Icons & Basic Terms

As a visual aid, Unisource displays the following icons under the product names. Icon inclusion may apply to all or some of the items listed in that product. Please refer to the product long descriptions and item groups for exceptions.

Icons are included where available for:

- Environmental attributes
- Fiber content attributes
- Performance attributes

Recycled - Designates paper products containing recovered fiber. Recovered fiber includes pre- or post-consumer sources, or both.

Forest Stewardship Council (FSC) - Products carrying the FSC label are independently certified to assure consumers that they come from forests that are managed to meet the social, economic and ecological needs of present and future generations

The Sustainable Forestry Initiative® (SFI) program promotes responsible environmental behavior and sound forest management. It's based on 13 objectives that address economic, environmental, and social issues.

Program for Endorsement of Forest Certification (PEFC) is a global organization for the assessment of national forest certification schemes developed in a multi-stakeholder process.

European Union Eco-Label. Manufactured with reduced emissions of sulfur and greenhouse gasses, decreased emissions to water of chlorine compounds and organic wastes, energy reduction and recycled fibers or virgin from sustainably managed forests.

Green-e offers certification and verification of renewable energy and greenhouse gas mitigation products.

Green Seal is a non-profit organization dedicated to safeguarding the environment by promoting the manufacture, purchase and use of environmentally responsible products and services.

Carbon Neutral means that the manufacturer has neutralized the effect of their greenhouse gas emissions. Unisource uses this symbol for any product that is carbon neutral, regardless of manufacturer.

Renewable Energy Sources were either used directly or offset by credits. May include Biomass, Hydro, Wind and other alternative energy sources.

Alternative Fibers – May include fibers from Eucalyptus, Bamboo, Sugar Cane, Hemp or other non traditional fiber sources.

Cotton fiber content included. May be 25% or 100%. Traditional use of cotton linter fibers discarded by the textile industry.

Respect – Unisource's trademarked logo to identify environmentally responsible products, regardless of manufacturer or certifications …so look for the leaf!
Respect paper products contains at least one of the following attributes:

- **R**eforestation attributes; forest sustainability certification of
  - FSC, SFI, or PEFC
- **R**enewable energy & utilization of manufacturing programs to safeguard resources
- **R**ecycled content; containing a minimum of 30% post consumer fiber

Caliper Grade – traditionally marketed by caliper as opposed to basis weight. Found on board grades.

Digital Companion Sizes Available – See Digital Section for companion product or contact sales for mill availability.

HP Indigo Certified by Rochester Institute of Technology. Your guarantee that these papers will perform on your Indigo press. Recently changed to the new checkmark logo.

NexPress Qualified by RIT or NexPress Okay supported by the mill's guarantee.

iGen guaranteed or qualified.

Xeikon qualified or mill guaranteed.

ColorLok Technology represents an advanced standard for better printing. Papers with ColorLok Technology provide higher inkjet printing quality and optimal results on all printing devices.

HOW TO QUALIFY WEB AND SHEET COATED PRINTING PAPERS

Coated papers, as designated by the American Forest & Paper Association (AFPA), are graded according to brightness levels. Specifically, coated grades whether gloss, dull, or matte finishes are designated Premium, No. 1, 2, 3, 4, 5 quality levels with Premium being the highest quality. Other factors like gloss levels, coat weight, groundwood or free pulp content, quality of other additive ingredients, and price also are considered in determining the quality level of coated paper. The real determinate is end-use need, print quality, design considerations, and budgetary needs.

*Guide to Identifying Quality Levels**

Classifications	Brightness Levels	Weight Ranges	Pulp Content
Premium	88 and above	70-120# Book	Free
No. 1	85-87.9	70-120# Book	Free
No. 2	83-84.9	60-120# Book	Free
No. 3	79-82.9	50-110# Book	Free
No. 4 Premium	78-79	40-100# Book	Free & Groundwood
No. 4	73-78.9	40-100# Book	Groundwood
No. 5	72.9 and below	32-70# Book	Groundwood
Supercalendered	69		Groundwood
Groundwood Specialties	65-80		Groundwood
Directory	59		Groundwood
Newsprint	59-65	33-50# News	Groundwood

*AFPA designates coated quality levels using only Premium, No. 1, 2, 3, 4, 5 levels. Due to changing marketing strategies and the blurring of these long established criteria, we have added a No. 4 Premium to the web coated designation.

