Platts
S&P Global
Commodity Insights

Specifications Guide
Global Biofuels

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Definitions of the trading locations for which Platts publishes indexes or assessments

All the assessments listed here employ S&P Global Commodity Insights' Platts Assessments Methodology, as published at https://www.spglobal.com/commodityinsights/plattscontent/_assets/_files/en/our-methodology/methodology-specifications/platts-assessments-methodology-guide.pdf.

These guides are designed to give Platts subscribers as much information as possible about a wide range of methodology and specification questions.

This guide is current at the time of publication. Platts may issue further updates and enhancements to this guide and will announce these to subscribers through its usual publications of record. Such updates will be included in the next version of this guide. Platts editorial staff and managers are available to provide guidance when assessment issues require clarification.

The following global biofuels guide contains the primary specifications and methodologies for Platts biofuels assessments throughout the world. The various components of this guide are designed to give Platts subscribers as much information as possible about a wide range of methodology and specification issues.

Asia

Assessment	Currency	Code	Mavg	Wavg	Contract Type	Contract Basis	Location	Delivery Period	Min Size	Max Size	UOM
Bioethanol (Fuel Grade)											
Bioethanol CIF Philippines	$/ cu m	AAWAA00	AAWAA03	AAWAA04	Spot	CIF	Subic Bay	30-75 days forward	3,000	5,000	cubic meter
Bioethanol CIF Philippines H3	$/ cu m	AAWAB00	AAWAB03	AAWAB04	Spot	CIF	Subic Bay	30-45 days forward	3,000	5,000	cubic meter
Bioethanol CIF Philippines H4	$/ cu m	AAWAC00	AAWAC03	AAWAC04	Spot	CIF	Subic Bay	45-60 days forward	3,000	5,000	cubic meter
Bioethanol CIF Philippines H5	$/ cu m	AAWAE00	AAWAE03	AAWAE04	Spot	CIF	Subic Bay	60-75 days forward	3,000	5,000	cubic meter
Ethanol (Industrial)											
Ethanol Grade B CFR Ulsan	$/ cu m	AAXVA00	AAXVA03	AAXVA04	Spot	CFR	Ulsan	60-90 days forward	5,000		cubic meter
Biodiesel											
Biodiesel FOB Southeast Asia	$/mt	AAVSV00	AAVSV03	AAVSV04	Spot	FOB	Pasir Gudang, Port Klang, Lahad Datu	15-30 days forward	2,000	10,000	metric ton
UCO North Asia	$/mt	AUCOC00	AUCOC03	AUCOC04	Spot	FOB	Tianjin	20-40 days forward	2,500	5,000	metric ton
UCO FOB Straits	$/mt	UCFCC00	UCFCC03	UCFCC04	Spot	FOB	Pasir Gudang, Singapore, Port Klang	20-40 days forward	2,500	5,000	metric ton
UCOME FOB China	$/mt	UCFCA00	UCFCA03	UCFCB04	Spot	FOB	North China region	20-40 days forward	2,500	10,000	metric ton
UCOME FOB Straits	$/mt	UCFCB00	UCFCB03	UCFCA04	Spot	FOB	Pasir Gudang, Singapore, Port Klang	20-40 days forward	2,500	10,000	metric ton
Bio-Bunkers B24 Singapore	$/mt	ABUNA00	ABUNA03	ABUNA04	Calculation	FOB	Singapore				metric ton
Feedstocks											
UCO North Asia	$/mt	AUCOC00	AUCOC03	AUCOC04	Spot	FOB	Tianjin	20-40 days forward	2,500	5,000	metric ton
UCO FOB Straits	$/mt	UCFCC00	UCFCC03	UCFCC04	Spot	FOB	Pasir Gudang, Singapore, Port Klang	20-40 days forward	2,500	5,000	metric ton
POME FOB Indonesia	$/mt	APOMA00	APOMA03	APOMA04	Spot	FOB	Dumai, Belawan	30-60 days forward	2,000	5,000	metric ton
POME FOB Malaysia	$/mt	APOMB00	APOMB03	APOMB04	Spot	FOB	Pasir Gudang, Port Klang	30-60 days forward	2,000	5,000	metric ton

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Asia

Assessment	Currency	Code	Mavg	Wavg	Contract Type	Contract Basis	Location	Delivery Period	Min Size	Max Size	UOM
Renewable Distillates											
RD Cost of Production (PFAD) Southeast Asia	$/mt	HVMAB00	HVMAB03		Production cost	FOB	Singapore				metric ton
RD Cost of Production (PFAD) Southeast Asia	$/bbl	HVMAA00	HVMAA03		Production cost	FOB	Singapore				barrel
RD Cost of Production (UCO) North Asia	$/mt	HVMAC00	HVMAC03		Production cost	FOB	China				metric ton
RD Cost of Production (UCO) North Asia	$/bbl	HVMAD00	HVMAD03		Production cost	FOB	China				barrel
SAF (PFAD) Southeast Asia	$/mt	ASMAA00	ASMAA03		Production cost	FOB	Singapore				metric ton
SAF (PFAD) Southeast Asia	$/bbl	ASMAB00	ASMAB03		Production cost	FOB	Singapore				barrel
SAF (UCO) North Asia	$/mt	ASMAC00	ASMAC03		Production cost	FOB	China				metric ton
SAF (UCO) North Asia	$/bbl	ASMAD00	ASMAD03		Production cost	FOB	China				barrel

Asia

Bioethanol CIF Philippines

Platts Asia fuel grade bioethanol assessments are daily assessments basis CIF Philippines based on latest information sourced from the market up to the close of the assessment window at 16:30 Singapore time.

Timing: Platts assesses three half-monthly cycles on arrival basis. The daily CIF Philippines marker (AAWAA00) averages the three cycles. The three cycles that Platts publishes are as follows:

1) 30-45 days forward

2) 45-60 days forward

3) 60-75 days forward

These assessments are rolled over on the 1st and 16th of each month. For example, on April 1, Platts assesses:

1) Second-half May

2) First-half June

3) Second-half June

These assessments would be rolled over on April 16. They would then read as:

1) First-half June

2) Second-half June

3) First-half July

Basis and locations: CIF Philippines reflect prices basis CIF Subic Bay. Pricing information for other Philippines ports may be taken into account but would be normalized back to the basis location.

Volume: Cargo size of 3,000 – 5,000 cu m, normalized to 3,000 cu m. Other volumes may be taken into consideration but will be normalized back to 3,000 cu m.

Unit: Assessments are published in $/cu m.

Terms and conditions: CIF Philippines are assessed on Letter of Credit at sight up to 30 days. For deals with usance of greater than 30 days, the value of the extra credit allowance will be normalized.

Quality and Product Purity specifications: Assessments reflect undenatured anhydrous bioethanol and conform to the Philippines National Standard (PNS/DOE QS 007:2005) specifications under the current definitions 3.1 and 3.2 of the standard for use as a blending component in unleaded gasoline.

These specifications include:

Ethanol content/purity: 99.3% min (by volume)

Density at 20 degrees Celsius: 0.7915 kg/liter max

Water content: 0.5% max (by mass)

Methanol: 0.5% max (by mass)

Total acids (as acetic acid): 0.007% max (by mass)

The CIF Philippines assessments reflect product at a temperature of 20 degree Celsius.

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Ethanol Grade B CFR Ulsan

Platts Ethanol Grade B CFR Ulsan is a daily physical spot price assessment based on latest information sourced from the market up to the close of the assessment window at 16:30 Singapore time. In the absence of representative CFR Ulsan price information, Platts may also refer to FOB prices from relevant supply origins using prevailing vessel sizes and spot freight rates.

Timing: Ethanol Grade B CFR Ulsan reflects spot cargoes arriving in Ulsan 60-90 days forward from the day of publication.

Basis and locations: CFR Ulsan, South Korea.

Unit of measurement: $/cu m

Volume: Typical cargo sizes normalized to 5,000 cu m.

Terms and conditions: Industry standard payment terms.

Quality specifications: The assessment will reflect typical Grade B ethanol specifications, from non-GM sugarcane, normalized to standard Ethanol Grade B at 20 degrees Celsius with a maximum of 40 mg/100 ml of higher alcohols.

Biodiesel FOB Southeast Asia

Platts FOB Southeast Asia daily assessment is based on the latest information sourced from the market up to the close of the assessment window at 18:00 Singapore time.

Quality: The assessment reflects palm methyl ester product that conforms to EN 14214 specifications, with a maximum CFPP of plus 13 degrees Celsius, a maximum water content of 350 ppm, and monoglycerides value at 0.5% or lower. The PME assessed adheres to the ISCC certification scheme, in compliance with the EU's Renewable Energy Directive or RED requirements. The assessment reflects PME with Green House Gas (GHG) savings of 48% - 60%. Bids, offers or trade indications for PME with higher or lower GHG savings than this may be normalized.

Unit: Biodiesel assessments are published in $/mt.

Timing: Assessment reflects cargoes loading one calendar month forward. The assessment laycan will roll to the next calendar month on the first publication day after the 14th of each month. For example, from September 15-October 14, the assessment will reflect parcels loading in November. The assessment will roll to December cargoes from October 15.

Basis and location: Assessment includes all biodiesel exported on a spot basis from Malaysia at the loading ports of Pasir Gudang, Port Klang and Lahad Datu.

Cargo size: 2,000 mt -10,000 mt. Larger cargo sizes may be taken into consideration but will be normalized back to reference volume range.

Biodiesel Feedstock: Used Cooking Oil (UCO) FOB North Asia

Platts UCO FOB North Asia assessment is based on the latest information sourced from the market up to the close of the assessment window at 16:30 Singapore time

Basis and Locations: FOB North Asia prices are assessed daily reflecting North China basis port FOB Tianjin

Unit: Assessment is published in $/mt

Timing: The assessment reflects loading 20-40 days forward from the date of publication.

Volume: 2,500 mt to 10,000 mt, normalized to 2,500 mt

Product Purity Specification: UCO assessments reflect material with a maximum of 7% FFA, a maximum of 2% MIU, maximum 50ppm sulfur and a minimum of 80gr iodine per 100gr of used cooking oil and wax content of maximum 300 ppm. The cargoes reflect ISCC-certified and RED-compliant material.

Biodiesel Feedstock: Used Cooking Oil (UCO) FOB Straits

Platts UCO FOB Straits assessment is based on the latest information sourced from the market up to the close of the assessment window at 16:30 Singapore time

Basis and Locations: Prices are assessed daily on an FOB Straits basis, with Straits being defined as Pasir Gudang and Singapore terminals. Loadings from Port Klang may also be reflected in the assessment but may be normalized for assessment purposes.

Unit: Assessment is published in $/mt

Timing: The assessment reflects loading 20-40 days forward from the date of publication. The minimum loading rate will be 150 mt/hour for breakbulk cargoes.

Volume: 2,500 mt to 5,000 mt, normalized to 2,500 mt.

Product Purity Specification: UCO assessments reflect material with a maximum of 5% FFA , a maximum of 2% MIU, maximum 40ppm sulfur and a minimum of 50gr iodine per 100gr of used cooking oil and maximum wax content of 300 ppm. The cargoes reflect ISCC-certified and RED-compliant material.

In addition, the assessment reflects product that holds proof of sustainability obtained in the framework of voluntary schemes approved by the EU Commission (Nabisy, UK and Dutch-double counting).Proof of Sustainability, Annex VII and Right to Audit needs to be provided by the seller. Payment terms are defined standard payment terms.

Used Cooking Oil Methyl Ester (UCOME) FOB North China

Platts UCOME FOB North China assessment is based on the latest information sourced from the market up to the close of the assessment window at 16:30 Singapore time

Basis and Locations: FOB North China prices are assessed daily reflecting a basis port FOB Tianjin

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Unit: Assessment is published in $/mt

Timing: The assessment reflects loading 20-40 days forward from the date of publication.

Volume: 2,500 mt to 10,000 mt, normalized to 2,500mt

Product Purity Specification: product meeting the EN14214 specification excluding oxidation stability, and allows for sulfur content of maximum 15 ppm, a maximum CFPP of 5 degrees Celsius , a maximum Monoglyceride Content of 0.3%, with minimum GHG savings of 87%.

The assessment would also reflect material that adheres to the ISCC certification scheme, in compliance with the EUs Renewable Energy Directive or RED requirements. It will also reflect German mandate (Nabisy) compliant material eligible for UK and Dutch double-counting. All material needs to be traceable and have right to audit provided by the seller.

Used Cooking Oil Methyl Ester (UCOME) FOB Straits

Platts UCOME FOB Straits assessment is based on the latest information sourced from the market up to the close of the assessment window at 16:30 Singapore time

Basis and Locations: Prices are assessed daily on an FOB Straits basis, including Pasir Gudang and Singapore terminals. Loadings from Port Klang may also be reflected in the assessment but may be normalized for assessment purposes.

Unit: Assessment is published in $/mt

Timing: The assessment reflects loading 20-40 days forward from the date of publication.

Volume: 2,500 mt to 10,000 mt, normalized to 2,500mt

Product Purity Specification: product meeting the EN14214 specification excluding oxidation stability, sulfur content maximum of 10 ppm, a maximum CFPP of 13 degrees Celsius, with minimum GHG savings of 84% and maximum water content of 350 ppm.

The assessment also reflects material that adheres to the ISCC certification scheme, in compliance with the EUs Renewable Energy Directive or RED requirements. It also reflects German mandate (Nabisy) compliant material eligible for UK and Dutch double-counting. All material needs to be traceable and have right to audit provided by the seller.

