are affected.

Set

The strain remaining after complete release of a load, producing the deformation in rubber.

Set Off

An unintended transfer of an ink or a coating from the surface of one sheet to the back of another sheet.

Setup

The process or processes that take place when the printer changes from one production order to the next. Often includes the changing of ink, printing plates, metering system, and substrate, as well as any in-line finishing equipment.

Severe

A category of non-attainment where sources of NO_x or VOCs of 25 tons per year or more are affected.

Sewer

A channel or conduit that carries waste and storm waters to a treatment plant for receiving water.

Sewer Use Ordinance SUO

The local control authority document that sets forth the conditions under which domestic and nondomestic users may discharge to a POTW.

SG

See Specific Gravity.

Shade

1. A color produced by adding black to a pigment or dye, therefore darkening it; opposite of tint; 2. In ink manufacture, a commonly used synonym for hue.

Shading

The addition of a color, shade or tone to suggest three-dimensionality, shadow or diminished light in a picture or design.

Shadows

The darkest area of a reproduction.

Sharpen

1. To decrease in color strength, as when halftone dots are made smaller; opposite of dot gain; 2. To bring out the detail in an image by enhancing the edges.

Shear

The relative movement of adjacent layers in a liquid or plastic during flow.

Shear Thickening

See Dilatent.

Shear Thinning

See Thixotropic.

Sheeter

1. A unit on press that converts forms into smaller sheets. 2. A specific web press delivery unit that cuts the printed web into individual sheets. 3. A separate device used in screen printing to cut cloth or other substrates into sheets.

Shelf Life

The length of time that a container, or a material in a container, will remain in an acceptable condition under specified conditions of storage.

Shelf-talkers

Small signs affixed to the display shelf edge.

Shell Cup

A device to measure viscosity. *See also Efflux Cup.*

Shellac

An alcohol-soluble, natural resin widely used in flexographic ink.

Shore A

The A-type gauge, on a scale from zero (softest) to 100 (hardest), used to measure durometer of photopolymer plates. Shore D is used for harder products.

Shore D

The D-type gauge, on a scale from zero (softest) to 100 (hardest), used to measure durometer of photopolymer plates. Shore A is used for soft, resilient compounds.

Short-term Exposure Limit STEL

The concentration to which workers can be exposed continuously for a short period of time without suffering from irritation, chronic or irreversible tissue damage or narcosis of sufficient degree, to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency.

Show-through

The undesirable condition where the print on the reverse side of a sheet can be seen through the sheet under normal lighting conditions.

SIC Code

See Standard Industrial Classification Code.

Side Guide

See Edge Guide.

Sidelay

In web printing, the lateral placement of a substrate as it travels through the printing unit and subsequent in-line devices. *See also Edge Guide.*

Side Weld

In bag-making, it is the seal formed by a hot knife cutting through two layers of a thermoplastic material, like polyethylene, and sealing that edge.

Sigma

See Standard Deviation.

Significant Industrial User SIU A

nondomestic indirect discharger to a POTW, which is either a CIU, who discharges more than 25,000 gallons per day, contributes more than 5% of the POTW's hydrophobic or organic load, or has the potential to adversely affect the POTW.

Significant Noncompliance SNC

One who is seriously deficient in adhering to the National Pretreatment Standards.

Silver Recovery

The process of reclaiming silver from silver-rich solutions such as fixers and low-flow washes.

Silver-Rich Solution

A solution containing sufficient silver that cost effective recovery could be done either on-site or off-site. Silver-rich solutions include fixers and low-flow wash.

Singlefacer

The part of a corrugator, which takes a roll of linerboard and medium, and combines them into single-face board. The corrugating rolls in the singlefacer form the medium into flutes, then adheres the fluted medium to the linerboard with adhesive applied to the flute tips.

SIU

See Significant Industrial User.

Sizing

The addition of materials to a paper-making furnish or the application of materials to the surface of paper and paperboard, in order to provide resistance to liquid penetration.

Skeleton Black

A black-and-white printer that prints only the middle tone to shadow portion of the gray scale.

Skip-out

Poor or no ink transfer onto the substrate, evident as a partial image or a missing portion of it, possibly caused by low areas of the plate.

Skips

Missing print, often caused by plate bounce, gear chatter or poorly set impression.

SKU

See Stock-keeping Unit.

Slip Compound

An ink additive, which imparts lubricating qualities to the dried ink film.

Slip Film

A thin film remaining on the surface of sheet photopolymer after the removal of the cover

sheet, to prevent adhesion of the polymer to the platemaking negative during exposure.

Slip Sheet

A material between sheets of film, foil, paper, board, etc. to prevent blocking, by keeping them separate from one another. It facilitates removal of sheets.

Slit

To cut rolls of stock to specified widths. Either rotary or stationary knives or blades are used with mechanical unwinding and rewinding devices.

Slitter

A machine to cut roll stock in the long direction. Three types are widely used: razor blade slitter, shear slitter and score cutter.

Sludge

Any solid, semisolid, or liquid waste generated from a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant or air pollution control facility, exclusive of the treated effluent from a wastewater treatment plant.

Slug

A rubber-plate section, usually type, used as an insert.

Slur

A condition caused by slippage at the moment of impression between substrate and plate.

Small Business

There are a variety of definitions. Under the CAAA, a small business is defined as a non-major source having 100 or fewer employees. The Small Business Administration defines a small business as having 500 or fewer employees.

Small Business Assistance Program SBAP

Provides technical assistance needed by small businesses to comply with the Clean Air Act.

