

PRICE ASSESSMENT METHODOLOGY AND SPECIFICATIONS

Global market pulp

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UNDERSTANDING RISI PRICE ASSESSMENTS

Each price assessment is...

RISI's assessment of the **open market price**
of pulp 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: Excludes transactions whose price is not negotiated, i.e. prices determined by a formula based on published prices from RISI or other source

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 market pulp 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).

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.

DEFINITIONS

RISI uses the following definitions:

What is the nature of the transaction?

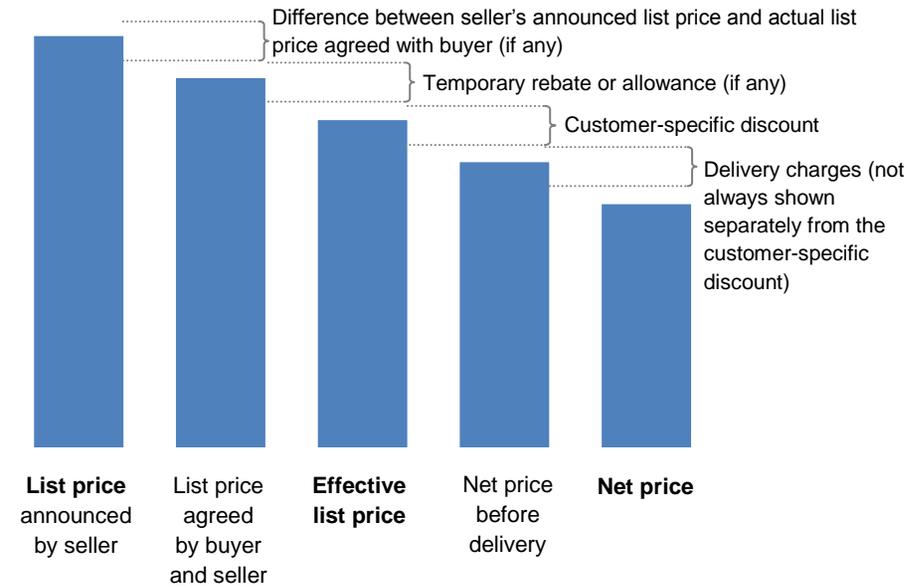
Contract

Transactions between suppliers and buyers who have a written contract or an ongoing unwritten relationship that involves regular transactions over time.

Spot

Transactions agreed upon without a commitment (either verbal or in writing) to business in future months. Spot prices are net prices, i.e. a level from which no further discounts, allowances or performance rebates are given.

What is being measured by the price?



List Price

In a contract transaction, the list price is the producer's initial asking price, as announced publicly or communicated to the buyer as the starting point for negotiations. RISI's Pulp & Paper News Service reports list prices as they are announced by producers or as they are initially communicated to buyers.

Effective List Price

In a contract transaction, buyers and sellers must agree to a price each month and then apply a discount that has been agreed upon earlier. The "effective list price for contract transactions" is the price on which buyers and sellers agree to be the baseline price off of which pre-agreed discounts are taken. The effective list price is net of:

- competitive allowances
- any other temporary market-wide discounts that are not captured in the standard contract discount that was previously agreed to between the buyer and the seller.

Performance Rebate

A rebate that a seller gives a buyer each quarter or year in return for the buyer meeting a pre-agreed upon volume of purchases in that period of time. Performance rebates are by definition customer-specific and so do not enter into the calculation of the effective list price.

Net Price

In a contract transaction, the net price is the price to the buyer after monthly discounts and allowances are taken, but before quarterly or annual performance rebates are given. In a spot transaction, spot price and net price are the same because they are spot prices stated net of discounts and allowances.

HOW PRICES ARE ASSESSED

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

Who assesses prices

Prices are assessed by a global team of pulp editors. Standards for training, experience and skills required for editors involved in price assessment, as well as supervision of editors, are described in the Price Assessment Procedures Manual.

The role of World Pulp Monthly: Because RISI's World Pulp Monthly – a source of market analysis produced by RISI economists – has long published leading price assessments for the North American market, RISI economists have played a key role in the price assessment process. With the implementation of this revised methodology in 2015, responsibility for determining all price assessments resides with RISI Indices editors. However, RISI pulp economists still gather market information to support price assessments.