Platts Bio-Bunkers B24 Singapore

The blended B24 bio-bunkers price is a cost-based assessment published on an FOB Singapore basis comprising Platts assessments and other fixed costs.

It reflects a ratio of 76% fuel oil based on Platts benchmark Marine Fuel 0.5% Bunker Dlvd Spore $/mt assessment (MFSPD00) and 24% delivered Used Cooking Oil Methyl Esther (UCOME) based on the Platts UCOME FOB Straits $/mt assessment (UCFCB00), and additional logistical costs.

The 24% delivered UCOME component of the calculated assessment is based on the Platts UCOME FOB Straits $/mt assessment (UCFCB00) and the Clean Singapore-Singapore 30kt MR Lumpsum (PFAEE00) is used as a proxy to derive the coastal freight to ship UCOME to Singapore terminals. Other costs factored in include the cost of blending and storing biodiesel in Singapore On-Shore Tanks (ABUNB00) and the B24 Bio-Bunkers Barging Cost (BBCAA00).

The assessment reflects B24 bio-bunkers stem size ranging between 500 mt to 1,000 mt.

The 24% blend of renewable fuels in bio-bunkers is in compliance with the advised blend rate set by the Maritime & Port Authority of Singapore.

Renewable Diesel (RD) Southeast Asia, Cost of Production

RD, also known as hydrotreated vegetable oil i.e HVO, is an FOB Singapore price based on cost calculations from our Platts Analytics team. The cost-based assessment for RD is published on an FOB Singapore basis and is comprised of a number of existing Platts assessments and other fixed costs.

The Renewable Diesel inputs are FOB China Used Cooking Oil [AUCOC00] and Japan Hydrogen SMR [IGYGC00], added to fixed renewable diesel refinery costs, then deducting the by-product credits to include Propane Refrigerated CFR South China [AABAK00] and Naphtha C+F Korea Cargo [PAADE00].

Renewable Diesel (RD) North Asia, Cost of Production

The FOB North Asia RD or HVO price is a cost-based assessment. The assessment is published on an FOB China basis and is comprised of a number of existing Platts assessments and other fixed costs.

The Renewable Diesel inputs are FOB China Used Cooking Oil [AUCOC00] and Japan Hydrogen SMR [IGYGC00], added to fixed renewable diesel refinery costs, then deducting the by-product credits to include Propane Refrigerated CFR South China [AABAK00] and Naphtha C+F Korea Cargo [PAADE00].

Sustainable Aviation Fuel (SAF) Southeast Asia

SAF, also known as biojet, is an FOB Singapore price based on cost calculations from our Platts Analytics team. The cost-based assessment for SAF is published on an FOB Singapore basis, and is comprised of a number of existing Platts assessments and other fixed costs

The SAF inputs are Palm Fatty Acid Distillates [APFAD00] and Japan Hydrogen SMR [IGYGC00] normalized to FOB Singapore using relevant freight, added to fixed renewable biojet refinery costs, then deducting the by-product credits to include Propane Refrigerated CFR North Asia [AAWVD00] normalized to FOB Singapore using relevant freight, Naphtha FOB Singapore Cargo [PAABP00] and Gasoil 0.001% S (10 ppm) FOB Spore Cargo [AAOVC00].

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Sustainable Aviation Fuel (SAF) North Asia

The FOB North Asia price SAF, or biojet, is a cost-based assessment. The assessment is published on an FOB China basis, and is comprised of a number of existing Platts assessments and other fixed costs.

The SAF inputs are FOB China Used Cooking Oil [AUCOC00] and Japan Hydrogen SMR [IGYGC00], added to fixed renewable diesel refinery costs, then deducting the by-product credits to include Propane Refrigerated CFR South China [AABAK00], Naphtha C+F Korea Cargo [PAADE00] and Gasoil LP C+F South China Cargo [POAFA00].

Palm Oil Mill Effluent (POME) FOB Indonesia

Basis and Location: FOB Indonesia, loading out of Dumai and Belawan

Quality: Free fatty acids minimum 50%, maximum 3% moisture content and total fatty matter of minimum 95%. It must also adhere to the ISCC certification scheme, in compliance with the EU's Renewable Energy Directive, or RED requirements.

Unit: $/mt, assessment reflects a 6pm Singapore market close

Timing: The assessment reflects parcels loading over a two-month period starting one month forward. The assessment laycan will roll over to the next two calendar months on the first publication day after the 15th.

Volume: Reflects a bulk volume of 2,000-5,000 mt. Other volumes and specifications may be considered but would be normalized back to the reference.

Palm Oil Mill Effluent (POME) FOB Malaysia

Basis and Location: FOB Malaysia, loading out of Port Klang and Pasir Gudang

Quality: Free fatty acids minimum 50%, maximum 3% moisture content and total fatty matter of minimum 95%. It must also adhere to the ISCC certification scheme, in compliance with the EU's Renewable Energy Directive, or RED requirements.

Unit: $/mt, assessment reflects a 6pm Singapore market close

Timing: The assessment reflects parcels loading over a two-month period starting one month forward. The assessment laycan will roll over to the next two calendar months on the first publication day after the 15th.

Volume: Reflects a bulk volume of 2,000-5,000 mt. Other volumes and specifications may be considered but would be normalized back to the reference.

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Europe

Assessment	Currency	Code	Mavg	Wavg	Contract Type	Contract Basis	Location	Delivery Period	Min Size	Max Size	UOM
Ethanol (Fuel Grade)											
Ethanol T2 FOB Rotterdam	€/cu m	AAYDT00	AAYDT03	AASLT00	Spot	FOB	Rotterdam	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	2,000	cubic meter
Ethanol T2 FOB Rotterdam	$/cu m	AAYDT10	AAYDT13	AAYDT14	Spot	FOB	Rotterdam	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	2,000	cubic meter
Ethanol T1 FOB Rotterdam	$/cu m	AAWUQ00	AAWUQ03	AAWUQ04	Spot	FOB	Rotterdam	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	2,000	cubic meter
Ethanol T2 FOB Rotterdam Premium	€/cu m	AASNS00	AASNS03	AASNS04	Spot	FOB	Rotterdam	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	2,000	cubic meter
Ethanol T1 CIF NWE Cargo	$/cu m	AAYDS00	AAYDS03	AASLS00	Spot	CIF	Rotterdam	10-25 days forward (Monday-Friday)	3,000		cubic meter
Ethanol futures											
T2 Ethanol Futures Assessment M1	€/cu m	AAXCL00	AAXCL03	AAXCL04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M2	€/cu m	AAXCM00	AAXCM03	AAXCM04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M3	€/cu m	AAXCN00	AAXCN03	AAXCN04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M4	€/cu m	AAXCO00	AAXCO03	AAXCO04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M5	€/cu m	AAXCP00	AAXCP03	AAXCP04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M6	€/cu m	AAXCQ00	AAXCQ03	AAXCQ04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M7	€/cu m	AAXCR00	AAXCR03	AAXCR04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M8	€/cu m	AAXCS00	AAXCS03	AAXCS04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M9	€/cu m	AAXCW00	AAXCW03	AAXCW04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M10	€/cu m	AAZZA00	AAZZA03	AAZZA04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M11	€/cu m	AAZZB00	AAZZB03	AAZZB04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
T2 Ethanol Futures Assessment M12	€/cu m	AAZZC00	AAZZC03	AAZZC04	Future	Ethanol T2 FOB Rotterdam (AAYDT00)			1,000		cubic meter
Biomass- Based Diesel (BBD)											
FAME -10 FOB ARA RED	$/mt	AAWGH00	AAWGH03	AAWGH04	Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
FAME 0 FOB ARA RED	$/mt	AAWGI00	AAWGI03	AAWGI04	Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
SME FOB ARA RED	$/mt	AAWGJ00	AAWGJ03	AAWGJ04	Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
RME FOB ARA RED	$/mt	AAWGK00	AAWGK03	AAWGK04	Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
PME FOB ARA RED	$/mt	AAXNZ00			Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
UCOME FOB ARA RED	€/mt	AUMEB00	AUMEB03	AUMEB04	Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
UCO FOB ARA	$/mt	AUCOA00	AUCOA03	AUCOA04	Spot	FOB	ARA	15-30 days forward of assessment	1,000	2,000	metric ton
Bio-Bunkers B30 Rotterdam FAME 0	$/mt	ABKRB00	ABUNA03	ABUNA04	Calculation	Delivered	Rotterdam				metric ton
Bio-Bunkers B30 Rotterdam UCOME	$/mt	ABKRA00	ABUNA03	ABUNA04	Calculation	Delivered	Rotterdam				metric ton
RD-A FOB ARA	$/mt	ANEWA00	ANEWA03		Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
RD-B FOB ARA	$/mt	ANEWB00	ANEWB03		Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
Renewable Diesel (UCO) Cost of Production	$/mt	HVNWD00	HVNWD03		Production cost	ex-refinery	NWE		1,000	3,000	metric ton
Biomass- Based Diesel (BBD) Premiums											
RED FAME 0 FOB ARA	$/mt	AAXNT00			Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
RED RME FOB ARA	$/mt	AAXNU00			Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton

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Europe

Assessment	Currency	Code	Mavg	Wavg	Contract Type	Contract Basis	Location	Delivery Period	Min Size	Max Size	UOM
RED SME FOB ARA	$/mt	AAXNX00			Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
RED PME FOB ARA	$/mt	AAXNY00			Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
UCOME FOB ARA RED	$/mt	AUMEA00			Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
RD-A FOB ARA Premium	$/mt	ANEWC00	ANEWC03		Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
RD-B FOB ARA Premium	$/mt	ANEWD00	ANEWF03		Spot	FOB	ARA	3-15 days forward (Monday-Tuesday) 5-15 days forward (Wednesday-Friday)	1,000	3,000	metric ton
European biofuel tickets											
Netherlands HBE-Advanced (HBE-A) (Current Year)	Eur/GJ	ANLDA00	ANLDA03		Spot				50,000		GigaJoules
Netherlands HBE-Advanced (HBE-A) (Previous Year)	Eur/GJ	ANLDE00	ANLDE03		Spot				50,000		GigaJoules
Netherlands HBE-Conventional (HBE-C) (Current Year)	Eur/GJ	ANLDC00	ANLDC03		Spot				50,000		GigaJoules
Netherlands HBE-Conventional (HBE-C) (Previous Year)	Eur/GJ	ANLDG00	ANLDG03		Spot				50,000		GigaJoules
Netherlands HBE-Annex IX B (HBE-B) (Current Year)	Eur/GJ	ANLDB00	ANLDB03		Spot				50,000		GigaJoules
Netherlands HBE-Annex IX B (HBE-B) (Previous Year)	Eur/GJ	ANLDF00	ANLDF03		Spot				50,000		GigaJoules
Netherlands HBE-Other (HBE-O) (Current Year)	Eur/GJ	ANLDD00	ANLDD03		Spot				50,000		GigaJoules
Netherlands HBE-Other (HBE-O) (Previous Year)	Eur/GJ	ANLDH00	ANLDH03		Spot				50,000		GigaJoules
Netherlands HBE-Advanced (HBE-A) (2023)	Eur/GJ	ANLDJ00			Spot				50,000		GigaJoules
Netherlands HBE-Advanced (HBE-A) (2024)	Eur/GJ	ANLDN00			Spot				50,000		GigaJoules
Netherlands HBE-Conventional (HBE-C) (2023)	Eur/GJ	ANLDK00			Spot				50,000		GigaJoules
Netherlands HBE-Conventional (HBE-C) (2024)	Eur/GJ	ANLDO00			Spot				50,000		GigaJoules
Netherlands HBE-Annex IX B (HBE-B) (2023)	Eur/GJ	ANLDI00			Spot				50,000		GigaJoules
Netherlands HBE-Annex IX B (HBE-B) (2024)	Eur/GJ	ANLDM00			Spot				50,000		GigaJoules
Netherlands HBE-Other (HBE-O) (2023)	Eur/GJ	ANLDL00			Spot				50,000		GigaJoules
Netherlands HBE-Other (HBE-O) (2024)	Eur/GJ	ANLDP00			Spot				50,000		GigaJoules

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Europe

Assessment	Currency	Code	Mavg	Wavg	Contract Type	Contract Basis	Location	Delivery Period	Min Size	Max Size	UOM
Methyl Tertiary Butyl Ether (MTBE)											
Assessed by the Petchems team (and covered in their methodology)											
Ethyl Tertiary Butyl Ether (ETBE)											
Assessed by the Petchems team (and covered in their methodology)											
Sustainable Aviation Fuel											
Values											
Sustainable Aviation Fuel (SAF)	$/mt	BJNWD00	BJNWD03		Production cost	ex-refinery	NWE		1,000	3,000	metric ton
SAF CIF ARA	$/mt	AJNWD00	AJNWD03		Spot	CIF	NWE	10-25 days forward (Monday-Friday)	500	5,000	metric ton
SAF CIF ARA Premium	$/mt	AJNWF00	AJNWF03		Spot	CIF	NWE	10-25 days forward (Monday-Friday)	500	5,000	metric ton

Europe

T2 Ethanol FOB Rotterdam

Basis and Locations: Prices for T2 ethanol barges are assessed daily on a FOB ARA basis, with nomenclature of FOB Rotterdam. T2 product (duty paid for European-qualified material, not inclusive of Russian origin material) in Eur/cu m. Platts also publishes a $/cu m value for T2 product, using a 16:30 London time assessed value for the Eur/USD exchange rate.