Small Business Ombudsman SBO

Acts as the small business community's representative in matters that affect them under the Clean Air Act.

Small Business Regulatory Enforcement Fairness Act SBREFA

Federal law enacted in 1996 to protect small business from potentially excessive regulatory burdens imposed by federal agencies.

Small Business Stationary Source Technical and Environmental Compliance Assistance Program

Established by Section 507 of the Clean Air Act Amendments of 1990 to help small businesses contend with new air-pollution control responsibilities. In each state, it consists of a Small Business Ombudsman and Small Business Assistance Program.

Small Commercial Imaging Facility

A facility that produces, on average, less than two GPD of silver-rich solution.

Small Quantity Generator SQG

Persons or facilities that produce 220 to 2,200 pounds per month of hazardous waste.

Smog

A mixture of pollutants, principally ground-level ozone, produced by chemical reactions in the air involving smog-forming chemicals exposed to sunlight. Smog formers include VOCs and NO_x.

SNC

See Significant Noncompliance.

Soap Resistance

The relative ability of an ink to withstand the action of detergent agents in soap, to be distinguished from alkali resistance.

Softening Point

The temperature at which plastic material will start to deform without an externally applied load.

Softwood

Wood from coniferous trees.

Solid Bleached Sulfate SBS

Paperboard made from bleached wood pulp, usually clay-coated, on one or both sides, to improve printability.

Solid Waste

As defined under RCRA, any solid, semi-solid, liquid or contained gaseous materials discarded from industrial, commercial, mining

or agricultural operations and from community activities.

Solid Waste Management System

Any disposal or resource recovery system; any system, program or facility for resource conservation; any facility for the treatment of solid waste.

Solids Content

The percentage of nonvolatile matter of which a compound or mixture is composed, based on weight of the entire mixture.

Solvent

A substance that is liquid at standard conditions and is used to dissolve or dilute another substance. This term includes, but is not limited to, organic materials used as dissolvers, viscosity reducers, degreasers, or cleaning agents. Water is considered the universal solvent.

Solvent Coating

A thin layer or covering, applied in liquid form, which dries by evaporation.

Source Reduction

The design, manufacture, purchase or use of materials (i.e., products and packaging) to reduce the amount or toxicity of garbage generated.

Source Separation

Separating waste materials such as paper, metal and glass by type at the point of discard so that they can be recycled.

Source-specific Wastes

This list includes certain wastes from specific industries. Certain sludges and wastewaters from treatment and production processes are examples.

Souring

See Ink Souring.

SO_x

See Sulfur Dioxide.

SPC

See Statistical Process Control.

Specific Gravity SG

The ratio of the weight of a body to the weight of an equal volume of water at the same specified temperature.

Specifications for Web Offset Publications

A set of production specifications developed for those involved in heatset, web-offset litho magazine publication printing, available from SWOP Incorporated.

Spectral Curve

A graphic plot indicating the amount of light energy reflected, emitted or transmitted by an object for each wavelength in the visible spectrum.

Spectral Data

The data used to plot the spectral curve.

Spectral Response

In an instrument such as densitometer, it is the measure of its signal during exposure to radiation of a constant power level and varying wavelength. *See also Densitometer Response.*

Spectrophotometer

A photoelectric device for measuring the relative intensity of wavelengths in the visible spectrum. Usually the intensity is measured in 10 or 20 nm increments from 380 to 740 nm.

Spectrophotometric Curve

See Spectral Curve.

Spectrum

The series of color bands diffracted and arranged in the order of their respective wavelengths by passing white light through a diffracting medium, shading continuously from red (the longest wavelength visible) to violet (the shortest wavelength visible).

Specular Highlight

A small, clear area in a tone field indicative of high-gloss reflection or sparkle.

Spent Material

Any material that has been used and, as a result of contamination, can no longer serve the purpose for, which it was produced without first processing it.

Splashing

When ink is thrown off the press by the inking rollers.

Splice

The joining of the ends of rolled material to form a continuous web.

Splitting

See Flying, Misting.

Spontaneous Combustible

A material that ignites as a result of retained heat from processing, or that will oxidize to generate heat and ignite, or that absorbs moisture to generate heat and ignite.

Spot Color

See Line Color.

Spread

The enlargement of a printed image from the plate film to the printing plate or the printed image. *See Dot Gain.*

SQG

See Small Quantity Generator.

Stabilizer

See Fixer.

Stable Overlays

A transparent sheet of material used as part of the finished art that will not stretch or shrink.

Stack Press

A flexographic press, where the printing units are placed one above the other, each with its own impression cylinder.

Staining

When two different colored inks touch or overlap each other, the result is a third color, or stain.

Standard Deviation

A statistical measure of the deviation of a measured value from its mean or average value. Also called sigma.

Standard Industrial Classification Code SIC

A method of grouping industries with similar products or services and assigning codes to these groups for use by government in identification of similar industry activities, outreaching for information, collecting statistics and evaluating performance by industry sectors.

Standard Reference Material

A physical sample with characteristics traceable to an accepted primary standard or set of standards. It is commonly used for densitometer calibration or calibration verification. One standard reference material

of interest is the SWOPTM Hi-Lo Color and Single Color References. These references may be obtained from the International Prepress Association.

Starvation

A print defect, apparent as voids or light shades of the intended color being printed. It is caused by either poor anilox cell rewetting, by trapped air in chambered doctor-blade system and/or ink balance problems.

Stat

A thermal proof or copy of final art before making platemaking film. *See Photostat.*

Static

Electricity contained in or produced by stationary charges. With reference to films, static causes them to cling to one another or to other insulating surfaces.

