

## PRICE ASSESSMENT METHODOLOGY AND SPECIFICATIONS

# Packaging Paper and Board – North America

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## UNDERSTANDING RISI PRICE ASSESSMENTS

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Each price assessment is...

RISI's assessment of the **open market price** based on **actual transaction prices** and supporting data gathered from a **broad, systematic survey** of market participants that has been **rigorously evaluated** to produce an assessment.

Open market price: Price for regular business excluding one-off/spot, internal transfers and transactions whose price is not negotiated, i.e. prices determined by a formula based on published prices from RISI or other source. (See *"Grade detail and specifications" below*)

Actual transaction prices form the bulk of data in each assessment; supporting data like price offers made or received is used to support transaction data. (See *"Types of data considered" below*)

Survey has thorough representation of the market and includes both buyers and sellers, and a range of players from small to large. (see *"Data collection process" below*)

Assessment procedures include evaluation, verification, weighting and aggregation, plus confirmation of the assessment by a supervising editor. (See *"How prices are assessed" below*)

## About this methodology

This document describes the procedures RISI uses to determine its US containerboard, boxboard and kraft paper price assessments. As of mid-2015, this methodology has been strengthened by application of the Principles for Oil Price Reporting Agencies published by IOSCO, the International Organization of Securities Commissions ([www.iosco.org](http://www.iosco.org)).

RISI has *voluntarily* chosen to adapt these principles to the markets we cover even though our markets fall outside of the governance of IOSCO and the Principles. That's because these guidelines represent the internationally recognized gold standard in price assessment. By adapting and implementing these principles, RISI demonstrates its commitment to providing the highest degree of reliability in price reporting.

For more on the Principles and how RISI has applied them, see "Implementation of IOSCO's Principles for Oil Price Reporting Agencies" at [www.risi.com/iosco](http://www.risi.com/iosco).

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## HOW PRICES ARE ASSESSED

RISI indices creates price assessments in accordance with this methodology document and the internal RISI Indices Price Assessment Procedures Manual.

### Who assesses prices

Prices are assessed by a North American team of packaging paper/board editors, who are part of RISI Indices group, separate from RISI Analytics group involved in forecasting. Standards for training, experience and skills required for editors involved in price assessment, as well as supervision of editors, are described in the RISI Indices Price Assessment Procedures Manual.

### Data collection process

RISI makes price assessments based on a systematic survey of active market participants to find out agreed transaction prices and volumes as well as price offers made or received, and other supporting information such as supply and demand conditions.

The amount and type of information that a respondent provides each month varies across individuals and companies. Data from respondents providing more complete information is weighted more heavily in the final assessment. Price data are also weighted roughly according to tonnage.

### Data providers

The survey includes both buyers and sellers, ensuring that the survey pool is balanced and representative of the overall market. Specifics are indicated in the "Grade Detail and Specifications" section below for each grade.

All market participants are encouraged to submit price data and supporting market information for inclusion in the assessment.

### How data are provided

Each price period, the price assessor contacts data providers and collects data via phone interviews and emails.

### Types of data considered

The following describes how different types of data are considered in price assessments.

#### Directly considered data

The following types of data may be included in an assessment, from most to least important. Each successive type of data is only considered if the volume of previous types is deemed insufficient to yield a reliable and representative market price assessment.

1. **Transaction prices**
  - a. Price levels

- b. Change of price levels from previous period
2. **Price offers** made or received. A single offer price in itself cannot be considered a market price because it represents only one party's desire to trade. The midpoint between a seller's offer to sell and buyer's comparable offer to buy is considered the market price level. As such, offers to sell are considered upper boundaries of the market price and offers to buy are considered lower boundaries.
  3. **Prices for directly comparable grades** that can substitute for the grade in question and that have relatively consistent historical spreads against the grade in question. For example, semichemical medium sells for parity or a small premium in price (\$0-20/ton) to recycled corrugating medium in the open market. Many buyers consider the two grades interchangeable and functionally equivalent for many end uses.
  4. **Trigger prices:** In absence of actual transactions or price offers, the price at which a seller would sell or a buyer would buy based on their assessment of the market.
  5. **Participants' estimates of market levels:** In less transparent markets (boxboard and kraft papers), participants' estimates of market levels are considered in assessments.