Loading Options: Platts FOB ethanol assessments reflect Amsterdam-Rotterdam-Antwerp loading. The seller will not incur additional freight costs for loading from ARA loading points, compared to loading from Rotterdam, provided that costs do not exceed standard market rates. The seller will notify the buyer of the port of loading in a time-frame as per standard market practice. The seller must also be prepared to make the volume available through early loading to allow for timing differences between ports to prevent delays and consequent financial losses.

Sustainability Criteria: Platts ethanol assessments reflect fuel ethanol that holds proof of sustainability obtained in the framework of voluntary schemes approved by the EU Commission. Furthermore and upon buyer's request, the seller shall exercise reasonable efforts to provide all necessary documentation for validation of the product batch against Germany's biomass web application system Nabisy. The seller shall also exercise best efforts to provide proof of sustainability documentation within 30 days from barge loading, as per ISCC and Nabisy guidelines. The buyer holds a right to audit the sustainability documentation for the sole purpose of determining the validity and veracity of these documents.

Timing: Platts ethanol assessments for T2 FOB Rotterdam barges reflect loading 3-15 days forward (Monday-Tuesday) and 5-15 days forward (Wednesday-Friday) from the date of publication.

Volume: Assessments reflect standard, transactable size of 1,000-2,000 mt, normalized to 1,000 mt.

Product Purity Specification: Assessments reflect anhydrous, undenatured ethanol conforming to the latest edition of the European standard EN 15376 specifications for automotive fuels — ethanol as a blending component for gasoline. The ethanol must also conform to the Netherlands' customs TARIC code of CN 2207 1000, under the European Commission's latest definition of "Undenatured ethyl alcohol of an alcoholic strength by volume of 80% vol. or higher."

Carbon Intensity: Platts T2 ethanol assessments reflect product meeting a maximum carbon intensity (CI) of 33.52g of carbon dioxide equivalent (CO2e) per megajoule (MJ), This is equivalent to a minimum GHG saving of 60% based on a fossil fuel comparator of 83,8g CO2e/MJ under the European Commission's Renewable Energy Directive (RED) I framework, or GHG savings of 64.3% based on the RED II fossil fuel comparator of 94g CO2e/MJ.

Platts may also publish bids, offers and trades for ethanol meeting other levels of CI, normalized to the assessment CI specification.

Temperature: The European automotive fuel ethanol assessment reflects product at a temperature of 20 degrees Celsius with a reference conversion metric tons to cu m: 0.7887.

Note:
1) The Platts T2 ethanol assessments reflect a barge market, however parties involved in transactions may also opt to load on a vessel or do pump overs. Performance by ship-to-ship transfers can take place as long as mutually agreed. A buyer may opt to nominate a vessel instead of a typical barge, provided the physical dimensions of the performing vessel

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comply with the requirements of the designated port. Should a buyer opt to nominate a vessel and delay in loading occurs, the seller will face demurrage exposure limited to the transacted size, while the buyer will face demurrage costs consequential to his choice of vessel.

For example, if the sale was done for 2,000 mt and the buyer nominates a 12,500 mt vessel, the seller will incur demurrage cost for 2,000 mt, while the buyer will face the demurrage cost of the remaining 10,500 mt. In this instance leading to a consequential demurrage cost, the seller must show good endeavor and not willfully obstruct the timely loading process in order to disadvantage the buyer.

2) Platts European ethanol assessments reflect products that are lawfully sourced within the marketplace. Platts considers in its assessment process ethanol based on its chemical structure and is not currently distinguishing between feedstocks used in its manufacture.

3) Platts T2 ethanol assessments reflect product meeting a maximum carbon intensity (CI) of 33.52g of carbon dioxide equivalent (CO2e) per megajoule (MJ), this is equivalent to a minimum GHG saving of 60% based on a fossil fuel comparator of 83,8g CO2e/MJ under the European Commission's Renewable Energy Directive (RED) I framework. Platts biofuels methodology does not make provision for sellers who report deals via the Platts Market on Close assessment process (MOC) to provide a mixture of PoS documentation where individual PoS certificates are below 60% GHG savings for a minimum 60% GHG ethanol parcel, unless otherwise mutually agreed between the parties.

T2 Ethanol futures

T2 ethanol futures trade in lots of 100 cu m and settle on the arithmetic average of the mid-point of the high and low quotations for physical T2 undenatured ethanol assessments published by Platts during the determined contract month.

Platts T2 ethanol futures values are assessed for the next twelve calendar months from the date of publication and are denoted in Eur/cu m. The assessments roll forward on the first business day of each month and reflect the close of European markets time stamped at 16:30 London time, subject to the typical guidelines of the Platts Market On Close assessment process.

T2 Premium Ethanol FOB Rotterdam

The T2 Premium Ethanol assessment is published as a differential to the Ethanol T2 FOB Rotterdam assessment, in Eur/cu m. The assessment reflects the same assessment parameters as the Ethanol T2 FOB Rotterdam price, such as volume, location basis and laycan, with the following exception:

Carbon Intensity: The premium ethanol assessment reflects ethanol meeting a maximum CI of 12.57g CO2e/MJ. This is equivalent to a minimum GHG saving of 85% based on a fossil fuel comparator of 83.8g CO2e/MJ under the European Commission's Renewable Energy Directive (RED) I and 86.6% based on the RED II fossil fuel comparator of 94g CO2e/MJ.

T1 Ethanol Northwest Europe

Basis and Locations: Prices for T1 (European Union duties unpaid) ethanol barges and cargoes are assessed daily on an FOB Rotterdam and CIF NWE basis, respectively, in $/cu m.

Sustainability Criteria: Platts ethanol assessments reflect fuel ethanol that holds proof of sustainability obtained in the framework of voluntary schemes approved by the EU Commission.

Minimum greenhouse gas saving: Platts FOB Rotterdam T1 ethanol assessments reflect material with sustainability documentation showing a minimum greenhouse gas saving of 50% when compared to the fossil fuel comparator, as per the European Union's Fuel Quality Directive calculation. This operates in addition to the prevailing Renewable Energy Directive (RED) requirement, with the highest requirement for GHG savings taking precedence.

Timing: Platts ethanol assessments for T1 FOB Rotterdam barges reflect loading 3-15 days forward (Monday-Tuesday) and 5-15 days forward (Wednesday-Friday) from the date of publication. Platts European ethanol assessments for T1 CIF Northwest European T1 cargoes reflect delivery 10-25 days forward from date of publication.

Volume: Standard transactable size of 1,000-2,000 mt, normalized to 1,000 mt, the equivalent in cu m for FOB Rotterdam barges and a minimum of 3,000 mt or the equivalent in cu m for T1 CIF NWE cargoes.

Product Purity and Specification: Assessments are for anhydrous, undenatured ethanol conforming to the latest edition of the European standard EN 15376 specifications for automotive fuels — ethanol as a blending component for gasoline. The ethanol must also conform to the Netherlands' customs TARIC code of CN 2207 1000, under the European Commission's latest definition of "undenatured ethyl alcohol of an alcoholic strength by volume of 80% vol. or higher".

Temperature: The European automotive fuel ethanol assessment reflects product at a temperature of 20 degrees Celsius with a reference conversion mt to cu m: 0.7887.

T1 ethanol assessment method: The Platts T1 ethanol CIF NWE cargoes and T1 ethanol FOB Rotterdam barge assessments represent the lowest calculated net-forward value from a basket of daily established values, basis 16:30 London time, for FOB Santos anhydrous and FOB Chicago Argo Terminal ethanol, as provided by Platts' regional teams.

For the Platts European T1 CIF NWE assessment, a premium is applied to convert ASTM to EN spec in the case of the Chicago Argo Terminal value. Premiums are applied to convert ANP to EN spec and for Bonsucro Proof of Sustainability in the case of the FOB Santos anhydrous value. All premiums are based on market feedback. The net-forward calculation uses an assessment of freight rates based on freight reports and market feedback. The assessment uses a density value of 0.7887 g/cu m for converting metric tons into cu m.

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T1 FOB Rotterdam barges are assessed at a fixed premium of $12/cu m versus the T1 CIF NWE assessment, which represents logistics costs.

Platts European ethanol assessments reflect products that are lawfully sourced within the marketplace. Platts considers in its assessment process ethanol based on its chemical structure and is not currently distinguishing between feedstocks used in its manufacture.

Biodiesel FOB ARA

Basis and Locations: Prices are assessed daily on a FOB Amsterdam-Rotterdam-Antwerp basis. The assessments are for T2 product; duty paid for European-qualified material and free from origin restrictions.

Unit: Assessment is published in $/mt and Eur/Mt for UCOME

Sustainability Criteria: Platts biodiesel assessments reflect product that holds proof of sustainability obtained in the framework of voluntary schemes approved by the EU Commission. Proof of Sustainability documentation should be provided to the buyer within a maximum of 20 working days from the date of Bill of Lading. All biodiesel barge assessments reflect material of 100% virgin vegetable oil (VVO) origin except for UCOME. This applies to both physical material and sustainability certification delivered to the buyer. The RME FOB ARA premium and outright assessments reflect product that holds proof of sustainability showing material of 100% rapeseed oil origin. The PME FOB ARA premium and outright assessments reflect product that holds proof of sustainability showing material of 100% palm oil origin. The SME FOB ARA premium and outright assessment reflect product that holds proof of sustainability showing material of 100% soybean oil origin. The FAME 0 ARA premium and outright assessments reflect product that holds proof of sustainability showing material of origins other than palm oil. Platts will continue to publish bids, offers and trades for non-VVO product and the associated data points will be normalized to reflect 100% VVO as part of the assessment process. Platts RME, FAME 0, PME, SME and FAME-10 FOB ARA assessments reflect biodiesel meeting a maximum CI of 33.52g of carbon dioxide equivalent per megajoule (CO_2e/MJ). This is equivalent to a minimum GHG saving of 64.3% based on a fossil fuel comparator of 94g CO_2e/MJ outlined in the European Commission's Renewable Energy Directive (RED) II framework, or 60% based on the RED I fossil fuel comparator of 83.8g CO_2e/MJ. Platts UCOME FOB ARA assessments reflect material meeting a maximum CI of 10.89 CO_2e/MJ, equivalent to a minimum GHG saving of 88.4% under RED II, or 87% under RED I.

Platts will only consider bids, offers and transactions where, upon buyer's request, the seller shall exercise reasonable efforts to provide documentation describing:

1) the biodiesel feedstock type and percentage of each feedstock in case of blendstocks;

2) the country of origin of the feedstock;

3) a declaration of land use on which feedstock was grown on or after January 1, 2008.

4) The buyer holds a right to audit the sustainability documentation for the sole purpose of determining the validity and veracity of these documents.

Timing: The assessments reflect barges loading 3-15 days forward (Monday-Tuesday) and 5-15 days forward (Wednesday-Friday) from the date of publication. Implied or actual loading date is a factor when normalizing indications to reflect the S&P Global barge loading dates of 3-15 days forward (Monday-Tuesday) and 5-15 days forward (Wednesday-Friday) from the date of publication.

Volume: a standard size of 1,000-3,000 mt, normalized to 1,000 mt. The operational tolerance reflected for European biodiesel barge assessments is plus or minus 2%.

Product Purity Specification:

Platts assesses six grades of biodiesel - Fatty Acid Methyl Ester minus 10 (FAME -10), FAME 0, Soy Methyl Ester (SME), Rapeseed Methyl Ester (RME), Palm oil Methyl Ester (PME) and Used Cooking Oil Methyl Ester (UCOME).

- FAME -10 assessments reflect product that conforms to EN 14214 specifications with a maximum cold filter plugging point (CFPP) of minus 10 degrees Celsius and a maximum water content of 350 ppm.
- FAME 0 assessments reflect product that conforms to EN 14214 specifications with a maximum CFPP of 0 degrees Celsius and a maximum water content of 350 ppm.
- SME assessments reflect product that conforms to EN 14214 specifications with maximum Iodine of 135g/100g, minimum Cetane of 47, a maximum CFPP of minus 3 degrees Celsius and a maximum water content of 400 ppm.
- RME assessments reflect product that conforms to EN 14214 specifications with a maximum CFPP of minus 12 degrees Celsius and a maximum water content of 300 ppm.
- PME assessments reflect product that conforms to EN 14214 specifications with a maximum CFPP of plus 13 degrees Celsius and a maximum water content of 350 ppm.
- UCOME assessments reflect product meeting the EN14214 specification, with a maximum CFPP of 0 degrees Celsius, a maximum water content of 350 ppm with minimum GHG savings of 87%. The assessment would also reflect RED and German mandate compliant material eligible for UK and Dutch double-counting.

Biodiesel blended with any non-bio additives will not be included in the assessment, with the exception of the BHT anti-oxidant. The assessment excludes tax refunds or other rebates.

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Calculation for FAME -10 assessments: Platts assessed RED FAME -10 biodiesel using a fixed calculation based on FAME 0, RME, PME and SME assessments. Platts determines the RED FAME -10 assessment as the most competitive method of replacement, using the ratios of blendstocks in the following table, plus a $5/mt logistic cost. Should the assessment for RED RME be lower than the corresponding RED FAME -10 replacement calculation, logistical costs will be ignored.

Blendstock ratios:

1) 10% FAME 0 and 90% RME
2) 15% SME and 85% RME
3) 8% PME and 92% RME

The logistical costs reflect recirculation and retesting costs. In the event that price indications for FAME -10 are received, then Platts may also reflect those in the assessments.