An important note is that paper is graded by brightness alone. Do not be misled by this grading system. There are some No. 4 sheets that print as well as some No. 1, 2, and 3's. For example, some sheets have been introduced as a No. 4 due to brightness. However, the sheet actually out printed some No. 1, 2 and 3's because of printed gloss hold out and smoothness.

Terms

Brightness Refers to ability of paper surface to reflect light. The higher the reflectance or brightness, the more contrast, brilliance and sparkle are affected in relation to the color printed matter.

Pulp Content All paper is made from cellulose fiber which is manufactured in two manners:

- **Mechanical or Groundwood**
  Cellulose pulp manufactured retaining all the non-fiber elements of the wood.
- **Chemical**

Free sheet paper manufactured using only the cellulose fiber while removing all the non-cellulose elements of the wood.

HOW TO FIGURE THE AMOUNT OF STOCK NEEDED FOR A JOB

Example:
Suppose the job calls for 5,000 pieces which will cut 15 out of a given sheet. To find the amount of paper required, follow the first column to 15, then across on that line to the 5,000 column. Result is 334 sheets. No allowance is made for spoilage.

	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
1	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	**1**
2	250	500	750	1,000	1,250	1,500	1,750	2,000	2,250	2,500	**2**
3	167	334	500	667	834	1,000	1,167	1,334	1,500	1,667	**3**
4	125	250	375	500	625	750	875	1,000	1,125	1,250	**4**
5	100	200	300	400	500	600	700	800	900	1,000	**5**
6	84	167	250	334	417	500	584	667	750	834	**6**
7	72	143	215	286	358	429	500	572	643	715	**7**
8	63	125	188	250	313	375	438	500	563	625	**8**
9	56	112	167	223	278	334	389	445	500	556	**9**
10	50	100	150	200	250	300	350	400	450	500	**10**
11	46	91	137	182	228	273	319	364	410	455	**11**
12	42	84	125	167	209	250	292	334	375	417	**12**
13	39	77	116	154	193	231	270	308	347	385	**13**
14	36	72	108	143	179	215	250	286	322	358	**14**
15	34	67	100	134	167	200	234	267	300	334	**15**
16	32	63	94	125	157	188	219	250	282	313	**16**
17	30	59	89	118	148	177	206	236	265	295	**17**
18	28	56	84	112	139	167	195	223	250	278	**18**
19	27	53	79	106	132	158	185	211	237	264	**19**
20	25	50	75	100	125	150	175	200	225	250	**20**
21	24	48	72	96	120	143	167	191	215	239	**21**
22	23	46	69	91	114	137	160	182	205	228	**22**
23	22	44	66	87	109	131	153	174	196	218	**23**
24	21	42	63	84	105	125	146	167	188	209	**24**
25	20	40	60	80	100	120	140	160	180	200	**25**
26	20	39	58	77	97	116	135	154	174	193	**26**
27	19	38	56	75	93	112	130	149	167	186	**27**
28	18	36	54	72	90	108	125	143	161	179	**28**
29	18	35	52	69	87	104	121	138	156	173	**29**
30	17	34	50	67	84	100	117	134	150	167	**30**
31	17	33	49	65	81	97	113	130	146	162	**31**
32	16	32	47	63	79	94	110	125	141	157	**32**
33	16	31	46	61	76	91	107	122	137	152	**33**
34	15	30	45	59	74	89	103	118	133	148	**34**
35	15	29	43	58	72	86	100	115	129	143	**35**
36	14	28	42	56	70	84	98	112	125	139	**36**
37	14	28	41	55	68	82	95	109	122	136	**37**
38	14	27	40	53	66	79	93	106	119	132	**38**
39	13	26	39	52	65	77	90	103	116	129	**39**
40	13	25	38	50	63	75	88	100	113	125	**40**

