



RECYCLING 101 SERIES: Paper Grades & Indicators



Topics for Discussion

- Language of Paper Recycling
- Global Grade Standards – ISRI
- Market Driven Grade Variables
- Commodity Market Indicators



The language of Paper Recycling:

A Paper Grade - What is it?

- Recycled paper commodities are bought and sold based on an agreement that each bale of the material will be made according to a specific recipe of material ingredients.
- Typically in the paper recycling business these recipes are called grades. Each grade is made up 3 components:
 - **Primary Material:** The main ingredients
 - **Outhrows:** Stuff that in small quantities won't ruin the recipe but in quantities above the percentage specified will cause the result to get rejected at the grade or recipe indicated.
 - **Prohibitives:** Stuff that will ruin the recipe in any amount or in excess of the extremely limited amount specified



The language of Paper Recycling:

A Formal Definition of Outthrows & Prohibitives

Outthrows

All papers that are so manufactured or treated or are in such a form as to be unsuitable for consumption as the grade specified.

Prohibitive Materials

- a. Any materials which by their presence in a packing of paper stock, in excess of the amount allowed, will make the packaging unusable as the grade specified.
- b. Any materials that may be damaging to equipment.

Note: The maximum quantity of “Outthrows” indicated in connection with the paper grade definitions is understood to be the TOTAL of “Outthrows” and “Prohibitive Materials.”

A material can be classified as an “Outthrow” in one grade and as a “Prohibitive Material” in another grade. Carbon paper, for instance, is “UNSUITABLE” in Mixed Paper and

is, therefore, classified as an “Outthrow”; whereas it is “UNUSABLE” in White Ledger and in this case is classified as a “Prohibitive Material.”



The language of Paper Recycling: Common Paper Industry Terms

- **BEATER-DYED:** Paper dyed or colored during the paper manufacturing process.
- **BOXBOARD:** Paperboard made from mixed papers having folding properties and thickness used to manufacture folding or set-up boxes.
- **CHIPBOARD:** Low density paperboard with 0.006 thickness or heavier.
- **COATINGS:** A layer of adhesives, clays, varnish or any barrier applied to paper.
- **CORES:** Paper tubes on which rolls of paper may be wound for shipment.
- **CORRUGATED CONTAINERS:** Shipping containers made with kraft paper linerboard and corrugated medium.
- **FLYLEAF/SHAVINGS:** Trim scrap from printing operations.
- **GROUNDWOOD:** Paper made with fibers produced without chemical pulping.



The language of Paper Recycling: Common Paper Industry Terms

- **JUTE:** Strong, long-fibered pulp made from hemp.
- **KRAFT:** Paper made from sulfate pulp (synonyms: brown and strong).
- **LINERBOARD:** Outside layers of a combination board used to manufacture corrugated shipping containers.
- **MEDIUM:** The inner corrugated fluted material used to manufacture corrugated shipping containers.
- **OFF-SHORE/ASIAN:** Denotes corrugated shipping containers manufactured overseas and containing bogus liners or medium. (Color is somewhat lighter/more yellow than North American produced materials).
- **TEST LINER:** Liners, which are the outer ply of any kind of paperboard, containing 100% recycled material.
- **WET STRENGTH:** Papers that have been treated with a moisture-resistant chemical that inhibits pulping.



The language of Paper Recycling: Common Paper Industry Terms

- **FRESHEET:** "woodfree" papers are made with a chemical pulp (or kraft) process that removes lignin and other components of wood from the cellulose fiber.
- **GROUNDWOOD:** In contrast to freesheet, groundwood papers are originally made with mechanically ground pulp, which retains the lignin which makes paper turn yellow and brittle. Groundwood now includes pulp from hybrid systems, such as semi-mechanical, thermo-mechanical and chemi-thermomechanical, that remove some but not all of the lignin. Freesheet papers may contain up to 10% groundwood pulp and still meet specifications. Groundwood is a contaminant in recycling systems for freesheet papers because it has shorter fibers and introduces lignin. Generally, recovered paper with groundwood is downgraded for lower end-use products like corrugating medium and tissue.