Biodiesel premium assessments: The majority of spot physical and paper biodiesel trades in Europe are transacted as premiums over the ICE 10ppm low Sulfur Gasoil futures contract. Platts publishes the outright price of all biodiesel qualities and grades and the corresponding premiums for a select number. The premium for each assessment is determined by subtracting from the full outright price assessment the weighted average value of the front month(s) ICE low sulfur gasoil future(s) across the date range reflected in the price assessment.

The weighted average ICE low sulfur gasoil value for the biodiesel assessment laycan is calculated per the following:

Front-month ICE low sulfur gasoil future value x (number of days front-month contract not expired during assessment laycan / total number of days in assessment laycan) plus

Second-month ICE low sulfur gasoil future value x (number of days front-month contract is expired during assessment laycan / total number of days in assessment laycan)

Biodiesel Feedstock: Used Cooking Oil (UCO) FOB ARA

Basis and Locations: Prices are assessed daily on a FOB Amsterdam-Rotterdam-Antwerp basis. The assessments are for T2 product; duty paid for European-qualified material and free from origin restrictions.

Unit: Assessment is published in $/mt

Timing: The assessment reflects barges loading 15-30 days forward from the date of publication.

Volume: a standard size of 1,000-2,000 mt.

Product Purity Specification: UCO assessments reflect material with a maximum of 5% FFA,a maximum of 2% MIU), maximum 50ppm sulfur and a minimum of 70gr iodine per 100gr of used cooking oil.

The Platts UCO assessment reflects renewable energy directive compliant UCO that holds proof of sustainability obtained in the framework of voluntary schemes approved by the EU Commission.

Market participants shall exercise reasonable efforts to provide all necessary documentation for Proof of Sustainability.

Bio-Bunkers B30 Rotterdam

The delivered-Rotterdam B30 bio-bunkers calculated prices reflect a ratio of 70% very-low-sulfur fuel oil (VLSFO) based on Platts FOB Rotterdam Marine Fuel 0.5% Barge $/mt assessment (PUMFD00) and 30% fatty acid methyl ester (FAME) based on Platts FAME 0 FOB ARA RED $/mt assessment (AAWGI00) plus barging costs, and 70% VLSFO based on Platts FOB Rotterdam Marine Fuel 0.5% Barge $/mt assessment (PUMFD00) and 30% Platts UCOME FOB ARA RED Eur/mt assessment (AUMEB00) converted to $/mt, plus barging costs.

More details on the Platts FOB Rotterdam Marine Fuel 0.5% Barge assessment can be found in the Platts specification guide for Europe and Africa Refined Oil Products.

Sustainable Aviation Fuel price assessment

Basis and Location: Prices are CIF basis Amsterdam Rotterdam Antwerp. Other locations within Northwest Europe will be considered for the assessment but may be normalized to reflect basis ARA

Quality: The assessment reflects neat SAF produced via the Hydrotreated Esters and Fatty Acid (HEFA) pathway from Renewable Energy Directive-compliant feedstocks, with an exclusion for Palm Fatty Acid Distillate, and reflects minimum GHG savings of 80%. Other GHG savings levels will be considered but may be normalized to the minimum basis level. The assessment reflects product that holds proof of sustainability obtained in the framework of voluntary schemes approved by the EU Commission. Market participants shall exercise reasonable efforts to provide all necessary documentation for Proof of Sustainability documentation.

Volume: 500-5,000 mt

Timing: The assessment reflects delivery 10-25 days forward from date of publication

Units: $/mt

Conversion factor: SAF uses a $/mt to $/b conversion factor of 8.276. SAF values reflect ASTM D7566 standard specification for Synthesized Paraffinic Kerosene from Hydroprocessed Esters and Fatty Acids,, with a relative density of 760 kg/cu m (at 15 degrees Celsius).

Renewable Diesel price assessment

Basis and Location: FOB basis Amsterdam Rotterdam Antwerp. Other locations within Northwest Europe would be considered for the assessment but will be normalized to reflect basis ARA.

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Quality: EN15940 standard with a minimum of 85% greenhouse gas savings under RED II. Other GHG savings levels may be considered and normalized to a min 85% GHG savings.

The renewable diesel assessments are divided into two categories, under the names RD-A and RD-B focusing on feedstock in Annex IX of the Renewable Energy Directive (RED)

The RD-A assessments reflect renewable diesel produced from Renewable Energy Directive Annex IX-A waste and residue feedstocks, as listed in the Netherlands Energy for Transport register.

The RD-B assessments reflect renewable diesel produced from feedstocks in Annex IX-B of the European Renewable Energy Directive.

Volume: 1,000-3,000 mt. Volumes outside this range will be normalized to basis 1,000 mt

Timing: The assessments reflect barges loading 3-15 days forward (Monday-Tuesday) and 5-15 days forward (Wednesday-Friday) from the date of publication

Units: $/mt and $/cu m

Sustainability Criteria: The new assessments reflect product that holds proof of sustainability obtained in the framework of voluntary schemes approved by the EU Commission. Market participants shall exercise reasonable efforts to provide all necessary documentation for Proof of Sustainability documentation.

Netherlands Renewable Energy Units (HBE's)

Platts assesses four types of HBE: HBE-Conventional (HBE-C), HBE-Advanced (HBE-A), HBE-Annex IX B (HBE-B) and HBE-Other (HBE-O)

Timing: Each HBE type will be assessed on a current year and previous year basis. Platts will assess a current year vintage from the first working day to the last working day of the calendar year.

A previous year vintage will be assessed from the first working day of January until the last working day of April of the year following the corresponding vintage.

For example, the 2024 obligation year will be assessed as current year starting on the first working day of January 2024 until the last working day of December 2024. The 2024 vintage would roll into the previous year assessment on the first working day of January 2025, until expiration on May 1, 2025

Volume: The assessment reflects a minimum of 50,000 units in GJ. Lower volumes may be considered and normalized to the minimum specification volume.

Units: Assessments are published in Eur/GJ

Calendar HBE codes: These codes correspond to the vintage year of the HBE to supplement the existing rolling codes (current and previous year) and accompany a specific HBE vintage throughout its entire lifecycle, from launch to discontinuation.

Renewable Diesel (RD) Cost of Production

Renewable Diesel (RD), also known as Hydrotreated Vegetable Oil (HVO), is an ex-refinery price based on cost calculations from our Platts Analytics team. The cost-based assessment for RD is published on an ex-refinery NWE basis, and is comprised of a number of existing Platts assessments and other fixed costs.

The RD inputs are Used Cooking Oil CIF ARA [AUCOA00] and Hydrogen Netherlands SMR [HXNMA00] added to fixed renewable diesel refinery costs, then deducting the by-product credits to include FOB ARA Propane [PMAAS00] and Naphtha CIF NWE cargoes [PAAAL00].

Sustainable Aviation Fuel Cost of Production (SAF)

SAF Cost of Production, is an ex-refinery price based on cost calculations from our Platts Analytics team. The cost-based prices for SAF are published on an ex-refinery NWE basis, and is comprised of a number of existing Platts assessments and other fixed costs.

The SAF inputs are Used Cooking Oil CIF ARA [AUCOA00] and Hydrogen Netherlands SMR [HXNMA00] added to fixed SAF bio-refinery costs, then deducting the by-product credits to include FOB ARA Propane [PMAAS00], Naphtha CIF NWE cargoes [PAAAL00] and Diesel CIF NWE ARA Cargoes [AAVBG00].

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Americas

Assessment	Currency	Code	Mavg	Wavg	Contract Type	Contract Basis	Location	Delivery Period	Min Size	Max Size	UOM
Brazil Ethanol Hydrous and Anhydrous Ethanol (Fuel Grade)											
Ethanol FOB Santos Cargo c/gal	¢/gal	AATAE00	AATAE03	AATAE04	Spot	FOB	Santos, Brazil	10-30 days from date of publication	10,000 cu m		gallon
Ethanol FOB Santos Cargo $/cu m	$/cu m	AAWFO00	AAWFO03	AAWFO04	Spot	FOB	Santos, Brazil	10-30 days from date of publication	10,000 cu m		cubic meter
Ethanol FOB Santos Cargo Real/cu m	Real/cu m	AAWFP00	AAWFP03	AAWFP04	Spot	FOB	Santos, Brazil	10-30 days from date of publication	10,000 cu m		cubic meter
Anhydrous ANP Domestic Ex-mill Ribeirao with taxes	Real/cu m	AAXNN00			Spot	EXW	ex-mill Ribeirao Preto	1-7 days from date of publication	500 cu m	1,500 cu m	cubic meter
Hydrous FOB Santos/Paranagua $/cu m	$/cu m	AAXNR00			Spot	FOB	Santos, Brazil	20-30 days from date of publication	5,000 cu m		cubic meter
Hydrous ANP Domestic Ex-mill Ribeirao with taxes	Real/cu m	AAXNQ00			Spot	EXW	ex-mill Ribeirao Preto	1-7 days from date of publication	500 cu m	1,500 cu m	cubic meter
Raw Sugar Equivalent	¢/lb	AAXOA00			Calculation	FOB	Santos, Brazil				pound
Grade B FOB Santos/Paranagua	$/cu m	AAXNS00			Spot	FOB	Santos/Paranagua	20-30 days from date of publication	5,000 cu m		cubic meter
NNE Brazil delivered Suape anhydrous weekly	Real/cu m	AAXFW00	AAXFW03	AAXFW04	Spot	DAP	Suape, Pernambuco	1-15 days from date of publication	250 cu m	1000 cu m	cubic meter
CBIO	Real/mt of CO2e	ACIBA00	ACIBA03	ACIBA04					10		metric tonnes
Biodiesel											
Biodiesel B100 SME Chicago	¢/gal	AAURR00	AAURR03		Spot	FOB	Chicago	3-10 days forward	150	3,000	barrels
Biodiesel B100 SME Houston	¢/gal	AAURS00	AAURS03		Spot	FOB	Houston	3-10 days forward	150	3,000	barrels
Biodiesel DAP Paulinia BRL/CBM	Real/cu m	ABPLA00	ABPLA03	ABPLA04	Spot	DAP	Paulinia, Brazil	1-7 days from date of publication	100	500	cubic meter
Biodiesel DAP Paulinia $/mt	$/mt	ABPLB00	ABPLB03	ABPLB04	Spot	DAP	Paulinia, Brazil	1-7 days from date of publication	100	500	cubic meter
Feedstock											
Packer Grade Beef Tallow Dlvd Chicago	¢/lb	ATALA00	ATALA03		Spot	Dlvd rail	Chicago, Il	Shipped 1-30 days forward	1 rail car	5 rails cars	pound
Renewable Identification Number (RIN) Assessments											
Ethanol (D6) RIN Rolling Year 1	¢/RIN	RINCY01	RINCY31		Spot				500,000		RIN
Ethanol (D6) RIN Rolling Year 2	¢/RIN	RINCY02	RINCY32		Spot				500,000		RIN
Ethanol (D6) RIN Rolling Year 3	¢/RIN	RINCY03	RINCY13		Spot				500,000		RIN
Ethanol RIN Cal 20XX	¢/RIN	RD620XX	RD6MAXX		Spot				500,000		RIN
Biodiesel (D4) RIN Rolling Year 1	¢/RIN	BDRCY01	BDRCY31		Spot				250,000		RIN
Biodiesel (D4) RIN Rolling Year 2	¢/RIN	BDRCY02	BDRCY32		Spot				250,000		RIN
Biodiesel (D4) RIN Rolling Year 3	¢/RIN	BDRCY03	BDRCY13		Spot				250,000		RIN
Biodiesel RIN Cal 20XX	¢/RIN	RD420XX	RD4MAXX		Spot				250,000		RIN
Advanced biofuel (D5) RIN Rolling Year 1	¢/RIN	ABRCY01	ABRCY31		Spot				100,000		RIN
Advanced biofuel (D5) RIN Rolling Year 2	¢/RIN	ABRCY02	ABRCY32		Spot				100,000		RIN
Advanced biofuel (D5) RIN Rolling Year 3	¢/RIN	ABRCY03	ABRCY13		Spot				100,000		RIN
Advanced Biofuel RIN Cal 20XX	¢/RIN	RD520XX	RD5MAXX		Spot				100,000		RIN
Cellulosic biofuel (D3) RIN Rolling Year 1	¢/RIN	CBRCY01	CBRCY31		Spot				100,000		RIN
Cellulosic biofuel (D3) RIN Rolling Year 2	¢/RIN	CBRCY02	CBRCY32		Spot				100,000		RIN
Cellulosic biofuel (D3) RIN Rolling Year 3	¢/RIN	CBRCY03	CBRCY13		Spot				100,000		RIN
Cellulosic Biofuel RIN Cal 20XX	¢/RIN	RD320XX	RD3MAXX		Spot				100,000		RIN
Renewable Volume Obligation 20XX	¢/gal	RVOY0XX	RVOY3XX		Spot						gal
Renewable Volume Obligation Current Year	¢/gal	RVOR002			Spot						

