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ARGUS HEAVY OIL PRODUCTS AND MARINE FUELS

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The most up-to-date Argus Heavy Oil Products and Marine Fuels methodology is available on
www.argusmedia.com

Methodology overview

Methodology rationale

Argus strives to construct methodologies that reflect the way the market trades. Argus aims to produce price assessments which are reliable and representative indicators of commodity market values and are free from distortion. As a result, the specific currencies, volume units, locations and other particulars of an assessment are determined by industry conventions.

In the Russian heavy oil products and marine fuels markets, Argus publishes physical market prices in the open market as laid out in the specifications and methodology guide. Argus uses the trading period deemed by Argus to be most appropriate, in consultation with industry, to capture market liquidity.

In order to be included in the assessment process, deals must meet the minimum volume, delivery, timing and specification requirements in our methodology. In illiquid markets, and in other cases where deemed appropriate, Argus assesses the range within which product could have traded by applying a strict process outlined later in this methodology.

Survey process

Argus price assessments are informed by information received from a wide cross section of market participants, including producers, consumers and intermediaries. Argus reporters engage with the industry by proactively polling participants for market data. Argus will contact and accept market data from all credible market sources including front and back office of market participants and brokers. Argus will also receive market data from electronic trading platforms and directly from the back offices of market participants. Argus will accept market data by telephone, instant messenger, email or other means.

Argus encourages all sources of market data to submit all market data to which they are a party that falls within the Argus stated methodological criteria for the relevant assessment. Argus encourages all sources of market data to submit transaction data from back office functions.

Throughout all markets, Argus is constantly seeking to increase the number of companies willing to provide market data. Reporters are mentored and held accountable for expanding their pool of contacts. The number of entities providing market data can vary significantly from day to day based on market conditions.

For certain price assessments identified by local management, if more than 50pc of the market data involved in arriving at a price assessment is sourced from a single party the supervising editor will engage in an analysis of the market data with the primary reporter to ensure that the quality and integrity of the assessment has not been affected.

Market data usage

In each market, Argus uses the methodological approach deemed to be the most reliable and representative for that market. Argus will utilise various types of market data in its methodologies, to include:

- Transactions
- Bids and offers
- Other market information, to include spread values between grades, locations, timings, and many other data.

In many markets, the relevant methodology will assign a relatively higher importance to transactions over bids and offers, and a relatively higher importance to bids and offers over other market information. Certain markets however will exist for which such a hierarchy would produce unreliable and non-representative price assessments, and so the methodology must assign a different relative importance in order to ensure the quality and integrity of the price assessment. And even in markets for which the hierarchy normally applies, certain market situations will at times emerge for which the strict hierarchy would produce non-representative prices, requiring Argus to adapt in order to publish representative prices.

Verification of transaction data

Reporters carefully analyse all data submitted to the price assessment process. These data include transactions, bids, offers, volumes, counterparties, specifications and any other information that contributes materially to the determination of price. This high level of care described applies regardless of the methodology employed. Specific to transactions, bids, and offers, reporters seek to verify the price, the volume, the specifications, location basis, and counterparty. In some transactional average methodologies, reporters also examine the full array of transactions to match counterparties and arrive at a list of unique transactions. In some transactional average methodologies, full details of the transactions verified are published electronically and are accessible by subscribers.

Several tests are applied by reporters in all markets to transactional data to determine if it should be subjected to further scrutiny. If a transaction has been identified as failing such a test, it will receive further scrutiny. For assessments used to settle derivatives and for many other assessments, Argus has established internal procedures that involve escalation of inquiry within the source's company and escalating review within Argus management. Should this process determine that a transaction should be excluded from the price assessment process, the supervising editor will initiate approval and, if necessary, documentation procedures.