Stationary Source

A place or object from which pollutants are released and which does not move around, i.e., a printing press or coating/laminating line.

Statistical Process Control

The use of statistics and statistical tools to characterize a process, predict its future behavior and optimally control the process.

Statistics

A collection of quantitative data useful for analyzing, interpreting and establishing a course of action.

Statutes

The acts or amendments (laws) that give authority to regulation.

STEL

See Short-term Exposure Limit.

Step and Repeat

Positioning and exposing multiple complete images on film in preparation for platemaking.

Stickyback

The double-faced adhesive-coated material used for mounting elastomeric printing plates to the plate cylinder.

Still Bottom

Solid or sludge residue or by-product of a distillation process, such as solvent recycling.

Stippling

Artwork in which a series of miscellaneous and usually random dots are used instead of lines.

Stochastic Screening

An alternative to conventional halftone screening by placing same-size microdots (typically 12 to 30 microns diameter) in a computer-controlled random order within a given area. Also known as frequency modulation (FM) screening.

Stock

Paper or other material to be printed; substrate.

Stock-keeping Unit SKU

An assortment or variety of wholesale items shipped in one physical case.

Storage Life

See Shelf Life.

Stormwater Permit

Required for areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products or industrial machinery are exposed to storm water that drains to a municipal separate storm water system or directly to a receiving water.

Stormwater Pollution Prevention Plan SWPPP

Often required by a stormwater permit, a written plan that identifies good engineering practices to maximize control of pollutants and reduce levels of pollutants in stormwater discharges.

Strength

The color intensity of (flexographic) ink.

Stretch

Extensibility of web materials under tension. The elongation of a design in an elastomeric relief printing plate when mounted around a cylinder.

Stretch/Shrink Factors

Calculations of dimensional change, which occur in rubber-plate molding and in all plate mounting, when a flat plate is applied to the curve of the plate cylinder.

Striations

A printing defect characterized by light and dark streaks parallel to the direction through the press.

Strike-Through

The penetration of ink through the substrate visible from the reverse side.

Stringiness

The property of an ink to draw into filaments or threads.

Stripping

Job assembly, where all the elements for the job are brought together to produce the final output files. The term is derived from the traditional process, where separate film negatives were manually assembled onto a carrier sheet.

Stylus

A hard, pointed pen-shaped instrument used in marking, writing, incising, tracing, etc.

Sublimable Dyes

Dyes that exhibit sublimation.

Sublimation

The process in chemistry whereby a solid is volatilized by heat and then converted back into a solid without passing through a liquid phase.

Substance

The weight in pounds of a ream (either 480 or 500 sheets) of paper cut to a given size.

Substrate

The material, which is printed upon, i.e., film, paper, paperboard.

Subtractive Primaries

The colors yellow, magenta, cyan. These colors are the result of subtracting one of the additive primaries (red, green, blue) from white light. Yellow subtracts blue, magenta subtracts green, and cyan subtracts red. Combining all three in a subtractive process, such as ink on paper, yields black.

Sulfate

See Sulphate.

Sulfite

See Sulphite.

Sulfur Dioxide SO₂

A criteria air pollutant that is a gas produced from burning coal.

Sulphate (Sulfate)

An alkaline process of cooking pulp. It is often referred to as Kraft process; pulp cooked by this process.

Sulphite (Sulfite)

An acid process of cooking pulp. Also the pulp cooked by this process.

SUO

See Sewer Use Ordinance.

Supercalendared Finish

A finish obtained by passing paper between the rolls of a supercalendar under pressure. Supercalendars used for uncoated paper are usually composed of alternating chilled, cast iron and paper rolls. For coated paper, the rolls are usually chilled cast iron and cotton. Papers supercalendared to a very high gloss are sometimes referred to as "plate finished".

Superfund

The program operated under the legislative authority of CERCLA and SARA that funds and carries out USEPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority and conducting and/or supervising the cleanup and other remedial actions.

Supplemental Environmental Project SEP

A voluntary environmental project performed in lieu of monetary penalty for noncompliance that will benefit the industry and community at large.

Surface Energy

A force existing at various solid, liquid and gas interfaces which tends to bring the contained volume into a form having the least superficial area. Surface energy units are expressed in dynes/cm.

Surface Impoundment

Double-lined, natural or fabricated, depressions or diked areas that can be used to treat, store or dispose of hazardous waste. Surface impoundments may be any shape and

any size and are sometimes referred to as pits, ponds, lagoons and basins.

Surface Print

Conventional flexographic printing resulting with a right-reading image on the top surface of the web. *See reverse print.*

Surface Tension

See Surface Energy.

Swatch

A small piece of material cut for a sample.

SWOP

See Specifications for Web Offset Publications.

SWPPP

See Stormwater Pollution Prevention Plan.

Synthetic Minor

Source with limited potential to emit below major source thresholds by having federally enforceable limitations that are approved by a regulatory agency.

GLOSSARY

T

Tabulate

To set or arrange copy in symmetrical rows and columns.

Tack

The resistance between two surfaces when pulled apart.

Tail-End Printer

See *In-Line Press*.

Tailprinter

See *In-Line Press*.

Tagged Image File Format TIFF

A file format for graphics developed by Aldus, Adobe and Apple that is particularly suited for representing scanned images and other large bitmaps. The original TIFF saved only black and white images in uncompressed forms. Newer versions support color and compression. TIFF is a neutral format designed for compatibility with both Macintosh and MS-DOS applications.