*In codes such as RD620XX, XX refers to the calendar year. E.g., RD62020

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Americas

Assessment	Currency	Code	Mavg	Wavg	Contract Type	Contract Basis	Location	Delivery Period	Min Size	Max Size	UOM
Ethanol (fuel grade)											
Ethanol Chicago (terminal)	¢/gal	AALRI00	AALRJ00		Spot	ITT	ITT Kinder Morgan Argo Terminal, Chicago	5-15 days forward	5,000		barrels
Ethanol Chicago (terminal) any-M1	¢/gal	AALRA00	AALRA03		Spot	ITT	ITT Kinder Morgan Argo Terminal, Chicago	Front-month	5,000		barrels
Ethanol Chicago (terminal) any-M2	¢/gal	AALRB00	AALRB03		Spot	ITT	ITT Kinder Morgan Argo Terminal, Chicago	Second-month	5,000		barrels
Ethanol Chicago IL Swap Balmo	¢/gal	ESCMM00			Future	Ethanol Chicago (terminal)	Chicago area terminals	1 st through 15th day of month	42,000		gallons
Ethanol Chicago IL Swap Mo01	¢/gal	ESCM001			Future	Ethanol Chicago (terminal)	Chicago area terminals	Next calendar month forward	42,000		gallons
Ethanol Chicago IL Swap Mo02	¢/gal	ESCM002			Future	Ethanol Chicago (terminal)	Chicago area terminals	Two calendar months forward	42,000		gallons
Ethanol Chicago (Rule 11)	¢/gal	AAVWD00	AAVWD03		Spot	FOB	Chicago	This week (Monday through Wednesday) Next Week (Thursday, Friday)	145,000		gallons
Ethanol NYH Barge (M1)	¢/gal	AAMPF00	AAMPG00		Spot	FOB	New York Harbor	Front-month	25,000		barrels
Ethanol NYH Barge (M2)	¢/gal	AAUEG00	AAUEG03		Spot	FOB	New York Harbor	Second-month	25,000		barrels
Ethanol NYH ITT	¢/gal	ANYHA00	ANYHA03		Spot	ITT	Sewaren Terminal	5-15 days forward	5,000		barrels
Ethanol Houston 5-15 Barge	¢/gal	AATGJ00	AATGJ03		Spot	FOB	Houston	5-15 days forward	10,000		barrels
Ethanol Dlvd Rail Houston 15-30 days	¢/gal	AABFE00	AABFE03		Spot	Dlvd rail	Pasadena, Bayport, Texas City and Galveston terminals	15-30 days forward	1		unit train
Ethanol Dlvd Rail Houston Differential to Chicago Swap	¢/gal	AACFF00			Spot						
North California Rail Car Ethanol	¢/gal	AAMFT00	AAMFW00		Spot	Dlvd rail	Richmond, Stockton, McClellan Park and Sacramento terminals	This week (Monday through Thursday) Next Week (Friday)	145,000		gallons
Ethanol North California Rail 70 CI	¢/gal	AENCA00	AENCA03		Spot	Dlvd rail	Richmond, Stockton, McClellan Park and Sacramento terminals	This week (Monday through Thursday) Next Week (Friday)	145,000		gallons
Ethanol NorCal Rail Premium to Ethanol Chicago IL Swap Mo01	¢/gal	AAVXD00	AAVXD03		Spot	Dlvd rail	Richmond, Stockton, McClellan Park and Sacramento terminals	This week (Monday through Thursday) Next Week (Friday)	145,000		gallons
Ethanol NorCal Rail 70 CI to Chi Spread Mo01	¢/gal	AENCB00	AENCB03		Spot	Dlvd rail	Richmond, Stockton, McClellan Park and Sacramento terminals	This week (Monday through Thursday) Next Week (Friday)	145,000		gallons
Ethanol cash margin	c/gal	AECMA00			Calculation	FOB	Chicago				
Low Carbon Fuel Programs Carbon Credits											
California Low Carbon Fuel Standard Carbon Credits Front Quarter	$/mt of CO2e	AAXYA00	AAXYA03		Spot			Quarterly			metric tonnes
California Low Carbon Fuel Standard Carbon Credits Second Quarter	$/mt of CO2e	AAXYZ00	AAXYZ03		Spot			Quarterly			metric tonnes
Ethanol CI Value Per Point	¢/gal	ACIVA00			Calculation						gallons

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Americas

Assessment	Currency	Code	Mavg	Wavg	Contract Type	Contract Basis	Location	Delivery Period	Min Size	Max Size	UOM
Oregon Clean Fuel Program Carbon Credits Front Quarter	$/mt of CO2e	ACXYZ00	ACXYZ03		Spot			Quarterly			metric tonnes
Oregon Clean Fuel Program Carbon Credits Second Quarter	$/mt of CO2e	ASXYZ00	ASXYZ03		Spot			Quarterly			metric tonnes
Washington Clean Fuel Standard Carbon Credits Front Quarter	$/mt of CO2e	AWXYA00	AWXYA03		Spot			Quarterly			metric tonnes
Washington Clean Fuel Standard Carbon Credits Second Quarter	$/mt of CO2e	AWXYZ00	AWXYZ03		Spot			Quarterly			metric tonnes
Renewable Distillates											
Values											
Sustainable Aviation Fuel Cost of Production (Tallow) w/ Credits USWC	¢/gal	ASAFK00	ASAFK03		Production cost	ex-refinery	California				gallons
Sustainable Aviation Fuel Cost of Production (Tallow) w/o Credits USWC	¢/gal	ASAFL00	ASAFL03		Production cost	ex-refinery	California				gallons
RD Cost of Production (Tallow) w/ Credits USWC	¢/gal	ARDFK00	ARDFK03		Production cost	ex-refinery	California				gallons
RD Cost of Production (Tallow) w/o Credits USWC	¢/gal	ARDFL00	ARDFL03		Production cost	ex-refinery	California				gallons
Dried Distiller Grains (DDG)											
Dried Distiller Grains CIF New Orleans barge	$/st	AADDG00	AADDG03	AADDG04	Spot	CIF	New Orleans	Delivery on a barge that has loaded in the front-month; rolls on 25th of month	1,500		short ton
Dried Distiller Grains Delivered Chicago	$/st	ACDDG00	ACDDG03	ACDDG04	Spot	Dlvd Transload	Channahon, Illinois	Delivered to railhead during calendar month; rolls on 21st day of the month	25		short ton
Dried Distiller Grains CFR Southeast Asia	$/MT	ADRIA00	ADRIA03		Calculation	CFR	Saigon Port Ho Chi Minh City, Vietnam	6 weeks forward			metric ton

Americas

The assessments listed below reflect the prevailing market value of the specified product at the following times:

Brazil daily biofuel assessments: 16:30 Sao Paulo time.

US biofuels and credit daily assessments: 13:30 Central time.

Brazil ethanol

Ethanol FOB Brazil Cargo (Anhydrous)

Quality: Standard ANP anhydrous quality ethanol.

Timing: Loading 10-30 days forward from date of publication.

Volume: Minimum 10,000 cu m.

Location: Basis FOB Santos. In the absence of FOB Santos pricing data, Platts may look at related markets such as the domestic anhydrous ex-mill Ribeirao price assessment adjusted for freight, terminal costs and taxes.

Units: The assessment is published in $/cu m and $/gal. This is converted to Real/cu m using a 16:30 Sao Paulo time Platts Real/USD exchange rate assessment.

Anhydrous ANP domestic ex-mill Ribeirao with taxes

Quality: Standard ANP anhydrous quality ethanol

Timing: 1-7 days forward from date of publication

Volume: Minimum volume of 500 cu m and maximum volume of 1,500 cu m.

Payment: The assessment reflects payment on the day of the product transfer and up to 10 days after the transfer.

Location: Basis Ex-mill Ribeirao Preto, Sao Paulo. Other ex-mill locations may be normalized, taking into account key regional destinations.

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Unit: Real/cu m.

Taxes: The assessment reflects the PIS/Cofins tax. No ICMS tax is included.

In the absence of Brazil anhydrous ethanol bids, offers or trades, Platts typically applies a percentage premium as defined by the market to the value of Brazil hydrous ethanol.

Hydrous ANP FOB Santos

Quality: Standard ANP hydrous quality ethanol.

Timing: Loading 20-30 days forward from date of publication.

Volume: Minimum 5,000 cu m.

Location: Basis FOB Santos. In the absence of FOB Santos pricing data, Platts may look at related markets such as the domestic anhydrous ex-mill Ribeirao price assessment adjusted for freight, terminal costs and taxes.

Units: $/cu m.

Hydrous ANP Domestic Ex-mill Ribeirao with taxes

Quality: Standard ANP hydrous quality ethanol.

Timing: Loading 1-7 days forward from date of publication.

Volume: Minimum volume of 500 cu m and maximum of 1,500 cu m.

Payment: The assessment reflects payment on the day of the product transfer and up to 10 days after the transfer.

Location: Ex-mill Ribeirao Preto, Sao Paulo; other ex-mill locations may be normalized taking into account key regional destinations.

Unit: Real/cu m

Taxes: The assessment includes the ICMS tax, as well as the PIS/Cofins tax.

Ex-mill Ribeirao Hydrous Raw Sugar equivalent

Platts publishes an ex-mill Ribeirao Preto hydrous ethanol raw sugar equivalent value in cents/lb. This is calculated using the Hydrous ANP domestic ex-mill Ribeirao with taxes assessment, and taking into account the ICMS and PIS tax, as well as freight and elevation costs to Santos. Platts also converts the ethanol price to ATR (Total Recoverable sugar) value, then to sugar equivalent. To allow an accurate comparison between the Platts raw sugar equivalent value and the ICE New York Sugar No. 11 futures contract, Platts normalizes the polarization quality to 96 degrees from an assumed polarization of between 99.2 to 99.3 pol.

Grade B FOB Santos/Paranagua

Quality: Standard Grade B industrial ethanol.

Timing: Loading 20-30 days forward from date of publication.

Volume: Minimum 5,000 cu m

Location: Basis FOB Santos/Paranagua.

Unit: $/cu m

NNE Brazil delivered Suape anhydrous

Quality: Standard ANP anhydrous quality ethanol

Timing: 1-15 days forward from date of publication

Volume: Minimum volume 250,000 liters, or 250 cu m, and maximum volume 1,000,000 liters, or 1,000 cu m.

Payment: Platts assessments reflect payment within 10 days of delivery.

Location: DAP (Delivered At Place) basis Suape, Pernambuco.

Other locations and Incoterms such as FOB/CIF may be normalized back to the basis location. Platts also takes into consideration product produced regionally, transfers from the Center-South region as well as volumes delivered from international locations.

Unit: Real/cu m.

Taxes: The assessment reflects the PIS/Cofins tax. No ICMS tax is included.

Crédito de Descarbonização (CBIO)

Platts assesses the Crédito de Descarbonização, or CBIO under the Brazilian National Biofuels Policy, or RenovaBio. CBIOs are issued by biofuel producers and importers authorized by the National Agency of Petroleum, Natural Gas and Biofuels and certified for RenovaBio. CBIOs are registered, traded and retired via Brazil, Bolsa, Balcão (B3), a Brazilian derivatives exchange.

Timing: CBIOs are issued with no expiration date, but CBIOs can be retired or removed from the market at the request of an obligated or non-obligated party.

Unit: The assessment is published in Real/CBIO. One CBIO is the equivalent of one mtCO2

Volume: Minimum 10 CBIOs

Brazil biodiesel

Quality: ANP standard quality biodiesel, taking into account the cold filter plugging point specification seasonality.

Timing: Loading 1-7 days forward from the date of publication.

Volume: 100-500 cubic meters

Location: DAP Paulinia.

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Unit: Real/cu m and $/mt

Note: In the absence of bids, offers, trades or market values, Platts may consider changes in the key feedstock market including the Platts assessment of FOB Paranagua soybean oil (SYOBA00)

Taxes: The assessment does not include the ICMS tax, but does includes PIS/Cofins tax.

US Ethanol

All Platts US ethanol assessments reflect domestic, denatured, refinery grade ethanol meeting ASTM D4806 specification. They are published in cents/gal.

US Atlantic Coast ethanol

Basis and Location: FOB New York Harbor

Volume: Minimum of 25,000 barrels.

Timing: Assessments reflect material loading two months forward on an any-month basis, i.e. loading at any point during the assessed month. The assessments roll to the next forward month on the first publishing day after eight calendar days before the end of the month.

Note: Platts considers LEAP terms standard in the New York Harbor ethanol market.

US New York Harbor

Basis and Location: New York Harbor Intertank Transfer (ITT) Sewaren terminal

Volume: Minimum of 5,000 barrels.

Timing: Loading 5-15 days forward from date of publication.

Offtake Options: Buyer has the option to take delivery of the product in a method other than by ITT at the Sewaren terminal such as by barge. All incremental costs associated with the chosen offtake option would be borne by the buyer. A seller should not unreasonably withhold any offtake option, and any associated costs for non-ITT offtake options must be demonstrably reasonable and typical.

Nomination guidelines: In the ITT market, the buyer retains the option to nominate the transfer date within a 5 to 15 day forward range; this nomination should take place at least one calendar day in advance of the transfer date. For all nominations, there will be an end-of-day time cut-off of 15:00 (16:00 ET). Any nomination provided after this time would be considered as being for the next day.

RIN transfer: For transactions in this market, if ownership of the physical product transfers between January 1 and January 31 it is the seller's option to transfer current or prior-year RINs. Transfers after January 31 for the rest of the calendar year must carry current-year RINs. The physical ethanol transfer date determines what RIN vintage may be attached, not the trade date.

Note: Platts considers LEAP terms standard in the New York Harbor ethanol market.