Primary tests applied by reporters

- Transactions not transacted at arm's length, including deals between related parties or affiliates.
- Transaction prices that deviate significantly from the mean of all transactions submitted for that day.
- Transaction prices that fall outside of the generally observed lows and highs that operated throughout the trading day.
- Transactions that are suspected to be a leg of another transaction or in some way contingent on an unknown transaction.
- Single deal volumes that significantly exceed the typical transaction volume for that market.
- Transaction details that are identified by other market participants as being for any reason potentially anomalous and perceived by Argus to be as such.

- Transaction details that are reported by one counterparty differently than the other counterparty.
- Any transaction details that appear to the reporter to be illogical or to stray from the norms of trading behaviour. This could include but is not limited to divergent specifications, unusual delivery location and counterparties not typically seen.
- Transactions that involve the same counterparties, the same price and delivery dates are checked to see that they are separate deals and not one deal duplicated in Argus records.

Secondary tests applied by editors for transactions identified for further scrutiny

Transaction tests

- The impact of linkage of the deal to possible other transactions such as contingent legs, exchanges, options, swaps, or other derivative instruments. This will include a review of transactions in markets that the reporter may not be covering.
- The nature of disagreement between counterparties on transactional details.
- The possibility that a deal is directly linked to an offsetting transaction that is not publicly known, for example a “wash trade” which has the purpose of influencing the published price.
- The impact of non-market factors on price or volume, including distressed delivery, credit issues, scheduling issues, demurrage, or containment.

Source tests

- The credibility of the explanation provided for the outlying nature of the transaction.
- The track record of the source. Sources will be deemed more credible if they
 - Regularly provide transaction data with few errors.
 - Provide data by Argus’ established deadline.
 - Quickly respond to queries from Argus reporters.
 - Have staff designated to respond to such queries.
- How close the information receipt is to the deadline for information, and the impact of that proximity on the validation process.

Assessment guidelines

When insufficient, inadequate, or no transaction information exists, or when Argus concludes that a transaction based methodology will not produce representative prices, Argus reporters will make an assessment of market value by applying intelligent judgement based on a broad array of factual market information. Reporters must use a high degree of care in gathering and validating all market data used in determining price assessments, a degree of care equal to that applying to gathering and validating transactions. The information used to form an assessment could include deals done, bids, offers, tenders, spread trades, exchange trades, fundamental supply and demand information and other inputs.

The assessment process employing judgement is rigorous, replicable, and uses widely accepted valuation metrics. These

valuation metrics mirror the process used by physical commodity traders to internally assess value prior to entering the market with a bid or offer. Applying these valuation metrics along with sound judgement significantly narrows the band within which a commodity can be assessed, and greatly increases the accuracy and consistency of the price series. The application of judgement is conducted jointly with the supervising editor, in order to be sure that guidelines below are being followed. Valuation metrics include the following:

Relative value transactions

Frequently transactions occur which instead of being an outright purchase or sale of a single commodity, are instead exchanges of commodities. Such transactions allow reporters to value less liquid markets against more liquid ones and establish a strong basis for the exercise of judgment.

- Exchange one commodity for a different commodity in the same market at a negotiated value.
- Exchange delivery dates for the same commodity at a negotiated value.
- Exchange a commodity in one location for the same commodity at another location at a negotiated value.

Bids and offers

If a sufficient number of bids and offers populate the market, then in most cases the highest bid and the lowest offer can be assumed to define the boundaries between which a deal could be transacted.

Comparative metrics

The relative values between compared commodities are readily discussed in the market and can be discovered through dialogue with market participants. These discussions are the precursor to negotiation and conclusion of transactions.

- Comparison to the same commodity in another market centre.
- Comparison to a more actively traded but slightly different specification commodity in the same market centre.
- Comparison to the same commodity traded for a different delivery timing.
- Comparison to the commodity’s primary feedstock or primary derived product(s).
- Comparison to trade in the same commodity but in a different modality (as in barge versus oceangoing vessel) or in a different total volume (as in full cargo load versus partial cargo load).