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, and includes players of all sizes, ensuring that the survey pool is balanced and representative of the overall market. Sellers include both market pulp producers and agents acting on behalf of producers. Buyers are producers of paper, paperboard, tissue/toweling, and nonwovens/absorbent products.

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 via email.

How much data is gathered

Pulp price assessments are based on data from as large a sample of market participants as possible. For Category 1 prices (benchmark grades, e.g. US NBSK – see specifications below), data typically represents more than half of open market tonnage for the specified assessment.

All price assessments are based primarily on transaction data, but there is no minimum transaction threshold needed to assess a price because in the rare event that no transaction data is available, additional types of data may be considered as indicated below.

Assessment calculation

Types of data considered

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. For instance, assertions of the price at which a contact would trade are only used in spot markets and only in reporting periods where there is little transacted volume.

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 a 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 comparable grades** that can substitute for the grade in question and that have relatively consistent historical spreads against the grade in question. (Note that this substitution can happen both on the buy side, as a buyer substitutes use of one grade for another, and on the producer side, as a producer chooses to produce one grade instead of another, e.g. swinging between fluff and SBSK production.)
4. **Trigger prices:** In absence of actual transactions or price offers, the price at which a contact would trade

Influencing data

These types of data aren't price points that enter directly into an assessment. Rather, these data can serve to either corroborate or cast doubt on directly considered data points, thus leading the surveyor to increase or reduce the weight attached to that 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 versus the last period and that aren't supported by other criteria.

1. **Spot prices:** Spot prices may influence how contract prices are assessed if the spread between spot and contract prices diverges significantly from the typical spread for a sustained period.

The spread between net contract prices and spot prices varies from month to month, but tends to revert toward its long-term average over time. (Note that to the extent that discounts are growing over time, the spread between effective list contract prices and spot prices also grows over time.)

Market forces tend to push the spread toward its long-term average. As the spread diverges from average, either buyers or sellers gain an incentive to shift tonnage from one market to another, which tends to push the spread toward average.

However, spot/contract divergence can persist in the short term because contractual and logistical factors prevent market participants from shifting tons quickly between spot and contract markets.

The indirect way spot price influences contract price assessments: If the spot/contract price spread varies significantly from the long-term average, this doesn't cause the contract price assessment to be adjusted directly. Rather, the situation alerts the price assessor to pay extra attention to signs that the contract price may be moving toward the long-term average spread versus the spot price. For instance, if the spot price was further below the contract price than usual and was falling, this situation suggests that contract prices are under pressure, and the assessor would look for greater substantiation from those claiming that contract prices are flat. If these data providers are not able to provide this greater substantiation, the weighting of their contract price data is reduced.

The influence of spot prices depends on length and extent of divergence from the long-term average spread versus contract prices. One month of diverging spot/contract price movements has no effect on the contract price assessment, but as the divergence grows larger and extends longer, the spot price starts to have an indirect influence on the contract price assessment. This indirect influence grows as the period of time in which spot/contract prices diverge grows longer and the divergence is larger.

Note that no matter how great the divergence between spot and contract price movements, for how great a time, claims that contract prices are following spot prices because they "should" are not considered. Without evidence of actual

lower/higher contract transaction prices or offer prices, contract price assessments will not change.

2. **Prices in other geographical markets** for the grade in question 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. Like spot prices, prices in other geographic markets are used as influencing data only if greater-than-usual price divergence is sustained.
3. **Other market information** including supply, demand and inventories

Relative importance of data types

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

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 other source.
Defining “indexed” transaction prices: A transaction price is considered “indexed” when it is entirely determined according to a formula based on a published price assessment. However, even when parties have a long-term index-priced contract (i.e. stipulation that each month’s price will be determined based on a published price assessment), they may sometimes supersede the contract terms by choosing to determine a given month’s price by negotiation. For instance, this can happen if parties negotiate and agree on the price for a given month before that month’s RISI price assessment has been published. In a case like this, even though the overall contract is indexed, the given month’s price is not considered indexed and would thus be included in that month’s price assessment.
- The transactions don’t meet the assessment specifications. (See “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.)