Tagged RGB

An RGB file which includes the image data and ICC profile of the input device, which generated the file.

Tank

A stationary device designed to contain an accumulation of hazardous waste that is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic).

TCLP

See *Toxicity Characteristic Leaching Procedure*.

TCRIS

See *Toxic Chemical Release Inventory System*.

Tear Strip (Tape)

A narrow ribbon of film, cord, etc., usually incorporated mechanically in the wrapper or overwrap during the wrapping operation to facilitate opening of the package.

Tearing Bond

A type of bond in which it is necessary to tear fibers of one of the other adhered sheets in order to separate them; while at the same time there is no failure in adhesion or cohesion of the adhesive.

Teflon®

An inert polymer of fluorinated ethylene, and in the form of a film, or an impregnator, is used for its heat-resistance and non-sticking properties.

Telescoping

Transverse slippage of successive winds of a roll of material, so that the edge becomes conical rather than flat.

Tempera

1. A water-reducible, opaque, matte-finish paint in, which an albuminous or colloidal medium, such as egg yolk, is the vehicle instead of oil or varnish; 2. A show card or poster color.

Temporary Total Enclosure TTE

A temporary enclosure that completely surrounds an emission source such that all VOC emissions can be measured during capture efficiency testing.

Used for testing only, in lieu of having source(s) in a permanent total enclosure.

Tensile Strength

The maximum load in tension that a material can withstand without failure.

Tension Control

The mechanical control of unwinding, processing and rewinding paper, film, foil and other roll materials.

Tertiary Colors

Those obtained by mixing two secondary colors.

Test Method 24

A method that applies to determination of volatile organic matter content, water content, density and weight solids of surface coatings. Refer to 40 CFR 60, Appendix A.

Test Method 24A

A method that applies to the determination of the VOC content and density of solvent-borne (solvent reducible) printing inks and related coatings. Refer to 40 CFR 60, Appendix A.

Test Method 25

A method that applies to the measurement of VOCs as total gaseous nonmethane organics as carbon in source emissions. The minimum detectable for the method is 50 ppm as carbon. Refer to 40 CFR 60, Appendix A.

Test Method 25A

A method that applies to the measurement of total gaseous organic concentrations of vapors consisting of alkanes, alkenes and/or arenes (aromatic hydrocarbons). The concentration is expressed in terms of propane (or other appropriate organic calibration).

Thermal Conductivity

The physical property of a material relating its ability to conduct thermal or heat energy.

Thermoset

A material that hardens when heated, but does not soften when reheated.

Thinners

Liquids, solvents, and/or diluents added to ink for dilution or thinning.

Thixotropic

When viscosity decreases with agitation and returns to its original value when agitation ceases. Also called false body.

Thread

The initial passage of a web between the various rollers or other parts of a machine.

Threshold

The lowest dose of a chemical at which a specific measurable effect is observed, and below which, it is not observed. Also, the level specified in regulations above, which a facility must comply with specific components of the regulations or file reports on a periodic basis.

Threshold Level

Time-weighted average pollutant concentration values, exposure beyond which is likely to adversely affect human health.

Threshold Limit Value TLV

As defined by the American Conference of Governmental Industrial Hygienists, it refers to the recommended maximum airborne concentrations of substances under which it is believed that nearly all workers may be repeatedly exposed to without experiencing adverse health effects.

Threshold Planning Quantity

The amount of a listed EHS present at a facility that triggers Section 302, 311, and 312 reporting requirements.

Throwing

See Flying.

Thumbail

A rough, pencil drawing of a concept for a finished piece of artwork, to convey the positioning of relevant elements.

Tier I Form

A chemical inventory form established under Section 312 that groups chemicals into five hazardous categories.

Tier II Form

A chemical inventory form established under Section 312 that provides specific chemical information and is preferred by most states.

TIFF

See Tagged Image File Format.

Time Weighted Average

The airborne concentration of a material to which a person is exposed, averaged over the total exposure time (generally, the total workday).

Tinctorial Strength

See Color Strength.

Tint

A means of making a given color appear lighter in value by printing it in a dot or line pattern of less than 100% coverage in any given area.

Tint

Colors of a lighter value obtained by adding white to the basic color; opposite of shade.

TIR

See Total Indicated Runout.

Titanium Dioxide TiO₂

A filler or pigment made from titanium ores, which has great opacity and brightening properties and is of minute particle size.

Title III

The title of the Clean Air Act Amendments of 1990 that establishes standards controlling hazardous air pollutants.

Title V

The title of the Clean Air Act Amendments of 1990 that defines major source permitting.

TLV

See Threshold Limit Value.

Tonal Range

See Dynamic Range.

Tone

1. A color quality or value; 2. A tint or shade of color; 3. A predominant hue in a nearly neutral value.

Tone Reproduction

The relative density of every reproduced tone to the corresponding original density.

Toner

A dispersion of highly concentrated pigment or dye, used to manufacture, strengthen or modify the color of an ink.

Tone Value

See Dot Area.

Total Enclosed Treatment Facility

A facility for the treatment of hazardous waste that is directly connected to an industrial production process that is constructed and operated to prevent the release of hazardous waste into the environment during treatment. An example is a pipe in which waste is neutralized.

Total Indicated Runout TIR

A measure of the out-of-trueness of a cylindrical surface.

Total Suspended Solids TSS

A measure of the turbidity of water.

Toxic

Capable of causing severe illness, poisoning, birth defects, disease or death when ingested, inhaled or absorbed by a living organism.