Volume minimums and transaction data thresholds

Argus typically does not establish thresholds strictly on the basis of a count of transactions, as this could lead to unreliable and non-representative assessments and because of the varying transportation infrastructure found in all commodity markets. Instead, minimum volumes are typically established which may apply to each transaction accepted, to the aggregate of transactions, to transactions which set a low or high assessment or to other volumetrically relevant parameters.

For price assessments used to settle derivatives, Argus will seek to establish minimum transaction data thresholds and when no such

threshold can be established Argus will explain the reasons. These thresholds will often reflect the minimum volumes necessary to produce a transaction-based methodology, but may also establish minimum deal parameters for use by a methodology that is based primarily on judgement.

Should no transaction threshold exist, or should submitted data fall below this methodology's stated transaction data threshold for any reason, Argus will follow the procedures outlined elsewhere in this document regarding the exercise of judgement in the price assessment process.

Transparency

Argus values transparency in energy markets. As a result, where available, we publish lists of deals in our reports that include price, basis, counterparty and volume information. The deal tables allow subscribers to cross check and verify the deals against the prices. Argus feels transparency and openness is vital to developing confidence in the price assessment process.

Swaps and forwards markets

Argus publishes forward assessments for numerous markets. These include forward market contracts that can allow physical delivery and swaps contracts that swap a fixed price for the average of a floating published price. Argus looks at forward swaps to inform physical assessments but places primary emphasis on the physical markets.

Publications and price data

Russian heavy oil product and marine fuel prices are published in the Argus Heavy Oil Products and Marine Fuels report. Subsets of these prices appear in other Argus market reports and newsletters in various forms. The price data are available independent of the text-based report in electronic files that can feed into various databases. These price data are also supplied through various third-party data integrators. The Argus website also provides access to prices, reports and news with various web-based tools. All Argus prices are kept in a historical database and available for purchase. Contact your local Argus office for information.

A publication schedule is available at www.argusmedia.com

Corrections to assessments

Argus will on occasion publish corrections to price assessments after the publication date. We will correct errors that arise from clerical mistakes, calculation errors, or a misapplication of our stated methodology. Argus will not retroactively assess markets based on new information learned after the assessments are published. We make our best effort to assess markets based on the information we gather during the trading day assessed.

Ethics and compliance

Argus operates according to the best practices in the publishing field, and maintains thorough compliance procedures throughout the firm. We want to be seen as a preferred provider by our sub-subscribers, who are held to equally high standards, while at the same time maintaining our editorial integrity and independence.

Argus has a strict ethics policy that applies to all staff. The policy can be found on our website at www.argusmedia.com. Included in this policy are restrictions against staff trading in any energy commodity or energy related stocks, and guidelines for accepting gifts. Argus also has strict policies regarding central archiving of email and instant messenger communication, maintenance and archiving of notes, and archiving of spreadsheets and deal lists used in the price assessment process. Argus publishes prices that report and reflect prevailing levels for open-market arms length transactions (please see the [Argus Global Compliance Policy](#) for a detailed definition of arms length).

Consistency in the assessment process

Argus recognises the need to have judgement consistently applied by reporters covering separate markets, and by reporters replacing existing reporters in the assessment process. In order to ensure this consistency, Argus has developed a programme of training and oversight of reporters. This programme includes:

- A global price reporting manual describing among other things the guidelines for the exercise of judgement
- Cross-training of staff between markets to ensure proper holiday and sick leave backup. Editors that float between markets to monitor staff application of best practices
- Experienced editors overseeing reporting teams are involved in daily mentoring and assisting in the application of judgement for illiquid markets
- Editors are required to sign-off on all price assessments each day, thus ensuring the consistent application of judgement.

Review of methodology

The overriding objective of any methodology is to produce price assessments which are reliable and representative indicators of commodity market values and are free from distortion. As a result, Argus editors and reporters are regularly examining our methodologies and are in regular dialogue with the industry in order to ensure that the methodologies are representative of the market being assessed. This process is integral with reporting on a given market. In addition to this ongoing review of methodology, Argus conducts reviews of all of its methodologies and methodology documents on at least an annual basis.