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 surveyor’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
- Agreed transaction prices are given more weight than price offers made or received
- 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 NBSK – see 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.

After applying these criteria, data are compiled into a final assessment. Assessments are defined as either:

- A point assessment, representing the weighted average price
- A range assessment, reported as a high and low price which represent the range in which the bulk of transactions have taken place. Range assessments are sometimes reported as a single price if the bulk of transactions have taken place at a single price.

CONTROLS AND COMPLIANCE

Ensuring consistency and quality of assessments

RISI has in place a number of procedures to ensure the consistency and quality of pulp 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 pulp price assessments. The supervisor will periodically perform 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 pulp 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 NBSK – see 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 posted on its website. 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. Because RISI's World Pulp Monthly has historically been used as a key source of price assessments, particularly for the North American market,

RISI's pulp economists (who are in the RISI Analytics unit) retain a role in gathering market data that informs price assessments. However, as of April 2015, final determination of assessments is done exclusively by RISI Indices staff.

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 Protocol 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 of the price assessment methodologies from RISI Indices are explicitly designed to comply with antitrust rules. See RISI Indices' Antitrust Compliance Policy 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.

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

REGIONAL DETAIL AND SPECIFICATIONS

General specifications

The following specifications apply to price assessments in all regions unless otherwise specified.

Arms-length transactions	Only transactions between unaffiliated parties are reflected.
Point in supply chain	Seller: pulp producer or a producer's agent Buyer: producer of paper, paperboard, tissue/toweling, or nonwovens/absorbent products
Quality	Prices are for prime-quality tonnage.
Normal terms of payment	Price estimates assume normal and customary payment terms.
Indexed tonnage excluded	Transactions whose price is indexed to published pulp prices (whether from RISI or other source) are excluded from our price survey. (See more above under "How prices are assessed – Exclusion of data ".)
Wet-lap excluded	Wet-lap pulp is excluded, except for DIP.
Currency/units	US dollars per metric tonne, which is the standard unit of pricing in the pulp market.

North America

Specifications

	Contract	Spot
Where published	PPI Pulp & Paper Week - Price Watch <ul style="list-style-type: none"> newsletter (pdf) online (interactive database) World Pulp Monthly ("Table 5")	PPI Pulp & Paper Week - Price Watch <ul style="list-style-type: none"> newsletter (pdf) online (interactive database)
Frequency	Monthly	Twice-monthly
Schedule	<ul style="list-style-type: none"> Preliminary price: 2nd Friday of the month Final price: 2nd-to-last business day of the month 	Published on same schedule as preliminary and final contract prices
Assessment window	Orders in the month to date. Shipment may occur no later than the following month.	Orders in the two weeks prior to publication. Shipment may occur no later than the following month.
Price type See "Definitions" above	Effective list	Net
Range/point	<ul style="list-style-type: none"> Preliminary price: range Final price: point 	Range
Delivery terms	Prices include delivery to customer.	
IOSCO categories	See Implementation of IOSCO's Principles for Price Reporting Agencies for definition of categories. NBSK delivered to US, contract price: Category 1 All others: Category 2	

Relative importance of data types

The following table shows the relative weight assigned to each of these types of data in assessing prices. This weighting applies to all assessments in this region with the indicated exceptions.

*** = the most important source(s)

** = used in every assessment, but given less weight than ***

* = sometimes used, sometimes not, depending on market conditions

xx = most important influencing data, may or may not apply

x = secondary influencing data, may or may not apply

-- = never used

Type of data	Weight	Exceptions
Directly considered data		
Transaction prices	***	
Price offers made/ received	**	
Prices for comparable grades	*	SBSK: ** DIP: --
Trigger prices	--	Spot prices: **
Influencing data		
Spot prices	xx	
Prices in other geographies	x	Fluff: xx DIP: --
Other market information	x	