## Influencing data

These types of data don't enter directly into an assessment, but rather serve to either corroborate or cast doubt on directly considered data points, thus leading the assessor to increase or reduce the weight attached to each data point.

For instance, given that higher inventories tend to be associated with downward pressure on prices, knowledge that inventory levels at mills are substantially above normal would cause us to assign a relatively lower weight to transaction data that show an increase in prices vs. the last period and that aren't supported by other criteria.

1. **Spot prices:** Spot prices may influence how open market prices are assessed if the spread between spot and open market prices diverges significantly from the typical spread for a sustained period or if spot tonnage increases significantly in volume. For example, if typical winter seasonal spot discounts continue into early spring and increase in volume, it would be a sign of market weakness that would lead us to assign more weight to transaction

prices showing declining prices.

2. **Contract prices:** Contract prices may be helpful in assessing open market price levels, especially if agreements have been recently negotiated. But contract prices may be indexed to published prices and are therefore not a good measure of price increases/decreases.
3. **Prices in related markets:** Prices of the grade in question in other geographical markets can be used as influencing data if those markets have a direct impact on the market in question, for instance if producers can decide to offer tonnage in one market or the other. Similarly, if producers can swing tonnage from producing one grade to another, price changes of the other grade are used as influencing data on the first.
 

Whether prices of related grades are directly considered data or influencing data depends on how readily the grades can be substituted in the market. If grades are easily substituted, they are included directly as price points (after normalization, if necessary). If grades aren't as easily substituted or shifted between markets, prices of related grades are only considered influencing data.
4. **Market statistics** including inventories, shipments, operating rates and export volume.

## Relative importance of data types

Transaction prices are the most important data source for all assessments. See "Grade Detail and Specifications" below for details on the relative importance of data types used in each specific price assessment.

## Assessment calculation

### Criteria for exclusion of data

Data are excluded from the assessment in the following cases:

- The price of a transaction is indexed to published prices from RISI or another source. A transaction price is considered to be "indexed" when it is entirely determined according to a formula based on a published price assessment.
- The transactions don't meet the assessment specifications. (See "Grade Detail and Specifications" section below.)

- The transaction has special circumstances that, in the price assessor’s judgment, render it unrepresentative of the broader market and/or not repeatable. (This type of exclusion is rarely used.)

## Normalization of data

Normalization is the process of adjusting data so that it can be properly compared to other data. For instance, prices for 32-lb linerboard are normalized so they can be included in the 42-lb linerboard assessment (see “Grade Detail and Specifications – Containerboard” below for details on the specifications for each assessment). The typical upcharge for 32-lb linerboard is \$25 over 42-lb, so if we find a price of \$650 for 32-lb linerboard, it is normalized to \$625 (i.e. \$650 - \$25 upcharge) for inclusion in our assessment.

Since domestic prices are reported on a delivered basis, transactions subject to unusually high or low freight are normalized to eliminate the effect of these freight extremes.

## Weighting of data

- Higher-quality data are weighted more heavily than lower-quality data. Higher-quality data includes:
  - Data with more detail, e.g. prices reported as separate transactions with accompanying volume rather than an overall average price.
  - Data whose credibility is supported by answers to the assessor’s follow-up questions.
  - Data from contacts with a history of reliability. Contacts are deemed more reliable if they:
    - Provide information that is corroborated by other sources
    - Provide complete and detailed information
    - Provide information regularly and consistently over time
    - Report price information that goes against their natural interests (e.g. a buyer reporting higher prices or a producer reporting lower prices)
- Data are weighted according to the type of information (see “Relative importance of data types” under “Grade Detail and Specifications” below).
- Larger transactions are given more weight than smaller ones. However, the weighting of any single data provider’s data is limited so that it doesn’t dominate the assessment. For Category 1 prices (e.g. US 42-lb unbleached kraft linerboard – see “Grade Detail and Specifications” below), this cap is

more formal: no single data provider’s data will be weighted so that it contributes more than 25% of the final assessment.