Argus market report editors and management will periodically and as merited initiate reviews of market coverage based on a qualitative analysis that includes measurements of liquidity, visibility of market data, consistency of market data, quality of market data and industry usage of the assessments. Report editors will review:

- Appropriateness of the methodology of existing assessments
- Termination of existing assessments
- Initiation of new assessments.

The report editor will initiate an informal process to examine viability.

This process includes:

- Informal discussions with market participants
- Informal discussions with other stakeholders
- Internal review of market data

Should changes, terminations, or initiations be merited, the report editor will submit an internal proposal to management for review and approval. Should changes or terminations of existing assessments be approved, then formal procedures for external consultation are begun.

Changes to methodology

Formal proposals to change methodologies typically emerge out of the ongoing process of internal and external review of the methodologies. Formal procedures for external consultation regarding material changes to existing methodologies will be initiated with an announcement of the proposed change published in the relevant Argus report. This announcement will include:

- Details on the proposed change and the rationale
- Method for submitting comments with a deadline for submissions
- For prices used in derivatives, notice that all formal comments will be published after the given consultation period unless submitter requests confidentiality.

Argus will provide sufficient opportunity for stakeholders to analyse and comment on changes, but will not allow the time needed to follow these procedures to create a situation wherein unrepresentative or false prices are published, markets are disrupted, or market participants are put at unnecessary risk. Argus will engage with industry throughout this process in order to gain acceptance of proposed changes to methodology. Argus cannot however guarantee universal acceptance and will act for the good order of the market and ensure the continued integrity of its price assessments as an overriding objective.

Following the consultation period, Argus management will commence an internal review and decide on the methodology change. This will be followed by an announcement of the decision, which will be published in the relevant Argus report and include a date for implementation. For prices used in derivatives, publication of stakeholders' formal comments that are not subject to confidentiality and Argus' response to those comments will also take place.

Introduction

Russian refineries sell up to 20pc of produced fuel oil in the domestic market, while remaining volume gets exported. Most of the product is sold to power generation companies, utilities, industrial end-users and bunker traders. In winter months fuel oil domestic consumption increases twofold compared to summer period.

Russian fuel oil is transported to consumers and seaports by rail cars and river barges (May to November). The product is sold through arms-length deals at over-the-counter market or at electronic exchange platforms.

Methodology

Argus assesses fuel oil prices in Russia using a process of intelligent interpretation of market information, taking into account numerous trade signals, including comparative prices, during the course of a trading day with cut off at 17:30 Moscow time.

The market information on deals done, bids and offers levels are collected daily by personal contacts, telephone, electronic mail and messengers. A cross-section of buyers and sellers are consulted and the market information cross-referenced with active market participants. Argus will contact and accept market data from all credible market sources including front and back office of market participants and brokers. Argus will also take into account bids, offers and trades done on the Spimex exchange.

A consensus value of bid and offer levels is then determined and used to generate prices for fuel oil.

Spot assessments (fca refinery)

Argus produces a daily series of spot price assessments for Russian domestic fuel oil. Prices are assessed at Nizhny Novgorod and Volgograd refineries.

Grade: M-100 meeting Russian technical specifications. Trade for product deviating from the specifications may be considered for inclusion in the assessment, following normalisation based on discussion with the market

Currency/unit: roubles per tonne, including VAT

Payment: 100pc pre-payment

Basis: fca (free carriage at) refinery

Timing: up to 30 days ahead

Minimum cargo size: 180t

Spot indexes

Argus publishes fuel oil price indexes at Moscow, Ryazan, Yaroslavl, Saratov, Omsk, Achinsk, Angarsk, Ufa group and Samara group of refineries.

Price indexes are the minimum and maximum rounded up prices of trades done on the Spimex exchange in the course of the day.