Europe

Specifications

	Contract	Spot
Where published	PPI Europe - Price Watch <ul style="list-style-type: none"> • newsletter (pdf) • online (interactive database) World Pulp Monthly ("Table 5")	PPI Europe - Price Watch <ul style="list-style-type: none"> • newsletter (pdf) • online (interactive database)
Frequency	Monthly	Twice-monthly
Schedule	First Thursday of the month	First and third Thursdays of the month
Assessment window	Shipments in the previous month. In Europe, the custom is to ship pulp before a final price has been negotiated, then to finalize prices just before or after the end of the month. So, prices represent transactions agreed in the indicated period, including shipments that have already occurred. For instance, the February price, published in early March, is for February shipments, with the final prices often agreed upon at the very end of February or in early March.	Orders in the two weeks prior to publication. Shipment may occur no later than the following month.
Price type See "Definitions" above	Effective list	Net
Delivery terms	CIF to main European port or delivered to customer	
IOSCO categories	See Implementation of IOSCO's Principles for Price Reporting Agencies for definition of categories. All prices: Category 2	

Relative importance of data types

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x = secondary influencing data, may or may not apply

-- = never used

Type of data	Weight	Exceptions
Directly considered data		
Transaction prices	***	
Price offers made/ received	**	
Prices for comparable grades	*	Southern pine: **
Trigger prices	--	Spot prices: **
Influencing data		
Spot prices	x	
Prices in other geographies	x	Fluff: xx
Other market information	x	

Eucalyptus price in euros is not a separate price assessment, but rather simply a conversion of the USD eucalyptus price into euros.

Asia

Specifications

	East Asia	China – imports	China – domestic
Where published	PPI Asia - Price Watch <ul style="list-style-type: none"> • newsletter (pdf) • online (interactive database) World Pulp Monthly (“Table 5”) (China import prices only)		
Frequency	Monthly	Twice monthly	Weekly
Schedule	Last Friday of the month	2 nd and last Friday of the month	Each Friday
Assessment window	Shipments in the month to date	Orders in the two weeks prior to the assessment date	Orders in the week prior to the assessment date
Price type See “Definitions” above”	Net contract price	Net price In China there isn’t a meaningful distinction between spot and contract transactions, so both types are reflected	
Location	South Korea, Japan, Taiwan, Southeast Asia	China	East China, including Zhejiang, Jiangsu, Anhui, Jiangxi and Shandong provinces, and Shanghai municipality
Currency	USD		RMB
Delivery terms	CIF or CFR to main port		At trader’s warehouse
Point in the supply chain	Seller: pulp producer or a producer's agent Buyer: paper producer*	Seller: pulp producer or a producer's agent Buyer: China-based trading company or major paper producer*	Resale price, i.e.: Seller: China-based trader or pulp producer Buyer: paper producer*
	* “Paper producer” includes producer of paper, paperboard, tissue/toweling or nonwovens/absorbent products		
Other terms			Includes 17% VAT
IOSCO categories	See Implementation of IOSCO’s Principles for Price Reporting Agencies for definition of categories.		

All prices: Category 2

Relative importance of data types

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x = secondary influencing data, may or may not apply

-- = never used

Type of data	Weight	Exceptions
Directly considered data		
Transaction prices	***	
Price offers made/ received	**	
Prices for comparable grades	*	USK from Russia: **
Trigger prices	--	
Influencing data		
Spot prices	--	
Prices in other geographies	x	
Other market information	--	

Latin America

Specifications

Where published	PPI Latin America <ul style="list-style-type: none"> • Price Watch in the newsletter • Price Watch online
Frequency	Monthly
Schedule	Fourth Tuesday of the month
Assessment window	Orders in the month to date
Price type See "Definitions" above	In Latin America, lowest prices reflects trades from Brazilian suppliers to distant markets in the Pacific. In Brazil, the lower end of the price range is the average net price and the higher end of the range is the list price.
Delivery terms	Latin American prices are CIF/CFR to main ports in Argentina, Colombia, Chile and Mexico. Brazilian prices are CIF/delivered in southern and southeastern regions and include Pis/Cofins taxes paid by producers.
IOSCO categories	See Implementation of IOSCO's Principles for Price Reporting Agencies for definition of categories. All prices: Category 2

Relative importance of data types

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Type of data	Weight	Exceptions
Directly considered data		
Transaction prices	***	
Price offers made/ received	**	
Prices for comparable grades	*	
Trigger prices	--	
Influencing data		
Spot prices	xx	
Prices in other geographies	x	
Other market information	x	

REVISION HISTORY

Changes to methodology and specifications will be tracked here.