WEIGHTS PER M SHEETS

Grade of Paper

Bond	Basis	12	13	16	20	24	28	32	36
	8½ x 11	6	6.5	8	10	12	14	16	18
	17 x 22	24	26	32	40	48	56	64	72
	17 x 28	31	33	41	51	61	71½	81½	92
	19 x 24	29	32	39	49	58½	68½	78	88
	22 x 34	48	52	64	80	96	112	128	144
	22½ x 35	51	56	67	84	101	118	134	152
	24 x 38	58	64	78	98	117	137	156	176
	28 x 34	62	66	82	102	122	143	163	184
Book and Offset	**Basis**	**40**	**45**	**50**	**55**	**60**	**70**	**80**	**100**
	8½ x 11	7.86	8.84	9.84	10.82	11.8	13.76	15.74	19.68
	12 x 18	18.19	20.46	22.74	25.01	27.28	31.83	36	45
	17 x 22½	33	38	41	46	50	58	66	82
	19 x 25	40	45	50	55	60	70	80	100
	23 x 29	56	63	70	77	84	98	112	140
	23 x 35	68	76	85	93	102	119	136	170
	25 x 38	80	90	100	110	120	140	160	200
	26 x 40	88	98	110	130	132	154	176	218
	28 x 40	94	114	118	130	141	165	189	236
	35 x 45	132	150	166	182	198	232	266	332
	38 x 50	160	180	200	220	240	280	320	400
Cover	**Basis**	**50**	**60**	**65**	**80**	**90**	**100**	**130**	
	8½ x 11	17.98	21.58	23.38	28.77	–	35.96	46.75	
	12 x 18	41.54	49.85	54	66	–	83	108	
	20 x 26	100	120	130	160	180	200	260	
	23 x 29	128	154	167	205	231	256	334	
	23 x 35	155	186	201	248	279	310	402	
	26 x 40	200	240	260	320	360	400	520	
	28 x 40	212	258	325	345	388	431	560	
	35 x 46	310	372	402	496	558	620	804	
Index	**Basis**	**90**	**110**	**140**					
	8½ x 11	21.64	26.44	33.66					
	20½ x 24¾	117	144	182					
	22½ x 28½	148	182	230					
	22½ x 35	182	222	283					
	25½ x 30½	180	220	280					
Vellum Bristol	**Basis**	**57**	**67**	**80**	**100**				
	8½ x 11	16.62	19.54	23.32	29.16				
	22½ x 28½	114	134	160	200				
	23 x 29	119	140	166	208				
	23 x 35	143	168	201	252				
	26 x 40	185	218	260	324				
	35 x 46	286	336	402	502				
Tag	**Basis**	**100**	**125**	**150**	**175**	**200**	**250**		
	8½ x 11	21.64	27.05	32.46	37.88	43.29	54.11		
	22½ x 28½	148	186	222	260	296	371		
	24 x 36	200	250	300	350	400	500		
	28½ x 45	296	372	446	520	594	742		
Coated One Side Cover*	**Basis**	**8 Pt**	**10 Pt**	**12 Pt**	**15 Pt**	**18 Pt**	**20 Pt**	**24 Pt**	**10 Pt Low Density**
		Coated Cover			**Coated Blanks**				
	20 x 26	135	163	185	–	—	—	—	149
	23 x 29	173	208	237	270	310	343	408	191
	23 x 35	209	252	287	326	375	414	492	231
	26 x 40	270	325	371	421	484	534	636	299

*Federal Paper Board Weights; International Paper and Union Camp's grades may vary slightly from these M weights.

EQUIVALENT WEIGHTS

The table below shows basic sizes and weights of the seven most widely used types of paper and indicate what these weights become when they are translated from one basic weight to another basic weight. For example, the table shows that a 70 lb. book paper is the equivalent of a 28 lb. bond paper and a 38 lb. cover paper.

All weights are for reams of 500 sheets.
Bold figures are standard basis weights.