If Spimex prices are not available for use in the index calculation, Argus will not publish an assessment for that particular grade and location.

Bunker fuel assessments (dob port)

Seaports

Argus produces a daily series of spot price assessments for Russian bunker fuels.

Marine gasoil prices are assessed on a dob (delivered on board) basis at the seaports of the Krasnodar region (Novorossiysk, Kavkaz, Taman and Tuapse), Murmansk, Arkhangelsk and Primorsky Krai (Vladivostok, Nakhodka, Vostochny, Kozmino, Slavyanka, Zarubino and Posyet), St. Petersburg and Ust Luga.

High-sulphur fuel oil prices are assessed on a dob basis at the seaports of the Krasnodar region (Novorossiysk, Kavkaz, Taman and Tuapse), Primorsky Krai (Vladivostok, Nakhodka, Vostochny, Kozmino, Slavyanka, Zarubino and Posyet), St. Petersburg and Ust-Luga.

ECA-compliant 0.1% sulphur hybrid marine fuel prices are assessed dob St Petersburg and Ust-Luga.

IMO 2020-compliant 0.5% sulphur fuel oil prices are assessed dob Krasnodar region (Novorossiysk, Kavkaz, Taman and Tuapse), St Petersburg, Ust-Luga, Murmansk, Arkhangelsk and Primorsky Krai (far east) (Vladivostok, Nakhodka, Vostochny, Kozmino, Slavyanka, Zarubino and Posyet).

Timing: prices are assessed over the course of a trading day with cut-off at 17:30 Moscow time, except for Primorsky Krai (far east) assessments, which have a 13.00 Moscow time cut-off.

Cargo size: minimum 50t for marine gasoil and ECA 0.1% marine fuel and minimum 200t for fuel oil

Delivery timing: 1-20 days ahead

Payment terms: for Arkhangelsk and Murmansk, the payment terms are up to 30 days after delivery. For all other ports, the payment terms are up to 15 days after delivery

Specification

Argus assesses HSFO 380 and MGO that meet the international standard of ISO 8217:2012 (E). There are so far no ISO standards for ECA-compliant 0.1% hybrid marine fuel or for IMO 2020-compliant fuel oil (see typical specifications table).

Currency

The Russian bunker fuel oil market is two-tier: the product is sold at rouble prices to operators of Russian-flagged vessels, while ships sailing under foreign flags buy fuel in US dollars.

The dollar and rouble-denominated markets for bunker fuel are separate. Argus publishes independently assessed prices for the dollar and rouble-denominated markets for some products in some ports.

Dollar-denominated prices:

dob Primorsky Krai

- 0.5%S fuel oil
- 3.5%S fuel oil 380cst
- 0.1%S MGO

dob Krasnodar region

- 0.5%S fuel oil
- 3.5%S fuel oil 380cst
- 0.5%S MGO

dob St. Petersburg

- 0.5%S fuel oil
- 3.5%S fuel oil 380cst
- 0.1%S marine fuel 80cst (ECA)
- 0.1%S MGO

dob Ust-Luga

- 0.5%S fuel oil
- 3.5%S fuel oil 380cst
- 0.1%S marine fuel 80cst (ECA)
- 0.1%S MGO

dob Murmansk

- 0.5%S fuel oil
- 0.1%S MGO

Russian fuel oil sulphur content		%
Refinery	Sulphur content	
Central district		
Moscow	2.5-3.0	
Ryazan	3.0	
Yaroslavl	3.0	
Volga district		
Nizhniy Novgorod	3.0	
Saratov	3.0	
Samara	3.0	
Ufa	3.0-3.5	
Southern district		
Volgograd	1.0-1.5	
Siberian district		
Omsk	1.1-1.2	
Achinsk	1.5	
Angarsk	1.5	