## Controls and compliance

### Ensuring consistency and quality of assessments

RISI has in place a number of procedures to ensure the consistency and quality of price assessments, including:

- **Sign-off:** Prior to publication, each price assessment is reviewed by a senior price assessor other than the assessor primarily responsible for the assessment to ensure the assessment is accurate and has followed proper procedures.
- **Quality assurance audit:** A supervising editor is responsible for overseeing containerboard, boxboard and kraft paper price assessments. The supervisor will periodically do a detailed review of decision-making for a given price assessment, reviewing price assessments in relation to assessments from similar markets, ensuring that the methodology has been followed consistently and that judgment has been applied appropriately.
- **Market review:** On a regular basis (i.e. annually for the main grades), Indices staff reviews markets and methodologies to ensure that assessment methodologies and the assessments they produce are appropriate for the market.
- **External audit:** In accordance with the standards of IOSCO’s PRA Principles, Category 1 price assessments (benchmark grades, e.g. US East 42-lb unbleached kraft linerboard – see “Grade Detail and Specifications” below) are audited annually to ensure that assessments comply with this methodology and with IOSCO’s PRA Principles.

### Independence and freedom from conflicts of interest

Please see RISI Indices’ Conflicts of Interest Policy ([www.risi.com/conflicts](http://www.risi.com/conflicts)). Key points include:

#### *Independence of RISI*

RISI has no affiliation with buyers or sellers of forest products and therefore no vested interest in either higher or lower prices.

### *Absence of financial interest*

RISI is free of ownership or other ties that would give it a financial interest in the movement of prices we report. RISI prohibits its employees who conduct price assessments from having a financial interest (excluding passive investments like mutual funds) in companies whose values are directly and substantially affected by prices on which they report.

### *Separation from forecasting*

RISI Indices is a separate business unit from RISI Analytics, which carries out RISI's forecasting activities, ensuring that forecasting of future prices doesn't influence assessment of actual prices.

## **Confidentiality**

Our data providers are essential to our work, so RISI Indices goes to great lengths to keep price survey data confidential. Confidential data include both the data collected and the names of individuals and companies who provide data. RISI's policy is to neither confirm nor deny the participation of any individual or company in our price surveys at any time, either directly or indirectly.

This confidentiality is essential to ensure the highest number of data contributors as well to ensure that contributing data to RISI cannot be used as a means for market players to unfairly communicate to each other.

RISI Indices' Confidentiality and Data Protection policy ([www.risi.com/confidentiality](http://www.risi.com/confidentiality)) explains full details around how price assessors protect the confidentiality of their contacts and data. Each year, price assessors are trained in data protection procedures and must sign a compliance agreement.

## **Antitrust compliance**

All price assessment methodologies from RISI Indices are explicitly designed to comply with antitrust rules. See RISI Indices' Antitrust Compliance Policy ([www.risi.com/antitrust](http://www.risi.com/antitrust)) for further details.

## **Disclaimer of warranty**

Although RISI collects information from sources who are believed to be reliable, RISI does not warrant or guarantee the accuracy or completeness of its price assessments. Actual transaction prices will often vary from the assessed level.

## **Changes and feedback**

### **Changes to methodology and specifications**

RISI periodically reviews the markets it covers to ensure that our methodology and specifications are still appropriate for that market.

Understanding that some RISI price assessments are used in long-term contracts, RISI seeks to minimize changes that will affect the continuity of its price assessment over time.

Prior to implementing any material changes to the methodology and specifications, these changes will be announced in draft form and open for comment from all stakeholders. RISI will review all comments and seek to balance the views of all players as much as possible while ensuring the reliability of price assessments.