Grade of Paper	Bond 17 x 22	Book and Offset 25 x 38	Cover 20 x 26	Index 25½ x 30½	Bristol 22½ x 28½	Tag 24 x 36	Metric Grams/ Sq Meter
Bond	**13**	33	18	27	22	30	49
	16	41	22	33	27	37	61
	20	51	28	42	34	46	75
	24	61	33	50	41	56	90
	28	71	39	58	48	64	105
	32	81	45	67	55	74	120
	36	91	50	75	62	83	135
	40	102	56	83	69	93	151
Book and Offset	12	**30**	16	25	20	27	44
	16	**40**	22	33	27	36	59
	18	**45**	25	37	30	41	67
	20	**50**	27	41	34	45	74
	24	**60**	33	49	40	55	89
	28	**70**	38	57	47	64	104
	31	**80**	44	65	54	73	118
	35	**90**	49	74	60	82	133
	39	**100**	55	82	67	91	148
	47	**120**	66	98	80	109	178
Cover	36	91	**50**	75	62	82	135
	43	110	**60**	90	74	100	163
	47	119	**65**	97	80	108	176
	58	146	**80**	120	99	134	216
	65	164	**90**	135	111	149	243
	72	183	**100**	150	124	166	271
Index	43	110	60	**90**	74	110	163
	53	135	74	**110**	91	122	203
	67	170	93	**140**	115	156	252
	82	208	114	**170**	140	189	328
Bristol	39	100	55	81	**67**	91	148
	47	120	65	98	**80**	109	178
	58	148	80	121	**100**	135	219
	70	176	97	146	**120**	162	261
	82	207	114	170	**140**	189	306
	93	237	130	194	**160**	216	351
Tag	43	110	60	90	74	**100**	163
	54	137	75	113	93	**125**	203
	65	165	90	135	111	**150**	244
	76	192	105	158	130	**175**	284
	87	220	120	180	148	**200**	326
	109	275	151	225	186	**250**	407

PAPER TEMPERATURE

GENERAL TEMPERATURE CONDITIONING CHART FOR PAPER

Temperature differences between paper on arrival (outdoor temperature may be used for easy calculation), and temperature of pressroom (room in which paper is to be opened).

	DEGREES							
	10°	15°	20°	25°	30°	40°	50°	60°
Cubic Volume of Paper On Skid or In Case	**HOURS**							
6 cubic feet	5	9	12	15	18	25	35	54
12 cubic feet	8	14	18	22	27	38	51	78
24 cubic feet	11	16	23	28	35	48	67	100
48 cubic feet	14	19	26	32	38	54	75	109
96 cubic feet	15	20	27	34	41	57	79	115

Hours shown are approximate time paper should stand unopened, to come into balance with room temperature.

NOTE: Determine the cubic volume of paper on a skid (or in cases) by multiplying length x width x height (in inches) and dividing that total by 1728.

Excerpt from Technical Bulletin No. 8 of the *Graphic Arts Technical Foundation:*

"If paper is unwrapped while cold and allowed to stand in the pressroom, it will very quickly develop a bad case of waviness because its low temperature chills the air immediately surrounding the pile and raises the relative humidity to approximately the saturation point, or 100 percent. Under these conditions, the edges of the sheet may pick up 10 or 12 percent of moisture before the pile warms up. As the temperature of the pile rises, this excess moisture will be partially given off, but in the process, the moisture content of the paper at the edges will follow the desorption curve and will not return to the same moisture content as the rest of the sheet. While the waviness may be reduced somewhat, it will not disappear."

GRAIN DIRECTION

One or more of the following tests will determine the direction of the grain:

1. Cut a sample about 2 inches square from the sheet marking its original position on the sheet. Wet one side. As it dries it will curl (see Diagram at right).

2. Moisten two right-angle edges of the sheet, and press between the fingers. As the sheet dries, the edge across the grain will be wavy; with the grain, straight.

3. Tear the sheet in two directions. It tears straighter and cleaner with the grain.

4. Fold the sheet in two directions. It folds easier and smoother with the grain.

5. If the paper has a laid finish, the grain is usually parallel to the chain marks (widely spaced lines), and across the wire marks (closely spaced lines.) This is not a conclusive test because paper is sometimes made with the chain marks running across the grain.