Toxic Release Inventory TRI

A database of annual toxics released from certain manufacturers compiled from EPCRA Section 313 reports.

Toxic Release Inventory Facilities

Manufacturing facilities that have 10 or more fulltime employees and are above established chemical throughput thresholds. Facilities must submit estimates for all chemicals that are on the USEPA's defined list and are above throughput thresholds.

Toxic Substance Control Act TSCA

Regulates the manufacture, handling and use of materials classified as toxic substances.

Toxic Substances

A chemical or mixture that can cause severe illness, poisoning, birth defects, disease or death when ingested, inhaled or absorbed by living organisms.

Toxicity Characteristic Leaching Procedure TCLP

A testing procedure used to determine whether a waste is hazardous. The procedure identifies waste that might leach hazardous constituents into groundwater if improperly managed.

Toxicity Characteristic Waste

Wastes which release toxic metals, pesticides or volatile organic chemicals above specified limits under a test procedure called the Toxicity Characteristic Leaching Procedure (TCLP).

TPQ

See Threshold Planning Quantity.

Tracking

See Kerning.

Tracking

A print defect where an unwanted image appears, often as a dark line in a light or solid print area. Tracking always occurs when two printing units, which are often next to each other, interact.

Trademark

A distinctive name, symbol or figure adopted by a manufacturer or other firm to identify the company and/or its products.

Transfer Roller

A plain roller rotating in contact with another plain roller, transferring variable amounts of ink in an inking system.

Transfer Screens

Halftone screens of different sizes that can be transferred from its original carrier sheet to the artwork by rubbing it with a stylus.

Transfer Sheets

Carrier sheets of type characters, design elements or halftone screens that will release the image when pressure is applied.

Transfer Type

Type characters of different sizes and styles that can be transferred from its original carrier sheet to the artwork by rubbing it with a stylus.

Transfers

A transfer of toxic chemicals in wastes to a facility that is geographically or physically separate from a facility reporting under TRI. The quantities reported present a movement of chemicals away from the reporting facility. Except for off-site transfers for disposal, these quantities do not necessarily represent entry of the chemical into the environment.

Transfers to Disposal

Wastes taken to another facility for disposal generally as a release to land or as an injection underground.

Transfers to Energy Recovery

Wastes combusted off-site in industrial furnaces for energy recovery. Treatment of a chemical by incineration is not considered to be energy recovery.

Transfers to POTWs

Wastewaters transferred through pipes or sewers to a POTW. Treatment and chemical removal depend on the chemical's nature and treatment methods used. Chemicals not treated or destroyed by the POTW are generally released to surface waters or landfilled.

Transfers to Recycling

Substances sent off-site for the purposes of regenerating or recovering still valuable materials. Once these chemicals have been recycled, they may be returned to the originating facility or sold commercially.

Transfers to Treatment

Wastes moved off-site for either neutralization, incineration, biological destruction or physical separation. In some cases, the chemicals are not destroyed but prepared for further waste management.

Transmission Densitometry

The practice of characterizing the light absorption of materials by measuring transmittance, and calculating and reporting optical density.

Transparency

The photographic positive on a clear or transparent support, viewed by transmitted light. Commonly, the term is applied to full-color transparencies such as Kodachrome.

Transparent Inks

Inks which do not have hiding power (opacity), permitting light to pass through and selectively absorb light of specific wavelengths; essential to process printing.

Trapping

The overlapping of various colors in a design to prevent their separating and not touching as a result of registration variables during printing.

Trapping

The condition of printing ink on ink or superimposing one color on another, in which the first down ink film is sufficiently dry that when the next is printed over it optimum ink transfer is achieved.

Treatment, Storage and Disposal Facility TSDF

The facility where hazardous wastes are treated, stored and/or disposed.

TRI

See Toxic Release Inventory.

TRI Facilities

See Toxic Release Inventory Facilities.

TRIS

Toxic Release Inventory System.

Tristimulus

The magnitudes of three standard stimuli needed to match a given sample of light. A method for communicating or generating a color using three stimuli (colorants such as R,

G, B or C, M, Y) or three attributes (such as lightness, chroma and hue).

Truncation

The process whereby a bar code is compressed in the height dimension beyond the allowable height and width specification.

TSCA

See Toxic Substances Control Act.

TSDF

See Treatment, Storage and Disposal Facility.

TSS

See Total Suspended Solids.

TTE

See Temporary Total Enclosure.

Tunnel

The compartment through which the web passes for final drying after printing.

Turning Bars

An arrangement of stationary bars on a flexographic press, which guide the web in such a manner that it is turned front to back, and will be printed on the reverse side by the printing units located subsequent to the turning bars.

TWA

See Time Weighted Average.

Two-roller System

The inking system commonly employed in flexographic presses, consisting of a fountain roller running in an ink pan and contacting the engraved anilox roller; the two as a unit, meter the ink being transferred to the printing plates.

Type

See Typeface.

Typeface

Variation of a font such as regular, italic, bold, condensed, extended.

Typography

The style, arrangement or appearance of typeset matter. The art of selecting and arranging typefaces.

GLOSSARY

U - V

UCA

See Undercolor Addition.

USC

See United States Code.

UCR

See Undercolor Removal.

ug/L

Micrograms per liter.

UIC

See Underground Injection Control.

Ultra-high Density

Refers to polyethylene resin with density above 0.965 g/cc.

Ultraviolet UV

Radiant energy in the wavelength band of 180 to 400 nanometers (nm), wavelengths shorter than visible light.

Ultraviolet (UV) Curing

Conversion of a wet coating or printing ink film to a solid film by the use of ultraviolet light.