US Gulf Coast ethanol

Basis and Location: FOB Houston and delivered rail to the Pasadena, Bayport, Texas City and Galveston terminals

Volume: FOB Houston - minimum of 10,000 barrels, delivered rail – full unit train.

Timing: FOB Houston - loading 5-15 days forward from date of publication, delivered rail – arriving 15-30 days from publication.

Note: For delivered rail, buyers have the option to nominate the delivery terminal and sellers pay freight to the terminal. Delivered rail is published both as a flat price and as a differential to the Platts Ethanol Chicago derivative in cents/gallon. In the absence of flat price indications, the flat price assessment considers the differential value applied to a price curve drawn using the balance-of-the-month swap and the forward month swap from the 1st-15th of the month and the forward month swap from the 16th through the end of the month.

Platts assesses the FOB Houston market as a spread to the delivered Houston rail assessment in the absence of FOB price indications. The rail-FOB spread factors costs such as logistics, which Platts understands to typically be 3 cents/gal.

RIN Transfer: For transactions in this market, if ownership of the physical product transfers between January 1 and January 31 it is the seller's option to transfer current or prior-year RINs. Transfers after January 31 for the rest of the calendar year must carry current-year RINs. The physical ethanol transfer date determines what RIN vintage may be attached, not the trade date.

Chicago Terminal ethanol

Basis and Location: Intertank Transfer (ITT) in the Kinder Morgan Argo and Chicago fungible system, which includes the Argo and Chicago (Stony Island) terminals

Timing: Loading 5-15 days forward from date of publication.

Offtake Options: Buyer has the option to take delivery of the product in a method other than by ITT at the Kinder Morgan terminals such as by barge, rail and truck. All incremental costs associated with the chosen offtake option would be borne by the buyer. A seller should not unreasonably withhold any offtake option, and any associated costs for non-ITT offtake options must be demonstrably reasonable and typical.

Platts expects incremental costs, which would include throughput fees for physical offtake, to be around 2.5 cents/gal for barge loading, and 1.5 cents/gal for rail loading and offtake via truck at the Kinder Morgan fungible ethanol system. These costs may be subject to change due to market conditions; any such change in costs for transactions published during the

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Platts MOC process may be subject to review by Platts, and must be demonstrably reasonable and typical.

Nomination guidelines: In the ITT market, the buyer retains the option to nominate the transfer date within a 5 to 15 day forward range; this nomination should take place at least one calendar day in advance of the transfer date.

- For offtake via barge, a buyer should nominate a three-day loading period within the 5-15 day assessment laycan as well as a performing vessel, at least five calendar days prior to the first day of the three-day loading period, subject to terminal acceptance. The seller should nominate a loading terminal at least 48 hours prior to the first day of the three-day loading period.

- If a buyer chooses to take delivery of product via truck, the buyer should nominate a specific lifting date at least one calendar day prior. For offtake via rail, a buyer should nominate a lifting date at least five calendar days prior.

For all nominations, there will be an end-of-day time cut-off of 15:00 CT (16:00 ET). Any nomination provided after this time would be considered as being for the next day.

Sellers for transactions published during the MOC process should ensure that they make best efforts to seek terminal dates that meet the reported transaction laycan. Platts is aware that physical conditions regarding logistics which are beyond the control of the seller or buyer may result in issues such as late loading. If it becomes clear that it is not possible to secure offtake of product within the 5-15 day assessment laycan via the means nominated by the buyer, the buyer should seek resolution to perform on the transaction via other means, including alternative offtake mechanisms and bookouts.

In addition, since offtake via rail at the Kinder Morgan ethanol fungible system is available only at the Chicago (Stony Island) terminal, if there is insufficient product at that terminal, a seller may reasonably reject an offtake nomination via rail.

Demurrage: Platts understands that ethanol trades that involve barge loading at the Kinder Morgan fungible system typically include a public dock clause. For transactions published in the MOC process, sellers should ensure that they seek terminal dates that meet the reported transaction laycan and have product available for said laycan. In the event that terminal dates do not meet the reported transaction laycan, the availability of which neither the buyer or seller have control over, the public dock clause would apply. Platts understands that under the commonly used public dock clause for barges loading ethanol at the Kinder Morgan fungible system, laytime commences when the vessel is at the dock.

Volume: Minimum of 5,000 barrels.

RIN transfer: For transactions in this market, if ownership of the physical product transfers between January 1 and January 31 it is the seller's option to transfer current or prior-year RINs. Transfers after January 31 for the rest of the calendar year must carry current-year RINs. The physical ethanol transfer date determines what RIN vintage may be attached, not the trade date.

Chicago Terminal Ethanol (any-month)

Basis and Location: Intertank Transfer (ITT) in the Kinder Morgan Argo and Chicago fungible system, which includes the Argo and Chicago (Stony Island) terminals

Timing: The assessments reflect two any-month Chicago Terminal ethanol assessments, one for the current-month (M1) and one for the forward-month (M2). The assessments roll to the next forward month two publishing days before the end of the month, this means that there would be at least one clear working day between the roll of the assessment and the start of the new calendar month. For example, the any-June (M1) 2024 and any-July (M2) 2024 assessments would roll to any-July (M1) 2024 and any-August (M2) on June 27,2024.

Offtake Options: Buyer has the option to take delivery of the product in a method other than by ITT at the Kinder Morgan terminals such as by barge, rail and truck. All incremental costs associated with the chosen offtake option would be borne by the buyer. A seller should not unreasonably withhold any offtake option, and any associated costs for non-ITT offtake options must be demonstrably reasonable and typicalNomination guidelines: In the ITT market, the buyer retains the option to nominate the transfer date within the month; this nomination should take place at least one calendar day in advance of the transfer date.

For all nominations, there will be an end-of-day time cut-off of 15:00 CT (16:00 ET). Any nomination provided after this time would be considered as being for the next day.

For other offtake and nomination details please refer to the Chicago Terminal ethanol section

Volume: Minimum of 5,000 barrels.

RIN transfer: For transactions in this market, if ownership of the physical product transfers between January 1 and January 31 it is the seller's option to transfer current or prior-year RINs. Transfers after January 31 for the rest of the calendar year must carry current-year RINs. The physical ethanol transfer date determines what RIN vintage may be attached, not the trade date.

Chicago ethanol derivatives

Platts assesses Chicago ethanol derivatives, which settle against the physical Platts assessments for Platts Chicago Terminal ethanol. The derivative assessments are published as outright values in cents/gal. Platts publishes Chicago ethanol derivatives for the balance of the current month and the first two forward months. The balance of month assessment is published through the 15th day of the calendar month. The two forward months roll to the next month on the first publishing day of each month.

Ethanol Cash margin

Platts publishes an ethanol cash manufacturing margin based on assumptions and fixed costs calculated by S&P Global Commodity Insights based on existing Platts assessments and third-party price data.

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Location: Chicago

Calculation: The ethanol cash production margin calculation is based on the Platts Chicago Terminal ethanol (AALRI00) price and factors in the co-product Dried Distiller Grains delivered Chicago price (ACDDG00), the USDA Chicago corn mill and processor bid price, Platts Intraday NICOR gas price (PNBEX21) and on-Peak Electricity Prices (PJM N IL HUB) added to fixed costs and other variable costs with a yield of 2.87 gallons/bushel.

Chicago Rail (Rule 11)

Basis and Location: Platts daily Rule 11 Chicago assessment, reflects ethanol that is railed basis Chicago. Rule 11 is a railroad accounting term that refers to a seller paying for freight up to an intermediate point and the buyer pays for freight beyond that point, without either party incurring switching costs.

Volume: Minimum of five rail cars or 145,000 gallons.

Timing: Assessments reflect this-Week-Shipment (TWS) Monday through Wednesday and Next-Week-Shipment (NWS) Thursday and Friday.

RIN transfer: For transactions in this market the bill of lading date is used to determine what RIN vintage may be attached. Bills of lading on or between January 1 to January 31, it is the seller's option on whether to transfer prior-year RINs or current year RINs. Bills of lading after January 31 through the rest of the calendar year must carry current-year RINs.

North California Rail Car Ethanol

Platts publishes North California Rail Car Ethanol assessments that reflect two different carbon intensity (CI) levels: an annual gasoline standard carbon intensity (CI) and 70 CI.

Platts understands that ethanol delivered into Northern California by rail reflects material with a range of CI values. Therefore, for any trades published in the Platts Market on Close assessment process for the North California 70 CI or the gasoline standard CI, Platts expects buyers and sellers to apply a value normalization based on the CI of the ethanol physically delivered. This can either be via direct payment or the transfer of carbon credits (partial obligation), with the seller retaining the option to choose the method of compensation. Platts expects the seller to notify the buyer of this option by the close of business on the day of the trade. As part of any direct payment, buyers and sellers are expected to apply a value normalization based on the value per point of CI per gallon of ethanol on the day of the trade.

North California Rail Car Ethanol (gasoline standard):

Basis and Location: North California delivered rail cars basis the Richmond, Stockton, McClellan Park and Sacramento terminals.

Quality and CI: Reflects Carbon Intensity (CI) equal to the annual gasoline CI standard as set by the California Air Resources Board (CARB). CI scores for fuel pathways consist of the sum of the greenhouse gases emitted throughout each stage of the ethanol's production and use. CI is expressed in grams of carbon dioxide equivalent per mega-joule (gCO2e/MJ).

Assessments reflect transactions where the seller retains any obligation for credits or deficits generated by the actual CI of the ethanol sold.

In the absence of pricing information for the gasoline standard CI North California rail car assessment, Platts would value it based on its North California 70 CI rail car ethanol assessment and daily-published Carbon Intensity ethanol CI value per point which uses the LCFS carbon credit and the energy density of denatured ethanol at 81.51 MJ/gallon.

Here is an example of the normalization:

To find the value in cents/gallon of the difference between a stated CI in a bid, offer or trade and the basis assessment CI, Platts takes the annual gasoline standard CI in gCO2e/MJ as set by CARB minus the CI of the stated bid, offer or trade. The LCFS carbon credits as published daily by Platts, under the code AAXYA00, is then divided by 1 million, and multiplied by 81.51 MJ/gallon (the energy density of ethanol). The result of this calculation (CI value per point) is multiplied by the CI difference previously calculated to get the $/gal value.

For example:
Platts publishes a 70 CI ethanol trade basis North California Terminal at 125 cents/gal; the annual gasoline standard CI is 88.25.

- The difference between the two CI levels is 18.25.
- The value of LCFS carbon credits for the front quarter published by Platts on the corresponding day is $70/mt.
- $70/mt divided by 1,000,000 then multiplied by 81.51 (energy density of ethanol) equals $0.0057057/CI
- 18.25 (the difference in the CI values) multiplied by 0.0057057 equals $0.104129/gal or 10.41 cents/gal.

The 70 CI ethanol trade of 250.00 cents/gal can be normalized by 10.41 cents/gal to give 239.59 cents/gal, rounded to 239.50 cents/gal; an equivalent value for a 88.25 CI ethanol trade.

Timing: Assessment reflects Monday through Thursday this-week-shipment (TWS); while on Friday, it reflects next-week-shipment (NWS).

Platts expects the buyer to nominate a destination to the seller by close of business on Thursday of the shipment week; and the seller to provide a bill of lading to the railroad by end of day Saturday of the shipment week.

Volume: Minimum of five rail car lots or 145,000 gallons.

Unit: Platts publishes North California ethanol assessments as both a flat price in cents/gallon and as a premium to the Platts Ethanol Chicago front-month derivative.

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North California Rail Car Ethanol 70 CI

Basis and Location: North California delivered rail cars basis the Richmond, Stockton, McClellan Park and Sacramento terminals.

Quality and CI: Assessment reflects ethanol with a reference 70 CI.

Timing: Assessment reflects Monday through Thursday this-week-shipment (TWS); while on Friday, it reflects next-week-shipment (NWS).

Platts expects the buyer to nominate a destination to the seller by close of business on Thursday of the shipment week; and the seller to provide a bill of lading to the railroad by end of day Saturday of the shipment week.

Volume: Minimum of five rail car lots or 145,000 gallons.

Unit: Platts publishes North California 70 CI ethanol assessments as both a flat price in cents/gallon and as a premium to the Platts Ethanol Chicago front-month derivative.

California Low Carbon Fuel Standard Carbon Credits (LCFS)

Platts assesses carbon credits under the Low Carbon Fuel Standard (LCFS) as defined by the California Air Resources Board (CARB).

Transfer dates: Platts assesses current quarter and next quarter carbon credits that are to be transferred before the end of the respective quarters.

Timing: Assessments roll on the first publishing day after the 14th of the last month of the quarter.

Units: US dollars per metric ton of carbon dioxide equivalent.

Carbon Intensity value calculation

Platts publishes a value that reflects the cost of each point of Carbon Intensity (CI) per gallon of ethanol under California's Low Carbon Fuel Standard.

The published CI price per point is calculated daily using the Platts assessment of front-quarter California LCFS credits ($/mt) and the energy density of denatured ethanol, as published by the California Air Resources Board at 81.51 MJ/gal, then divided by 10,000 to give a cents/CI per gallon value.

Unit: Cents/gallon

Oregon Clean Fuel Program Carbon Credits (OCFP)

Platts assesses carbon credits under the Clean Fuel Program (CFP) as defined by the Oregon Department of Environmental Quality (DEQ).

Transfer dates: Platts assesses current quarter and next quarter carbon credits that are to be transferred before the end of the respective quarters.

Timing: Assessments roll on the first publishing day after the 14th of the last month of the quarter.