Quality standards for Russian bunker fuel					
Name	Units	HSFO 380	MGO (DMA)**	ECA 0.1% marine fuel	0.5%S fuel oil
Sulphur content (max)	%	3.5	0.1*	0.1	0.5
Flash point (min)	°C	60	60	60	60
Gravity at 15°C (max)	kg/m ³	991	890	975	
Viscosity (max)	cst	380 (50°C)	6 (40°C)‡	80 (50°C)‡	380 (50°C)
Summer flow temperature	°C	no higher than 30	no higher than 0		no higher than 30
Winter flow temperature	°C	no higher than 30	no higher than 6		no higher than 30
Cetane index			not less than 40		
Ash (max)	% m/m				0.1
Vanadium (max)	ppm				350
Aluminium plus silicon (max)	ppm				60
Water (max)	% V/V				0.5

*0.5% in ports of Russian far east †typical viscosity in the ports of St Petersburg and Ust-Luga is within the range of 6–25 at 50°C, ‡9 (40°C) in Russian far east ports, Rouble-denominated trade is non-excisable

dob Arkhangelsk

- 0.5%S fuel oil
- 0.1%S MGO

Rouble-denominated prices:
dob Primorsky Krai

- 0.5%S fuel oil
- 3.5%S fuel oil 380cst
- 0.5%S MGO
- diesel

dob Krasnodar region

- 0.5%S fuel oil
- diesel

dob St. Petersburg

- 0.5%S fuel oil
- 0.1%S marine fuel 80cst (ECA)
- 0.1%S MGO
- diesel

dob Ust-Luga

- 0.5%S fuel oil
- 0.1%S marine fuel 80cst (ECA)
- 0.1%S MGO
- diesel

dob Murmansk

- 0.5%S fuel oil
- 0.1%S MGO
- summer diesel
- winter diesel

dob Arkhangelsk

- 0.5%S fuel oil
- 0.1%S MGO
- summer diesel
- winter diesel

Rouble-denominated prices include VAT. Rouble-denominated MGO prices include excise duty and VAT.

River ports

Argus publishes spot price assessments for MGO, 0.5%S fuel oil and diesel at Volga-Don river ports with varying specifications

Samara

- gasoil bunker 0.1%S, excisable
- diesel

Kazan

- diesel

Rostov/Azov

- 0.5%S fuel oil
- gasoil bunker 0.1%S, excisable
- diesel

Volgograd

- gasoil bunker 0.1%S, excisable
- diesel

Yaroslavl

- gasoil bunker 0.1% sulphur, excisable
- diesel

The assessments are rouble-denominated and are published on a dob (delivered on board) ports basis on Thursdays, or the following day if Thursday is a public holiday. The minimum cargo size is 3t, the delivery timing is 1-20 days ahead and the payment terms are up to 15 days after delivery.

Bunker fuel price indexes (cpt port)

Argus calculates price indexes representing the value of fuel oil delivered to St Petersburg, Novorossiysk, Murmansk, Arkhangelsk and Vladivostok from major refineries, supplying these ports, by adding transportation tariffs to refinery gate prices (fca). The prices are published at cpt (carriage paid to) port in Roubles per metric tonne, including VAT.

Russian paving bitumen (fca/fot)

Argus publishes prices for paving grade bitumen delivered to the Russian domestic market by rail and truck.

If prices for bitumen from the same refinery differ based on the destination, the assessment is based on the price for supply to any region, without restrictions.

The Nizhny Novgorod bitumen assessment includes supplies to different regions of Russia. The low value is typically of material sold for delivery to Moscow and the Moscow region and the high value is typically of material sold for supply to any region of Russia, without restrictions.

Timing: 1-20 days forward

Assessment timing: published weekly, assessments are of the prevailing price in the market on Wednesday taking into account market information received before 5.30pm Moscow time

Currency/unit: roubles/tonne including VAT

Basis: prepaid rail cargoes of 60-400t and trucks of 10-30t, fca refinery

Quality: Russian standard GOST 22245-90 and GOST 33133-2014. Refineries produce various grades of bitumen.