The Global Paper Grade Standards – ISRI Grade Specifications

- ISRI – Institute of Scrap Recycling Industries
 - Guidelines Publication: ISRI Scrap Specifications Circular 2007
 - Internationally accepted standard specifications intended to assist members in the buying and selling of the following materials:
 - Nonferrous scrap
 - Ferrous scrap
 - Glass cullet
 - Paper stock
 - Plastic scrap
 - Electronics scrap
 - Tire Scrap
 - These specifications are constructed to represent the quality or composition of the materials bought and sold in the industry.



The Global Paper Grade Standards – ISRI Grade Specifications

- 51 primary grades: Post Consumer and Industrial grades
- 35 specialty grades: wax and poly-coated papers, wet strength papers, foil laminated stock, etc..



The Global Paper Grade Standards

— Most Common Low Grades

- **(1) & (2) Residential or Soft Mixed Paper**

Consists of a clean, sorted mixture of various qualities of paper not limited as to type of fiber content. Prohibitive Materials may not exceed 2%. Total Outthrows may not exceed 5%

- **(8) Special News, De-ink Quality (#8 ONP)**

Consists of sorted, fresh newspapers, not sunburned, free from magazines, white blank, pressroom over-issues, and paper other than news, containing not more than the normal percentage of rotogravure and colored sections. This grade must be tare-free. Prohibitive Materials None permitted. Total Outthrows may not exceed 1/4 of 1%

- **(9) Over-Issue News (OI or OIN)**

Consists of unused, overrun newspapers printed on newsprint, containing not more than the normal percentage of rotogravure and colored sections. Prohibitive Materials None permitted Total Outthrows None permitted

- **(11) Corrugated Containers (OCC)**

Consists of corrugated containers having liners of either test liner, jute or kraft. Prohibitive Materials may not exceed 1%. Total Outthrows may not exceed 5%



The Global Paper Grade Standards

— Most Common Low Grades

- **(24) White Blank News (WBN)**

Consists of unprinted cuttings and sheets of white newsprint or other uncoated white groundwood paper of similar quality. Prohibitive Materials None permitted. Total Outthrows may not exceed 1%

- **(37) Sorted Office Paper (SOP)**

Consists of paper, as typically generated by offices, containing primarily white and colored groundwood-free paper, free of unbleached fiber. May include a small percentage of groundwood computer printout and facsimile paper. Prohibitive Materials may not exceed 2%. Total Outthrows may not exceed 5%

- **(40) Sorted White Ledger (SWL)**

Consists of uncoated, printed or unprinted sheets, shavings, guillotined books, and cuttings of white groundwood-free ledger, bond, writing, and other paper which has similar fiber and filler content. Prohibitive Materials may not exceed 1/2 of 1%. Total Outthrows may not exceed 2%



Guess the Grade?

**GRADE -
OCC**





Guess the Grade?

**GRADE -
SOP**





Guess the Grade?

**GRADE -
SWL**





Guess the Grade?

**GRADE –
ONP#8**





Guess the Grade?

**GRADE –
MP**





Paper Grade Variables

Impact of Markets & Mills

- Not all grades are created equally
 - E.g. ARL v. HOU ONP#8 and telephone books
- 3 Significant Variables in any market:
 - Supply-Demand & Quality-Distance Factors
 - We are one of the largest customers of Waste Management in the total tons purchased from their recycling operations. In some areas, they represent some of the lowest quality tons we purchase. However, it would be difficult to replace those tons in some markets which forces us to accept lower quality material than desired.
 - The end user/Mill process capabilities
 - Internal Mill Supply versus open Domestic/Export market



Commodity Market Indicators

- **What are they?** Essentially, commodity market indicators are a reflection of the price at which people are either buying or selling materials
- **How do they work?** They are manually derived price targets that are collected periodically by firms that survey both the mill buyers and the material sellers to establish a trading range, otherwise known as the high or low side value.
- **Are they accurate?** They typically understate the true mill buy price. Some are far more accurate than others. The Official Board Markets (OBM) is the most widely used and generally accurate indicator for paper.