Based on comments received, RISI will finalize the changes and announce them to the market, specifying exactly what will change and when.

### **Feedback and complaints**

RISI Indices welcomes feedback on its price assessment methodology as well as on specific price assessments published. We greatly value such feedback and the dialog that it generates.

In general, such feedback is most effectively dealt with by the editor directly in charge of the price assessment in question. We invite you to speak with or email any of your existing contacts within the editorial team, or view a list of contacts at [www.risi.com/EditorialContacts](http://www.risi.com/EditorialContacts).

If working with the editor does not adequately address your issue, please view our procedures for submitting complaints at [www.risi.com/complaints](http://www.risi.com/complaints).

## GRADE DETAIL AND SPECIFICATIONS

### General specifications

These are specifications that apply to containerboard, boxboard and kraft papers. Specifications unique to each grade are detailed below.

Where published	PPI Pulp & Paper Week Price Watch <ul style="list-style-type: none"> <li>• Newsletter (pdf)</li> <li>• Online (interactive database)</li> </ul> Secondary publication: Paper Packaging Monitor
Frequency	Monthly
Schedule	3 <sup>rd</sup> Friday of the month (Paper Packaging Monitor: Early part of the following month)
Assessment window	Orders taken in the month to date for shipment in the current or following month
Transaction types reflected	Open market transactions in ongoing supply relationships (i.e. excluding spot/one-off transactions) Excludes transactions whose price is indexed to published prices (whether from RISI or other source).
Arms-length transactions	Only transactions between unaffiliated parties are reflected. Transfers by mills to their own converting plants are excluded.
Location	As indicated. "US East" = East of the Rocky Mountains; "US West" = West of the Rocky Mountains
Normal terms of payment	Price estimates assume normal and customary payment terms.
IOSCO categories	42-lb unbleached kraft linerboard, US East, open market price: Category 1 All others: Category 2 <i>See implementation of IOSCO's Principles for Price Reporting Agencies (<a href="http://www.risi.com/iosco">www.risi.com/iosco</a>) for definition of categories.</i>

## Containerboard

Assessment	RISI Assessment ID	Currency	Units	Terms	Location	Range of basis weights included *	Notes
<b>Linerboard</b>							
42-lb unbleached kraft, East		USD	ton	Delivered	US East	31-lb to 42-lb	
Open market price	1328						
Transaction price	673						Legacy series to be discontinued as of January 2016. **
List price	154						Legacy series to be discontinued as of January 2016. **
42-lb unbleached kraft, West		USD	ton	Delivered	US West	31-lb to 42-lb	
Open market price	1329						
Transaction price	674						Legacy series to be discontinued as of January 2016. **
List price	155						Legacy series to be discontinued as of January 2016. **
35-36-lb high performance		USD	ton	Delivered	US East	31-lb to 42-lb	
Open market price	1330						
Transaction price	675						Legacy series to be discontinued as of January 2016. **
List price	156						Legacy series to be discontinued as of January 2016. **
42-lb white top, East		USD	ton	Delivered	US East	31-lb to 42-lb	
Open market price	1331						
Transaction price	676						Legacy series to be discontinued as of January 2016. **
List price	157						Legacy series to be discontinued as of January 2016. **
42-lb white top, West		USD	ton	Delivered	US West	31-lb to 42-lb	
Open market price	1332						
Transaction price	674						Legacy series to be discontinued as of January 2016. **
List price	155						Legacy series to be discontinued as of January 2016. **
<i>Exports</i>							
175g+ S. Europe (CIF)	697	Euros	tonne	CIF	Southern Europe	175g and higher	
175g+ Hong Kong (C&F)	295	USD	tonne	C&F	Hong Kong	175g and higher	
42-lb unbleached kraft, to Laredo for Mexico	659	USD	ton	FOB	Laredo	31-lb to 42-lb	