Ultraviolet (UV) Light

Commonly called UV light. UV-A has a wavelength bandwidth of 320 to 400 nanometers, UVB has a wavelength bandwidth of 280 to 320 nanometers and UV-C has a wavelength bandwidth of 180 to 280 nanometers. UV activates the photoinitiator in photo-curable polymers.

Ultraviolet (UV) Response

Refers to that response specified as Type 1 in ISO 5/3. This is generally used for measuring densities when printing to UV/blue sensitive materials. Type 1 (UV) printing density was standardized to provide printing density values for use when exposing diazo and vesicular films normally sensitive in a narrow band of the blue and ultraviolet region of the spectrum, between 380 nm and 420 nm with a peak at 400 nm.

Unbalance

The uneven distribution of weight or forces in a roll. There are two types of unbalance: static and dynamic.

Unbleached

A term applied to paper or pulp which has not been treated with bleaching agents.

Uncoated Free Sheet

An uncoated paper used for printing, writing, and related application, made almost entirely from chemical wood pulps.

Undercolor Addition UCA

A prepress method of intensifying dark, neutral gray areas in process color reproduction by selectively increasing cyan, magenta and yellow dot areas.

Undercolor Removal UCR

The balanced reduction of cyan, magenta and yellow in an image's shadow areas, with an increase of the black to maintain the dark and near neutral shadows.

Undercut

Engraving, where sidewall areas have been etched under the printing surface.

Underground Injection Well

Steel and concrete-encased shafts into which hazardous wastes are deposited by force or under pressure.

Undertone

See Overtone.

Undistorted Artwork

Artwork that has been prepared without compensation for the distortion that takes place after the printing plate has been mounted on the printing cylinder.

U.P.C.

See Universal Product Code.

United States Code USC

Prepared and published by the Office of the Law Revision Counsel, it is a consolidation and codification by subject matter of the

general and permanent laws of the United States.

Universal Product Code UPC

A 12- or 8-digit code number that identifies a wide range of products, printed on packages as the UPC bar code symbol which can be read electronically by a scanner at retail store checkout counters.

UST

Underground Storage Tank. *See also* AST (*Above Ground Storage Tank*).

UV

See Ultraviolet.

Vacuum Back

The top or back of a process camera with a vacuum system used to hold the photographic paper or film in place during exposure.

Vacuum Forming

The process of heating a plastic until it is soft, placing it over a mold and then creating the form by means of a vacuum.

Vacuum Frame

In platemaking, a vacuum device for holding copy and reproduction material in contact during exposure.

Vapor

The gas given off by substances that are solids or liquids at ordinary atmospheric pressure and temperatures.

Vapor Capture System

Any combination of hoods and ventilation systems that captures or contains organic vapors so they may be directed to an abatement or recovery device.

Vapor Phase Inhibitor VPI

See Volatile Corrosion Inhibitor.

Vapor Pressure

The pressure exerted by a saturated vapor above its own liquid in a closed container.

Vapor Transmission

1. The passage of vapor (usually water vapor) through a material. 2. The properties of a packaging material permitting the passage of vapor.

Variance

Government permission for a delay or exemption in the application of a given law, ordinance or regulation.

Varnish

The binder component of an ink. Also resin.

Vector

A line between two points. Vectors are created and displayed on the screen with drawing software. Vector drawings can be processed as a series of points and connections that are compact for a computer to store and manipulate.

Vector Display

A cathode-ray tube (CRT) that moves the electron beam randomly to trace figures on the color monitor screen, as compared with raster display.

Vehicles

The liquid components of a printing ink.

Vellum

High quality translucent paper used for tracing.

Velox

A black-and-white photographic paper print (proof) made from a negative film; originally an Eastman Kodak Company chloride printing paper and today used erroneously as a generic term for similar proofs.

Vertical Process Camera

A large, vertical camera used for making enlargements or reductions on photographic film or paper.

Vignette

A halftone image in which the background gradually fades away until it blends into the unprinted substrate or a solid print. Also called "fade". The term is occasionally used to indicate a conventional halftone.

Vinyl

Informal, generic term for any of the vinyl resins, or for film or other products made from them.

Vinyl Plastics

Plastics based on resins made from vinyl monomers, except those specifically covered by other classifications such as acrylic and styrene plastics. Typical vinyl plastics are

polyvinyl chloride, polyvinyl acetate, polyvinyl alcohol, polyvinyl butyral, copolymers of vinyl monomers and unsaturated compounds.

Viscometer

An instrument used to measure the viscosity of an ink, varnish or other solution.

Viscosimeter

See Viscometer.

Viscosity

A measure of a fluid's (ink, coating) resistance to flow which influences the amount of ink (color) printed.

VOC

See Volatile Organic Compound.

Voids

The undesirable absence of ink or presence of dirt within a bar of a bar code symbol.

Volatile

Easily passing from a liquid into a gaseous state. Subject to rapid evaporation. Having a high vapor-pressure at room temperature.

Volcanoes

See Pock Marks.

Volatile Corrosion Inhibitor

A chemical which slowly gives off a vapor that reduces or inhibits corrosion. It is usually applied to paper.

Volatile Organic Compound VOC

Any organic compound that evaporates readily into the atmosphere. Examples include isopropyl alcohol and toluene.

Vulcanization

A curing process to change the physical properties of a rubber.

Vulcanizing Press

See Molding Press.