Units: US dollars per metric ton of carbon dioxide equivalent.

Washington Clean Fuel Standard Carbon Credits (WACFS)

Platts assesses carbon credits under the Clean Fuel Standard (CFS) as defined by the Washington State Department of Ecology

Transfer dates: Platts assesses current quarter and next quarter carbon credits that are to be transferred before the end of the respective quarters.

Timing: Assessments roll on the first publishing day after the 14th of the last month of the quarter.

Units: US dollars per metric ton of carbon dioxide equivalent.

US Dried Distillers Grain with Solubles (DDGS)

DDGS Delivered Chicago

Basis and Location: Basis Chicago, assessment reflects trucks delivered to the Channahon, Illinois, railhead.

Quality: Assessments will reflect export quality DDGS, protein content minimum of 25%, fat minimum of 6%, Profat combined protein and fat content, minimum of 34% , minimum color of 50 (according to the Hunter L test) and a moisture level in the range of 10% to 12%, standardized to 11.5%.

Volume: 25 short tons (22.6mt).

Timing: Assessment reflects delivered trucks on a calendar month basis. Platts assesses delivery in the current month until the 20th of that month; this rolls the next calendar month on the first publication day after the 20th.

Units: $/short ton.

DDGS CIF New Orleans barge

Basis and Location: CIF basis New Orleans

Quality: Assessments will reflect export quality DDGS, protein content minimum of 25%, fat minimum of 6%, Profat combined protein and fat content, minimum of 34% , minimum color of 50 (according to the Hunter L test) and a moisture level in the range of 10% to 12%, standardized to 11.5%.

Volume: 1,500 short tons (1,360 mt).

Timing: The assessment reflects barge shipments in the current month, for delivery into New Orleans. This rolls to the next shipment month on the first publication day after the 24th of the month.

Units: $/short ton.

DDGS CFR Southeast Asia

Basis and location: CFR Saigon port in Ho Chi Minh City, Vietnam using Platts assessment for DDGS delivered in Chicago (ACDDG00) and an internal assessment of transloading and freight costs, based on routing through US West Coast ports of Long Beach, Los Angeles, California, and the Pacific Northwest.

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Quality: Assessments will reflect export quality DDGS, protein content minimum of 25%, fat minimum of 6%, Profat combined protein and fat content, minimum of 34% , minimum color of 50 (according to the Hunter L test) and a moisture level in the range of 10% to 12%, standardized to 11.5%

Volume: loaded 40' shipping container. 25.5 mt product weight.

Timing: Calculated as net forward 6 weeks in advance of publishing date.

Units: $/metric ton.

US Biodiesel

Biodiesel delivered Chicago

Basis and Locations: Assessments reflect truck or rail volume delivered at Kinder Morgan Argo and Chicago fungible system, which includes the Argo and Chicago (Stony Island) terminals, and other major storage facilities in the Chicago area.

Volume: Truck volume of 150 barrels; rail volume of 700 barrels. Volumes of 1,000 to 3,000 barrels sold FOB in-tank at terminals in Chicago may also be considered and normalized for assessment purposes.

Quality: ASTM specification D6751 for biodiesel (B100). Assessment reflects soy methyl ester (SME). Price data for B99 may be normalized to B100.

Timing: Three to 10 days forward from date of publication.

Units: Cents/gal.

Notes: Platts assessments reflect a 50%/50% split of the biodiesel blender's tax credit between buyer and seller. Other splits of the credit may be normalized to the current value of the credit when the federal tax credit is not in effect. The assessment reflects product with a D4 renewable identification number attached; Platts may normalize RIN-less indications using the Platts assessment of the current-year D4 RIN. Platts typically assesses US biodiesel by applying differentials heard in the market to the daily settlement of the front-month NYMEX ULSD futures contract.

Biodiesel delivered Houston

Basis and Locations: Assessments reflect truck or rail volume delivered in the Houston area.

Volume: Truck volume of 150 barrels; rail volume of 700 barrels. Volumes of 1,000 to 3,000 barrels sold FOB in-tank at terminals in the Houston Ship Channel may also be considered and normalized for assessment purposes.

Quality: ASTM specification D6751 for biodiesel (B100). Assessment reflects soy methyl ester (SME). Price data for B99 may be normalized to B100.

Timing: Three to 10 days forward from date of publication.

Units: Cents/gal.

Notes: Platts assessments reflect a 50%/50% split of the biodiesel blender's tax credit between buyer and seller. Other splits of the credit may be to the current value of the credit when the federal tax credit is not in effect. The assessment reflects product with a D4 renewable identification number attached; Platts may normalize RIN-less indications using the Platts assessment of the current-year D4 RIN. Platts typically assesses US biodiesel by applying differentials heard in the market to the daily settlement of the front-month NYMEX ULSD futures contract.

Chicago packer-grade beef tallow

Basis and Locations: Assessments reflect rail delivered into the greater Chicago area.

Volume: One to five rail cars with a typical volume of 175,000 pounds

Quality: Assessments reflect specifications for all-beef packer tallow as defined by the American Fats and Oils association.

Timing: Shipped one-30 days forward from date of publication

Units: Published as an outright price in cents/lb

US Renewable Distillates: Sustainable Aviation Fuel (SAF) and Renewable Diesel (RD)

The US West Coast Renewable Distillate prices are cost based values reflecting the production of sustainable aviation fuel (SAF) and renewable diesel (RD) through hydroprocessing. The assumptions are calculated by S&P Global Commodity Insights based on existing Platts assessments and other fixed costs. Fixed costs will be reviewed on at least an annual basis.

Quality: SAF values reflect ASTM D7566 standard specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons, with a relative density of 776 kg/cu m (at 15 degrees Celsius).

RD values reflect ASTM D0975 standard specification for Diesel Fuel Oils, with a relative density of 779 kg/cu m (at 15 degrees Celsius).

Location: Ex-refinery, basis California.

Calculation: The SAF inputs are Packer Grade Beef Tallow Dlvd Chicago (ATALA00) and Hydrogen California SMR w/o CCS (incl CAPEX) (IGZBL00), added to fixed renewable aviation fuel refinery costs, then deducting the by-products of Gasoline Unl 84 Los Angeles CA Pipeline (AAUHA00), Propane non-LST Mt Belvieu pipe Mo01 (PMAAY00) and ULSD No2 CARB Diesel Los Angeles CA Pipeline (POAAK00).

The RD inputs are Packer Grade Beef Tallow Dlvd Chicago (ATALA00) and Hydrogen California SMR w/o CCS (incl CAPEX) (IGZBL00), added to fixed renewable diesel refinery costs, then deducting the by-products of Gasoline Unl 84 Los Angeles CA Pipeline (AAUHA00), and Propane non-LST Mt Belvieu pipe Mo01 (PMAAY00).

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Platts may normalize the Chicago packer grade tallow assessment to account for freight to California and a quality differential between packer tallow and an alternative grade used for SAF and RD production.

The primary SAF and RD values are inclusive of environmental credits. Platts publishes additional values without environmental credits by deducting the value of the Renewable Identification Numbers under the Renewable Fuel Standard, credits from the Low Carbon Fuel Standard administered by CARB and, when applicable, the federal biomass-based diesel blender's tax credit and federal tax credit for sustainable aviation fuel

Platts uses the International Civil Aviation Organization's publication of the CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels to calculate the applicable SAF tax credit. Platts uses a tallow feedstock with a 22.5 gCO2e/MJ lifecycle emissions in the calculation.

As per IRS Notice 2023-06 section 4.04 and 4.05 Platts calculates the lifecycle greenhouse gas emissions reduction percentage by multiplying a fraction, the numerator of which is the baseline for the lifecycle greenhouse gas emissions of petroleum-based jet fuel (89 gCO2e/MJ) minus the lifecycle emissions value of tallow (22.5 gCO2e/MJ), and the denominator of which is jet baseline, by 100 percent

[(89 – 22.5)/ 89] x 100% = 74% (The lifecycle greenhouse gas emissions reduction percentage is rounded down to the nearest whole percent)

Platts then adds $0.01/gal to $1.25/gal for every percentage point reduction above 50% up to a maximum of $1.75/gal, in line with the methodology in section 13202 of the Inflation Reduction Act.

(74-50) x 0.01 = $ 0.24 /gallon

Therefore, the total SAF tax credit Platts will use in its US West Coast SAF without credits prices is $1.49/gal ($1.25/gal + $0.24/gal)

The Platts published environmental credits deducted for the without credits value are Biomass-Based Diesel RIN Cal Yr02 (BDRCY02) and the Low Carbon Fuel Standard Carbon Credits Front Quarter (AAXYA00).

Units: The primary SAF and RD values are published in cents/gal. Both with and without credit values are also published in $/mt and $/b. SAF uses a 3.4 conversion factor from cents/gal to $/mt and 0.42 from cents/gal to $/barrel. This implies a $/mt to $/b conversion factor of 8.105.

RD uses a 3.39 conversion factor from cents/gal to $/mt and 0.42 from cents/gal to $/barrel. This implies a $/mt to $/b conversion factor of 8.071.

Renewable Identification Number (RIN) assessments

A RIN is a credit issued by the US Environmental Protection Agency, for the purpose of tracking renewable fuel usage. Applicable refiners and importers, called obligated parties, use RINs to demonstrate to the EPA they have fulfilled their government mandated use of renewable fuels. If the obligated party has not used enough physical product, such as ethanol, it can satisfy the quota by purchasing RINs.

Platts assesses RINs for conventional biofuels or corn-based ethanol (D6), biomass-based diesel (D4), cellulosic biofuel (D3) and advanced biofuel (D5) for the previous year, current year and next-year vintage RINs.

In the absence of spot market values for D3 RINs, Platts may look at the value of the Cellulosic Waiver Credit (CWC) and D5 RIN value.

The EPA has historically published the value of the next year's CWC around December of the current year, however the final underlying data for calculating the CWC is published in early September. Platts may publish next-year D3 RIN assessments using a projected value calculated from the available underlying data the EPA uses starting from the first publishing day of July, which is when Platts begins publishing next-year RIN assessments. From early September, Platts may use a calculated CWC using the final underlying data the EPA uses to calculate the next-year CWC.

Volumes:

D6: Typical volume of 500,000 RINs per trade.

D4: Typical volume of 250,000 RINs per trade.

D3: Typical volume of 100,000 RINs per trade.

D5: Typical volume of 100,000 RINs per trade.

Transfer dates: For current-year and previous-year RIN trades, the seller is obligated to transfer RINs to the buyer during the first full calendar month forward from date of execution. For example, a seller of a RIN on June 7, 2022, has the obligation to transfer that RIN to the buyer no later than the last working day of July 2022. For year-ahead RIN assessments, the seller is obligated to transfer RINs to the buyer no later than January 31 of the following year. Vintage rolling schedule: Platts begins assessing next-year RINs on the first publishing day of July. The final publishing day for prior-year RIN assessments is the last publishing day of January two years after the RIN vintage. For example, the last assessment for 2021 RINs will be on January 31, 2023.

Calendar RINs codes: These codes correspond to the calendar year of the RIN to supplement the existing rolling codes and accompany a specific RIN vintage throughout its entire lifecycle, from launch to discontinuation, even as the vintage may be previous, current or forward year. The codes contain the calendar year, e.g., RD62022.

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Renewable Volume Obligation

Platts publishes the US Renewable Volume Obligation (RVO) calculated values in line with the release of the blending mandates under the Renewable Fuel Standard. RVO is the aggregate cost of the RIN percentages per gallon of transportation fuel as mandated by the EPA in the RFS.

Platts publishes RVO values for three calendar years: the previous year, current year and next year. Each year's RVO will follow the same calendar and publication timings as the corresponding RIN assessments.

The RVO is calculated by taking each category and vintage RIN from daily Platts assessments (e.g., 2023 D6, D4, D5 and D3 RINs), multiplying by its EPA mandated percentage and then adding them together.

For example:

- D6 ethanol RINs daily assessment: 163 cents/RIN
- D5 advanced biofuel daily assessment: 165.75 cents/RIN
- D4 biodiesel daily assessment: 166.75 cents/RIN
- D3 cellulosic biofuel daily assessment: $2.39/RIN

2023 RVO formula:

RVO= 8.71% (D6) + 0.33% (D5) + 2.58% (D4) + 0.48% (D3)

RVO= 8.71% (140) + 0.33% (140.25) + 2.58% (140.5) + 0.48% (302)

RVO= 17.7313 cent/gal

The 2023 and 2024 RVO percentages are:

	D4	D6	D5	D3
2023 RVO	2.58	8.71	0.33	0.48
2024 RVO	2.82	8.71	0.34	0.63

The percentages Platts is using reference the low end of the percentage mandate ranges published by the EPA, given the EPA publishing the lows in the federal register and the EPA's proposed intention to deny more small refinery exemptions than in past years.

As these renewable fuels are mandated by the EPA and hence subject to change without prior notice, Platts may update the Platts RVO formulas at any time and inform the market of the changes through subscriber notes.