Polymer modified bitumen (PMB)

Argus publishes posted prices for polymer modified bitumen. Prices are published weekly on Wednesdays on an fot refinery basis including VAT, taking into account market information received before 5.30pm Moscow time. In the absence of new posted prices, the last known value is republished. Argus does not publishes PMB prices in winter, when most road construction and PMB production stops.

PMB Grades		
Supplier	Location	Grade
RZMB	Ryazan	PMB-60
MPK KRZ	Ryazan	PMB-60
Tekhprogress	Tula	PMB-60
Moscow refinery	Moscow	PMB-60
Lukoil	Nizhniy Novgorod	PMB-60
Sila Sibiry	Nizhny Novgorod	PMB-60
PHT	Noginsk	PMB-60
Omsk refinery	Omsk	PMB-60
Omsk refinery	Omsk	PMB-90
Butumix	Noginsk	PMB-60
Vesna 88	Saratov	PMB-60
Bitumoil	Sibay	PMB-60
TD Module	Achinsk	PMB-60
Samarskaya STK	Samara	PMB-60
Avtoban	Moscow	PMB-60
Armbitum	Armavir	PMB-60
Help-Oil	Kirishy	PMB-60
Salsk terminal	Salsk	PMB-60
ABZ-1	St. Petersburg	PMB-60
Nova-Brit	Vyazma	PMB-60
Bitumniye Tekhnologiy	Moscow region	PMB-60

Delivered bitumen and polymer modified bitumen

Argus publishes calculated delivered prices for bitumen and polymer modified bitumen by adding the cost of rail or road transportation to the published fca/fot assessments.

Delivered prices are published on a cpt basis in roubles per tonne (RUB/t), including VAT.

Prices are calculated using the following formula:

$$I = K + T,$$

where:

I = index of delivered prices in the region (on a cpt basis)

K = spot price assessment for bitumen on fca/fot plant basis

T = cost of transportation

When calculating the cost of Nizhny Novgorod bitumen for shipments to Moscow and the Leningrad region, the low end of the underlying published assessment is used. For all other locations, the midpoint of the underlying assessment is used.

Road transportation

When calculating the cost of road transportation, the current rates of oil product shippers estimated by market participants are used.

Rail transportation

In calculating the cost of rail transportation, the latest lease rates for rail tank cars published in the Argus Neftetransport report are used. The railcar lease rates are calculated for specific destinations on the basis of daily railcar lease rates in Russia determined by polling the major freight railcar operators and their customers. The daily lease rate for tank cars in Russia is determined monthly and published in the Argus Neftetransport report. See the [Argus Neftetransport methodology](#). The following basic parameters are used to calculate expenses: Speed of the loaded voyage and empty return of the tank car in Russia: 330 km/day

Total downtime during the loading and unloading of tank cars: 6 days

Argus uses the Rail-Tariff software provided by STM to calculate rail tariffs.

When calculating tariffs, the following assumptions are made:

Railcar axles: 4

Loading capacity: 60t

Average actual load: 57t

All tariffs are calculated including VAT (group carload).

Indexes are calculated weekly on Fridays until 5.30pm Moscow time. If there is no price assessment for bitumen/polymer-bitumen binders at the refinery, Argus will not publish delivered prices.

Locations

Prices are calculated for

- Republic of Bashkortostan
- Chuvash Republic
- Udmurt Republic
- Leningrad region
- Rostov region
- Kirov region
- Kemerovo region
- Kostroma region
- Amur region
- Stavropol krai
- Primorsky krai
- Voronezh
- Lipetsk
- Kursk
- Tambov
- Moscow

International market price assessments

Argus Heavy Oil Products and Marine Fuels includes international fuel oil and marine fuels prices drawn from other Argus publications. Methodologies for these publications are available at <http://www.argusmedia.com/Methodology-and-Reference>.