GLOSSARY

W - Z

Washboarding

A print fault in corrugated, characterized by darker lines appearing at the flutes from the uneven surface of the corrugated board. It is caused by the liner as it dips lower where there is no flute and higher where there is a flute.

Wash Drawings

Drawings, which contain a thin coat of paint, such as watercolor.

Waste Prevention

The design, manufacture, purchase or use of materials or products to reduce their amount or toxicity before they enter the municipal solid waste stream. Because it is intended to reduce pollution and conserve resources, waste prevention should not increase the net amount of toxicity of wastes generated throughout the life of a product.

Waste Stream

The total flow of solid waste from homes, businesses, institutions and manufacturing plants that are recycled, burned or disposed of in landfills, or any segment thereof.

Wastewater Treatment Unit

A tank or tank system that is subject to regulation under either Section 402 or 307(b) of the Clean Water Act, and that treats or stores an effluent waste water that is hazardous waste, or that treats or stores a wastewater treatment sludge that is hazardous.

Water Vapor Transmission Rate WVTR

The actual rate of water vapor transmission used to compare water vapor barriers; formerly called moisture vapor transmission rate.

Water-based Ink

An alternative to solvent-based inks, these contain a vehicle whose binder is water-soluble or water dispersible.

Water-borne Ink

According to the control techniques guidelines (CTG) for flexography, water-borne inks

should consist of a volatile portion of 75% of water and 25% organic solvent by volume. Note, however, that the definition of a water-borne ink can vary depending on the regulatory agency.

Watermark

A translucent mark made in paper while it is still set for purposes of identification.

Web

The paper, foil, film or other flexible material, from a roll, as it moves through the machine in the process of being formed or in the process of being converted, printed, etc.

Web Guide

The device, which keeps the web traveling in a straight or true path through the press.

Web Temperature

The temperature of the web in the oven as differentiated from the oven temperature.

Wet Strength

A measure of the physical strength properties of paper when saturated with water (i.e., wet tensile strength, wet bursting strength).

Wettability

See *Wetting Out*.

Wetting

Surrounding the pigment particles with varnish during the ink-making process. Pigments that wet out easily will, in general, grind more easily, form better ink bodies and result in a finer dispersion.

Wetting Agent

A chemical agent used to overcome the reluctance of a liquid to coat the surface of a dissimilar material by reducing surface tension of the liquid.

Wetting Out

The ability of an ink to lay down smoothly and evenly on the substrate as opposed to laying down in beads on the surface.

Whip

See Bounce.

White Opaque Polyethylene WhoPE, WITE

A film frequently used for frozen foods packaging.

Whole Effluent Toxicity WET

This test measures the total toxic effect of discharges on aquatic organisms.

WhoPE

See White Opaque Polyethylene.

Wicking

The absorption of moisture into paperboard through the raw edge.

Wire Mark

The impression left in a web of paper by the wire of a Fourdrinier machine.

Wire Side

The side of a sheet of paper or paperboard that was formed in contact with the wire of the paper machine during the process of manufacture.

WITE

See White Opaque Polyethylene.

Work Area

A room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

Workplace

An establishment at one geographical location containing one or more work areas.

WVTR

See Water Vapor Transmission Rate.

X-Dimension

The specified width of the narrow element in a bar code symbol.

Xerography

An imaging process in which electrostatically charged powder (toner) is bonded to paper using heat. It is the method used by laser printing systems to create an image onto document media. Also called electrophotography.

Yellow

See Process Yellow.

Yield

The amount of substrate that can be covered with a given volume of liquid ink.

Yield

The number of square inches of film per pound or product per mil.

Yield Strength

The value at which permanent deformation takes place in an elastic material under stress.

YMC

Yellow, Magenta, Cyan.

Yule-Neilsen (Y-N) Factor

Used to calculate the physical dot area or actual dot size, usually for analytical purposes. It eliminates the optical dot gain with an “n” factor.

Zahn Cup

A device for measuring viscosity. *See Efflux Cup.*

ORGANIZATIONS

ACGIH

See American Conference of Governmental Industrial Hygienists.

AFPA

See American Forest and Paper Association.

AICC

See Association of Independent Corrugated Converters.

AIM

Automatic Identification Manufacturers.

American Conference of Governmental Industrial Hygienists ACGIH

An organization of professional personnel in governmental agencies or educational institutions engaged in occupational safety and health programs.

American Forest and Paper Association FPA

A national trade association of the forest, paper and wood products industries.

American National Standards Institute ANSI

The USA member of the International Standards Organization (ISO) that develops voluntary standards for business and industry.

American Society for Testing and Materials ASTM

The world's largest source of voluntary consensus standards for materials, products, systems and services. It is a resource for sampling and testing methods, health and safety aspects of materials, safe performance guideline, and effects of physical and biological agents and chemicals.

ANSI

See American National Standards Institute.

Association of Independent Corrugated Converters AICC

An international trade association whose purpose is to protect and represent the business interests of the independent sector of the corrugated packaging industry.

ASTM

See American Society for Testing and Materials.

Canadian Council of Ministers of the Environment CCME

Works to promote cooperation on and coordination of inter-jurisdictional issues such as waste management, air pollution and toxic chemicals. Its members propose nationally consistent environmental standards and objectives so as to achieve a high level of environmental quality across Canada.

CAS

See Chemical Abstract Service.

CCME

See Canadian Council of Ministers of the Environment.

CGATS

See Committee for Graphic Arts Technologies Standards.

Chemical Abstract Service CAS

An organization that assigns identification numbers to chemicals registered through them. A number is used to identify chemicals, which may go under a variety of technical and common commercial names.