Assessment	RISI Assessment ID	Currency	Units	Terms	Location	Range of basis weights included *	Notes
<b>Corrugating Medium (26-lb)</b>							
Semichemical, East		USD	ton	Delivered	US East	23-lb to 26-lb	
Open market price	1333						
Transaction price	678						Legacy series to be discontinued as of January 2016. **
List price	161						Legacy series to be discontinued as of January 2016. **
Semichemical, West		USD	ton	Delivered	US West	23-lb to 26-lb	
Open market price	1334						
Transaction price	679						Legacy series to be discontinued as of January 2016. **
List price	162						Legacy series to be discontinued as of January 2016. **

\* Assessments include transactions for the range of basis weights indicated. Price data for basis weights that are within this range but that don't match the assessment definition are normalized, or adjusted, for inclusion in the assessment. For instance, price data for 35-lb linerboard would be reduced by the prevailing upcharge (e.g. \$20) for inclusion in the 42-lb assessment.

\*\* Obsolete series published prior to introduction of "open market" prices in March 2013. To be discontinued as of January 2016.

## Linerboard - US

Price assessments reflect the upper end of the range of net prices at which the bulk of transactions take place.

Point in supply chain: Seller is a containerboard producer or a producer's agent.  
Buyer is a small or medium-size independent converter.

Prices are for prime-quality tonnage with normal trims.

Furnish: Contains not less than 80% virgin sulfate woodpulp.

*Relative importance of data types in determining assessments:*

### **Directly considered data** (\*\* to \* = most to least important)

- \*\*\* Transaction prices
- \*\* Price offers made/received
- \* Trigger prices

### **Influencing data** (+++ to + = most to least important)

- ++ Spot prices
- + Contract prices
- + Export prices (influencing domestic linerboard) -- Export prices are an indicator of pressure building on the domestic price. However, even a significant domestic/export differential doesn't necessarily lead to shifting tonnage between the export and domestic markets, so the correlation between export and domestic prices is loose.
- ++ US East prices (influencing US West prices): If there was abundant evidence that prices changed in the East, it would make it more likely prices also changed in the West because some mills ship into both regions.
- + Other market information: Containerboard inventories at box plants and mills, weeks of supply, box shipments, containerboard mill operating rates and linerboard export volume. For example, inventories for the current month are compared to the five and ten-year average for that month.

## Linerboard – Export

Price assessments reflect the price range in which the bulk of transactions take place, except for Laredo prices, which reflect the upper end of the range of net prices at which the bulk of transactions take place.

Point in supply chain: Seller is a containerboard producer or a producer's agent.  
Buyer is a small or medium-size independent converter

Prices are for prime-quality tonnage with normal trims.

*Relative importance of data types in determining assessments:*

### **Directly considered data** (\*\* to \* = most to least important)

- \*\*\* Transaction prices
- \*\* Price offers made/received
- \* Trigger prices

### **Influencing data** (+++ to + = most to least important)

- ++ Domestic prices in destination regions
- + Other market information: Export shipment volume, exchange rates.

## Semichemical Medium

Price assessments reflect the upper end of the range of net prices at which the bulk of transactions take place.

Point in supply chain: The seller is a containerboard producer or a producer's agent.  
The buyer is a small or medium-size independent converter.

Furnish: Semichemical medium is defined by the AF&PA to include no more than 25% recycled fiber. RISI's assessments include medium with up to 100% recycled fiber, normalized if necessary to account for difference in product quality.

Prices are for prime-quality tonnage with normal trims.

*Relative importance of data types in determining assessments:*

**Directly considered data** (*\*\*\* to \* = most to least important*)

- \*\*\* Transaction prices
- \*\* Price offers made/received
- \* Trigger prices

**Influencing data** (*+++ to + = most to least important*)

- ++ Spot prices
- + Contract prices
- ++ US East prices (influencing US West prices): If there was abundant evidence that prices changed in the East, it would make it more likely prices also changed in the West because some mills ship into both regions.
- + Other market information: Same as linerboard.