Commodity Market Indicators

- The primary fiber market pricing indicators are as follows:
 - Official Board Markets
 - Paper Stock Report
 - Fiber Market News
 - Pulp & Paper



Official Board Markets (OBM) 4.11.08

Transacted Paper Stock Prices – Low Grades

	Mixed Paper (1)	Boxboard Cuttings (4)	News (6)	News (8)	OCC (11)	OCC Export/Port FAS	SOP (37)	Sorted White Ledger (40)
Chicago	\$85-90 (0)	90-95 (0)	80-85 (0)	100-110 (0)	110-120 (0)		220-230 (0)	310-320 (0)
New England	80-85 (0)	85-90 (0)	80-85 (0)	110-120 (-5)	125-135 (-5)		225-235 (0)	310-320 (0)
Buffalo	80-85 (0)	85-90 (0)	80-85 (0)	105-115 (-5)	125-135 (-5)		225-235 (0)	315-325 (0)
New York	90-95 (0)	85-90 (0)	90-95 (0)	115-125 (-5)	130-140 (-5)	172-175(-23)	225-235 (0)	310-320 (0)
Southeast	90-95 (0)	85-90 (0)	75-80 (0)	115-125 (-10)	115-125 (0)		215-225 (0)	305-315 (0)
Southwest	95-105 (0)	85-90 (0)	75-80 (0)	120-130 (0)	115-125 (0)		215-225 (0)	310-320 (0)
Los Angeles	130-140 (-10)	130-140 (-10)	140-150 (0)	155-165 (0)	150-160 (-10)	192-195(-20)	245-255 (0)	320-330 (0)
San Francisco	130-140 (-10)	130-140 (-10)	140-150 (0)	145-155 (0)	150-160 (-10)		245-255 (0)	320-330 (0)
Pacific NW	120-130 (-10)	130-140 (-10)	115-125 (0)	125-135 (0)	120-130 (0)		245-255 (0)	320-330 (0)

Source: Official Board Markets





Official Board Markets (OBM) 4.11.08

Transacted Paper Stock Prices – High Grades

For detailed chart explanation, see page 11

	New DLK Cuttings (13)	White News Blanks (24)	Coated Soft Wht. Shavings (28)	Hard White Shavings (30)	Hard White Env. Cuts (31)	CPO (with non- impact) (42)	Unprint Bleached Sulfate (47)
East	\$150-160 (+10)	200-210 (0)	340-350 (0)	395-405 (0)	460-470 (0)	325-335 (0)	400-410 (0)
Midwest	135-145 (+10)	190-200 (0)	330-340 (0)	405-415 (0)	445-455 (0)	320-330 (0)	390-400 (0)
Southeast	135-145 (+10)	190-200 (0)	320-330 (0)	400-410 (0)	445-455 (0)	280-290 (0)	360-370 (0)
Southwest	140-150 (+10)	190-200 (0)	320-330 (0)	415-425 (0)	435-445 (0)	280-290 (0)	360-370 (0)
Los Angeles	155-165 (-10)	225-235 (0)	290-300 (0)	385-395 (0)	410-420 (0)	300-310 (0)	385-395 (0)
San Francisco	155-165 (-10)	225-235 (0)	290-300 (0)	385-395 (0)	410-420 (0)	300-310 (0)	385-395 (0)
Pacific NW	155-165 (-10)	225-235 (0)	290-300 (0)	385-395 (0)	410-420 (0)	300-310 (0)	385-395 (0)

Source: Official Board Markets





Thanks for your time!



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*Recycling 101 Series
Papers Grades & Indicators*

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