CMC

Color Measurement Committee.

Committee for Graphic Arts Technologies Standards

Formed in 1987, this group reports to ANSI and is charged with the overall coordination of graphic arts standard activities and the development of graphic arts standards where no applicable standards developer is available. The IT8 Committee, developer of digital data exchange standards, was merged under CGATS in 1994. Information about existing and pending CGATS activities is available from the NPES, The Association for Suppliers of Printing and Publishing Technologies.

Consumer Products Safety Commission CPSC

Responsible for regulating hazardous

materials when they appear in consumer goods.

CPSC

See Consumer Products Safety Commission.

DOT

See United States Department of Transportation.

Environment Canada EC

Federal environmental regulatory agency in Canada.

EPA

See United States Environmental Protection Agency.

FBA

See Fibre Box Association.

FDA

See United States Food and Drug Administration.

Fibre Box Association FBA

A nonprofit organization representing and serving the corrugated industry.

Flexographic Technical Association FTA

A technical society incorporated in 1958, whose membership is composed of flexographic printers and companies furnishing equipment and supplies to flexographic printers. FTA promotes, develops and maintains the advancement of flexography; works cooperatively with the industry; assists with the development and maintenance of quality standards; works to improve flexography by fostering research, technical development and training; provides a forum for information and discussion, and acts in the best interest of the flexographic industry.

Foundation of Flexographic Technical Association FFTA

Incorporated in 1974, the FFTA conducts educational meetings; publishes educational materials; participates in or initiates research, and provides scholarships to students.

GAA

See Gravure Association of America.

Glass Packaging Institute GPI

GPI serves as the voice for the glass container industry in Washington, D.C. and across the

country. It serves its member companies through legislative, public relations, promotional, and technical activities.

GPI

See Glass Packaging Institute.

Graphic Arts Technical Foundation GATF

A nonprofit technical and education organization serving the graphic communications industries. GATF is consolidated with PIA.

Gravure Association of America GAA

An association, which promotes the use of gravure printing for publication, package and product printing.

IARC

See International Agency for Research on Cancer.

International Agency for Research on Cancer IARC

Part of the World Health Organization, IARC's mission is to coordinate and conduct research on the causes of human cancer, the methods of carcinogens and to develop scientific strategies for cancer control.

International Color Consortium ICC

The International Color Consortium was established in 1993 by eight industry vendors for the purpose of creating, promoting and encouraging the standardization and evolution of an open, vendor-neutral, cross-platform color management system architecture and components.

International Organization for Standardization ISO

A worldwide federation of national standards bodies from some 100 countries. Their mission is to promote the development of standardization and related activities in the world, with a view toward facilitating the international exchange of goods and services, and to developing cooperation in the spheres of intellectual, scientific, technological and economic activity.

International Prepress Association IPA

A trade association consisting of over 300 of the world's leading graphic communications companies and 60 graphic arts suppliers. Members take advantage of IPA resources to make well-informed decisions for a productive

and profitable future.

National Institute for Occupational Safety and Health NIOSH

A federal agency that tests and certifies respiratory protective devices and air-sampling detector tubes, recommends occupational exposure limits for various substances and assists in occupational safety and health investigations and research.

National Institute of Standards and Technology

Established by Congress to assist industry in the development of technology needed to improve product quality, to modernize manufacturing process, to ensure product reliability and to facilitate rapid commercialization of products based on scientific discovery.

National Response Center

The federal operations center that receives notification of all releases of oil and hazardous substances into the environment.

NESCAUM

See Northeast States for Coordinated Air Use Management.

NIOSH

See National Institute for Occupational Safety and Health.

NIST

See National Institute of Standards and Technology.

Northeast States for Coordinated Air Use Management

An interstate association of air quality control divisions in the northeast United States.

Occupational Safety and Health Administration OSHA

US Department of Labor agency that sets health and safety regulations.

OSHA

See Occupational Safety and Health Administration.

PIA

See Printing Industries of America.

PNEAC

See Printers' National Environmental

Assistance Center.

Printers' National Environmental Assistance Center PNEAC

A technical assistance center that provides information about environmental impacts of printing and effective means to achieve compliance with environmental regulations.

Printing Industries of America PIA

A trade association devoted to promoting programs, services, and an environment to help its printer members operate profitably.

TAPPI

See Technical Association of the Pulp and Paper Industry.

Technical Association of the Pulp and Paper Industry

The world's largest professional organization dedicated to the paper and pulp industries.

Underwriters' Laboratories of Canada ULC

A safety, certification, testing, quality registration and standards development organization dedicated entirely to the protection of life and property.

ULC

See Underwriters' Laboratories of Canada.

United States Department of Transportation DOT

Federal agency that promotes safe and efficient transportation system.

United States Environmental Protection Agency EPA

An independent regulatory agency of the executive branch of the United States government. The USEPA's mission is to control and abate pollution in the area of air, water, solid waste, pesticides, noise and radiation. Offices include:

OAQPS: Office of Air Quality Planning and Standards.

OAR: Office of Air and Radiation.

OECA: Office of Enforcement and Compliance Assurance.

OPPT: Office of Pollution Prevention and Toxics.

OSW: Office of Solid Waste.

OSWER: Office of Solid Waste and
Emergency Response.

OW: Office of Water.

**United States Food and Drug
Administration FDA**

The government agency responsible for the approval of food additives. Inks, coatings and other packaging materials coming in direct contact with food or drugs must be shown to be non-migrating, or must be made only from raw materials that are known to be harmless and are listed in the Code of Federal Regulations, Title 21.