Fuel oil 3.5% NWE cif

Fuel oil 3.5% W Med cif

See the [Argus European Products methodology](#)

Fuel oil No 6 3% NYH

See the [Argus US Products methodology](#)

Fuel oil HS 180 cst cargo Singapore

Fuel oil HS 380 cst cargo Singapore

See the [Argus Asia-Pacific Products methodology](#)

Fuel oil bunker 0.5%S 380cst Piraeus

Fuel oil bunker HS 380 cst Piraeus

Gasoil bunker Piraeus

Fuel oil bunker 0.5%S 380cst Istanbul

Fuel oil bunker 380 cst Istanbul

Gasoil bunker Istanbul

Fuel oil bunker 0.5%S 380cst ARA
 Fuel oil bunker 380 cst Rotterdam
 Gasoil bunker ARA
 Fuel oil bunker 380 cst Los Angeles
 Gasoil bunker Los Angeles
 Fuel oil bunker 380 cst Singapore
 Fuel oil bunker 0.5%S 380cst Singapore
 Marine diesel Singapore
 Fuel oil bunker 0.5%S 380cst Zhoushan
 Fuel oil bunker 0.5%S 380cst South Korea
 Marine diesel South Korea
 Fuel oil bunker 380 cst South Korea
 See the [Argus Marine Fuels methodology](#)

Typical Russian bitumen grades	
Supply basis	Grade
Moscow	BND 70/100
Ryazan	BND 70/100
Yaroslavl	BND 70/100, 100/130
Kirishi	BND 70/100
Nizhny Novgorod	BND 50/70, 70/100, 100/130
Saratov	BND 60/90
Samara	BND 70/100, 100/130
Orsk	BND 60/90, 70/100
Nizhnekamsk	BND 50/70, 70/100
Salavat	BND 60/90, 70/100, 100/130
Ufa	BND 90/130, 70/100
Volgograd	BND 50/70, 70/100
Omsk	BND 70/100, 100/130
Achinsk	BND 100/130
Angarsk	BND 100/130
Salsk	BND 50/70, 60/90, 70/100
Novosibirsk	BND 70/100, 100/130
Novoshakhtinsk	BND 50/70, 60/90, 70/100

Russian bitumen quality (GOST 22245-90)		
Grade	BND 90/130	BND 60/90
Penetration, 0.1 mm		
at 25°C	91-130	61-90
at 0°C, no less than	28	20
Softening point, °C	43	47
Ductility, sm		
at 25°C	65	55
at 0°C	4.0	3.5
Penetration index	-1.0 to +1.0	
Brittle point, °C	-17	-15

Russian bitumen quality (GOST 33133-2014)						
Grade	130/200	100/130	70/100	50/70	35/50	20/35
Penetration, 0.1 mm						
at 25°C	131-200	101-130	71-100	51-70	36-50	20-35
Softening point, °C	42	45	47	51	53	55
Ductility, sm						
at 25°C	80	70	62	60	50	40
at 0°C	6	4	3.7	3.5		
Brittle point, °C	-21	-20	-18	-16	-14	-11
Penetration index	-1.0 to +1.0					

PBB quality (GOST 52056-2003)		
Grade	PBB-90	PBB-60
Penetration, 0.1 mm		
at 25°C	90	60
at 0°C, no less than	40	32
Softening point, °C	51	54
Ductility, sm		
at 25°C	30	25
at 0°C	15	11
Brittle point, °C	-25	-20
Flash point, °C	220	230
After warming-up softening point temperature variation, max	6	5
Penetration index	-1.0 to +1.0	
Elasticity, %		
at 25°C	85	80
at 0°C	75	70
Coupling with marble or sand	corresponding sample no. 2	
Smoothness	smooth	

The Russian-language version of this methodology is available at <http://www.argusmedia.com/Methodology-and-Reference> and <http://www.argus.ru/Methodology-and-Reference>.