## Boxboard

Assessment	RISI Assessment ID	Currency	Units	Terms	Location	Physical specifications	Notes
<b>Solid bleached sulfate board (SBS)</b>							
16-pt folding carton, C1S		USD	ton	Delivered	US East	Coated on one side	
Transaction price	1006						
List price	147						Legacy series*
14-pt cup stock, PE2S	1016	USD	ton	Delivered	US East	Polyethylene-coated on two sides	
<b>Coated unbleached kraft board (CUK)</b>							
20-pt folding carton, C1S		USD	ton	Delivered	US East	Coated on one side	
Transaction price	1007						
List price	148						Legacy series*
<b>Recycled folding boxboard (CRB, URB)</b>							CRB = coated recycled board, URB = uncoated recycled board
20-pt clay coated news		USD	ton	Delivered	US East	Coated on one side	
Transaction price	1004						
List price	146						Legacy series*
20-pt bending chip		USD	ton	Delivered	US East	Including folding, tube/core but excluding wallboard	
Transaction price	1005						
List price	149						Legacy series*

\* "List price" series are legacy series that are a constant amount higher than the "transaction price" series, which are the active series.

Price levels reflect prices before discounts.

Assessments are presented as a range in which the bulk of transactions take place.

Point in supply chain: Seller is a boxboard producer or a producer's agent. Buyer is a carton converter or sheeter.

Prices are for prime-quality tonnage with normal trims.

*Relative importance of data types in determining assessments:*

**Directly considered data** (\*\* to \* = most to least important)

- \*\*\* Transaction prices
- \*\* Participants' estimates of market levels
- \*\* Price offers made/received
- \* Trigger prices

**Influencing data** (+++ to + = most to least important)

- ++ Spot prices
- + Contract prices
- + Historical price differentials between SBS and CUK, and between CUK and CRB
- ++ US East prices (influencing US West prices): If there was abundant evidence that prices changed in the East, it would make it more likely prices also changed in the West because some mills ship into both regions.
- + Other market information: AF&PA weekly unmade orders and monthly production, shipments, operating rate, inventories and export data.

## Kraft Papers

Assessment	RISI Assessment ID	Currency	Units	Terms	Location	Physical specifications
<b>Unbleached</b>						
Extensible multiwall sack, 50-lb	150	USD	ton	Delivered	US East	
Natural multiwall sack, 50-lb	683	USD	ton	Delivered	US East	
Grocery bag, 70-lb	151	USD	ton	Delivered	US East	Contains primarily virgin fiber
Grocery bag, 30-lb	152	USD	ton	Delivered	US East	Contains primarily virgin fiber
<b>Bleached</b>						
Grocery bag, 30-lb	153	USD	ton	Delivered	US East	Contains primarily virgin fiber

Price levels reflect prices before discounts.

Assessments are presented as a range in which the bulk of transactions take place.

Point in supply chain: Seller is a kraft paper producer or a producer's agent. Buyer is an independent converter.

Prices are for prime-quality tonnage

*Relative importance of data types in determining assessments:*

**Directly considered data** (\*\* to \* = most to least important)

- \*\*\* Transaction prices
- \*\*\* Participants' estimates of market levels
- \*\* Price offers made/received
- \* Prices for comparable grades: Extensible and natural multiwall kraft prices are each considered in the assessment of the other (i.e. extensible is

considered in the multiwall assessment and vice versa).

- \* Trigger prices

**Influencing data** (*+++ to + = most to least important*)

- ++ Spot prices
- + Contract prices
- + Export prices
- + Because producers can sometimes swing production from lightweight kraft linerboard to heavyweight kraft paper, the price of linerboard can be an influencing factor on heavyweight grocery bag paper.
- + Other market information: Influencing data include converted sack shipments, kraft paper shipments and mill/bag plant inventory levels..

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## REVISION HISTORY

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Changes to methodology and specifications will be tracked here.