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Global calculations and spreads

Assessment	Currency	Code	Mavg	Wavg
Asia biodiesel-gasoil spread	$/mt	ASIAA00		
Asia RD-gasoil spread	$/mt	ASIAC00		
Asia SAF-jet fuel spread	$/mt	ASIAE00		
Asia RD-gasoil ratio	$/mt	ASIAB00		
Asia SAF-jet fuel ratio	$/mt	ASIAD00		
USWC SAF-Jet Fuel Ratio	¢/gal	AUSWG00		
USWC SAF-Jet Fuel Spread	¢/gal	AUSWH00		
USWC RD-Diesel Ratio	¢/gal	AUSWB00		
USWC RD-ULSD Spread	¢/gal	AUSWC00		
Chicago ethanol-gasoline spread	¢/gal	ACHIA00		
Current-Year D4/D5 RIN Spread	¢/RIN	ACURC00		
Current-Year D4/D6 RIN Spread	¢/RIN	ACURD00		
Current/Next Year D6 RIN Spread	¢/RIN	ACURA00		
Current/Previous Year D6 RIN Spread	¢/RIN	ACURB00		
European ethanol-gasoline spread	$/mt	AEURB00		
European FAME 0-ULSD spread	$/mt	AEURA00		
European RD-ULSD spread	$/mt	AEURG00		
European SAF-jet fuel spread	$/mt	AEURK00		
European RD-ULSD ratio	$/mt	AEURF00		
European SAF-jet fuel ratio	$/mt	AEURJ00		

Global calculations and spreads

Assessment	Currency	Code	Mavg	Wavg
California LCFS CI values				
Biodiesel CI value per point	¢/gal	ABDIA00		
Renewable Diesel CI value per point	¢/gal	ARENA00		
CARB Diesel CI value per point	¢/gal	ACRBA00		
CaRFG CI value per point	¢/gal	ARFGA00		
CARBOB CI value per point	¢/gal	ACRBB00		
SAF CI value per point	¢/gal	ASCIA00		
USWC RD Credit Value	¢/gal	AUSWA00		
USWC SAF Credit Value	¢/gal	AUSWF00		
European GHG savings values				
European SAF GHG savings	¢/g of CO2e per MJ	AGHGA00		
European UCOME GHG savings	¢/g of CO2e per MJ	AEURM00		
European RME GHG savings	¢/g of CO2e per MJ	AEURI00		
European PME GHG savings	¢/g of CO2e per MJ	AEURH00		
European SME GHG savings	¢/g of CO2e per MJ	AEURL00		
European FAME 0 GHG savings	¢/g of CO2e per MJ	AEURC00		
European FAME-10 GHG savings	¢/g of CO2e per MJ	AEURD00		
European HVO GHG savings	¢/g of CO2e per MJ	AEURE00		
Asian spreads				
PME vs Crude Palm Oil	$/mt	UCFCE00		

*In codes such as RD620XX, XX refers to the calendar year. E.g., RD62020

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Global

Calculations and spreads

The calculated spreads and ratios use existing Platts biofuel, refined product and credit assessments to provide insight into the price of greenhouse gas reductions using biofuels, carbon credit values for biofuels and the relationships between biofuels and related fossil fuels. The calculations and spreads include outright spreads and ratios between existing Platts assessments.

Platts also publishes prices that represent the value of each point of Carbon Intensity (CI) per gallon of fuel under California's Low Carbon Fuel Standard. The published CI prices per point are calculated using the Platts assessment of front-quarter California LCFS credits ($/mt) and the energy density of the relevant fuel, as published by the California Air Resources Board.

Platts publishes prices that represent the cost of reducing greenhouse gas emissions using physical biofuels in Europe. The calculations adjust Platts biofuels and refined product assessments based on energy densities published in the European Commission's Renewable Energy Directive and then compare the greenhouse gas emissions scores for biofuels and fossil fuels published in RED.

Futures and Foreign Exchange

Platts publishes assessments reflecting the prevailing market value precisely at the MOC close for several futures contracts on Bursa Malaysia (BMD), Intercontinental Exchange (ICE), Euronext and Chicago Board of Trade (CBOT) and foreign exchange values, as well as the settlements for certain futures contracts on the above exchanges.

18:00 Singapore assessments

An assessment for the third-month crude palm oil futures contract listed on the BMD reflecting the prevailing value at 18:00 Singapore is published daily in MYR/mt. The BMD contract rolls forward on the 15th of each calendar month, or if this falls on a holiday, on the preceding business day. From the start of the calendar month until rolling, the assessment reflects the traded value for BMD contract representing the balance of the current month. After the contract rolls until the end of the calendar month, the assessment reflects the traded value for the next month.

The assessed spread between the BMD crude palm oil third-month futures assessment and the ICE gasoil futures contract (PO-GO) for corresponding contractual months is also published reflecting the prevailing value at 18:00 Singapore time. Platts publishes this spread in US dollars per mt and uses the published and prevailing USD/MYR exchange rate at 18:00 Singapore time to convert the BMD palm oil assessment from MYR/mt to USD/mt.

16:30 London assessments

Assessments for the two front months of the gasoil futures contract listed on ICE Futures reflecting prevailing values at 16:30 London time are published in USD/mt. The assessments will roll over to the second and third month contracts on the 5th day of each calendar month until the official expiry of the front month futures contract.

Assessments reflecting the front month of the milling wheat, rapeseed and corn futures contracts listed on Euronext reflecting prevailing values at 16:30 London time are published in Eur/mt.

Assessments reflecting the front month of the soybean oil (USc/lb), corn (USC/bu) and soybean meal (USD/st) contracts listed on CBOT reflecting prevailing values at 16:30 London time are published. The front month assessment will roll to the second month on the 5th of each calendar month (until the official expiry of the existing front month contract).

Platts also reflects in USD/mt, the spread between the first- or second-month soybean oil futures contract as listed on CBOT and the corresponding calendar month's ICE gasoil futures contract (BO-GO). This assessment reflects the front month soybean oil contract until the 5th day of the calendar month of contract expiry. The assessment will roll over to reflect the second-month soybean oil futures contract listed on CBOT on the 5th day of the calendar month of futures contract expiry until the official expiry of the front-month contract. If the 5th day of the calendar month is not a business day in London the spread assessment will roll to reflect the second month futures contract on the next business day.

13:30 CT Houston

Platts publishes the settlement values for the front month soybean oil, corn and soybean meal CBOT futures contracts. Platts also publishes USD.BRL and USD.MXN foreign exchange rate assessments that reflect the prevailing market value at 13:30 CT.

16:30 Sao Paulo

Platts publishes a USD.BRL foreign exchange rate assessment that reflects the prevailing market value at 16:30 Sao Paulo time.

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Revision history

July: Platts added Brazil CBIO credit, Oregon Clean Fuel Program Carbon Credits (OCFP) Washington Clean Fuel Standard Carbon Credits (WACFS) price assessments. Platts also added Chicago Terminal ethanol any-month price assessments.

June 2024: Platts launched European renewable diesel price assessments. Platts changed the Asian used cooking oil and used cooking oil methyl ester timestamps to 1630 Singapore time, from 1800 Singapore time and aligned both the North China assessment to reflect a basis port FOB Tianjin. Platts updated the name of cost-based HVO/renewable diesel prices. Platts updated max volume for Brazil biodiesel. Platts added CFR Southeast Asia assessment and updated Incoterm details for DDGS Delivered Chicago assessment.

February 2024: Platts added POME FOB Indonesia and POME FOB Malaysia assessments. Platts also added Netherlands HBE assessments. Platts updated the calculation and volume specifications for the Bio-Bunkers B24 Singapore assessment. Platts updated the carbon intensity specification for the Ethanol T2 FOB Rotterdam premium assessment and updated the carbon intensity specification for the Ethanol T2 FOB Rotterdam assessment to remove specific publication of 50% GHG savings. Platts updated the NNE Brazil delivered Suape anhydrous assessment specifications to reflect PIS/Cofins tax, and removed the 2022 RVO calculation.

November 2023: Platts updated the density for the CIF ARA SAF assessment. Platts also updated the CIF ARA Used Cooking Oil assessment as well as B30 bio-bunker calculated assessments.

September 2023: Platts completed an annual review of this guide, reviewing all content, correcting typos, and making edits to language throughout. Platts updated the FOB Rotterdam T2 ethanol to exclude German spec, and removed the forex assessments. Platts also added the specifications for the new European SAF assessment, updated the frequency of the NNE Brazil DAP Suape ethanol assessment and updated the DDGS profat specification.

June 2023: Platts added the Bio-Bunkers B24 Singapore assessment and updated FOB Straits UCO quality specifications and Brazil biodiesel tax status.

February 2023: Platts updated the FOB ARA FAME 0 assessment to reflect PoS of non-palm oil origin and FOB China and FOB Straits UCO and UCOME location and quality specifications. Updated RVO calculation to reflect 2023 percentages. Platts updated SAF tax credit to reflect IRS guidance. Platts added NYH ITT ethanol assessment

December 2022: Platts updated the FOB China UCOME CFPP to 5C and changed its CFR Singapore UCOME assessment from a FOB China freight net forward to a standalone assessment on FOB Straits basis together with a separate definition of standard quality specification.

October 2022: Platts completed an annual review of this guide, reviewing all content, correcting typos, and making edits to language throughout. Platts clarified the Basis and Location for Used Cooking Oil (UCO) FOB Straits. Platts updated its daily Brazil ethanol assessments to reflect a 16:30 Sao Paulo time and updated the language for its New York Harbor ethanol barge roll

October 2022: Platts updated the guide with new UCO and UCOME assessments in Asia and amended the specifications of Used Cooking Oil (UCO) North Asia to an FFA of 7%, on August 1.

August 2022: Platts updated its Brazilian ethanol methodology to reflect changes in tax rates. Platts updated the formulas for renewable volume obligations.

June 2022: Platts extended the T2 Ethanol Futures forward curve from six to twelve months out.

April 2022: Platts introduced implied or actual loading date as a factor when normalizing indications in the European biodiesel assessments.

Platts changed the proof of sustainability certification requirement for some of its first-generation biodiesel assessments to ensure the PoS certification reflects the same feedstock as the physical material.

February 2022: Platts introduced a maximum Carbon Intensity requirement of 33.52mg CO2e/MJ to its RME, FAME 0, PME, SME and FAME-10 FOB ARA assessments. This replaced the previous specification of a minimum GHG savings limit.

January 2022: Platts added Brazilian biodiesel, Houston delivered rail and global biofuels calculations and spreads. Platts starts publishing North Asia Used Cooking Oil (UCO) Sustainable Aviation Fuel (SAF) and Hydrotreated Vegetable Oil (HVO) values.

November 2021: Platts amended the size reflected in its used cooking oil North Asia assessment to bulk volume of 3,000 mt to 10,000 mt parcels, effective Nov. 1, 2021.

September 2021: Platts completed an annual review of the Biofuels specifications guide. Platts reviewed all content, corrected typos and made minor edits to language. Platts removed FOB Santos to NYH ethanol calculation in line with discontinuation. Platts clarified PoS certification requirements for T2 Ethanol FOB Rotterdam and balance of month assessment methodology for US Ethanol swaps; and added Ethanol cash margins methodology

April 2021: Following a formal public consultation launch, proposal and review, S&P Global Platts discontinues its Ethanol T2 FOB Rotterdam German Spec assessment, effective April 1, 2021.

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March 2021: Platts updated the renewable volume obligation percentages used in its RVO assessments and launched Renewable Diesel assessments in the US.

January 2021: Platts introduced a maximum Carbon Intensity requirement of 33.52mg CO2e/MJ into its European T2 ethanol assessments. This replaced the previous specification of a minimum GHG savings limit. Platts also launched a European T2 Premium ethanol assessment meeting a maximum CI of 18.82g CO2e/MJ. Platts starts publishing Southeast Asia Palm Fatty Acid Distillates (PFAD) Sustainable Aviation Fuel (SAF) and Hydrotreated Vegetable Oil (HVO) values.

September 2020: Platts completed an annual review of the Biofuels specifications guide. Platts reviewed all content, corrected typos and made minor edits to language. Platts launched Chicago tallow assessment and starts publishing US West Coast Sustainable Aviation Fuel (SAF) values.

August 2020: Platts changed the timing and laycan for its biodiesel FOB Southeast Asia assessment, as well as its calculation of the palm oil-gasoil spread, effective July 1, 2020. Platts started publishing Northwest European Sustainable Aviation Fuel (SAF) and Hydrotreated Vegetable Oil (HVO) assessments.

April 2020: Platts launched Carbon Intensity per point per gallon of ethanol value and North California delivered rail 70 CI assessment. Platts updated gasoline standard CI North California delivered rail assessment and discontinued South California delivered rail assessment. Updated this guide with 2020 RVO percentages and calculation.

March 2020: Platts updated the guide with new UCO and UCOME assessments.

November 2019: Platts completed an annual review of the Biofuels specifications guide. Platts reviewed all content, corrected typos and made minor edits to language.

July 2019: Platts updated this guide to reflect the change in Ethanol Chicago (terminal) assessment methodology, with effect from June 3, 2019, including new offtake options and nomination guidelines. Platts completed an annual update to sections 1 to 6 of Platts Methodology and Specifications Guides in April 2019, and moved these sections into a standalone Methodology Guide.

April 2019: Platts updated CS Brazil domestic ethanol assessment credit terms, volume.

February 2019: Update RIN code labelling and RVO percentages.

January 2019: Platts reviewed the guide as part of its annual methodology review and made a number of minor edits.

October 2018: Platts clarified T2 ethanol sustainability criteria.

July 2018: Platts revamped sections I-VI.

June 2018: Platts clarified its Ethanol Grade B CFR Ulsan specifications reflecting sugarcane based industrial ethanol.

May 2018: Platts clarified RIN transfers with trades in US ethanol Market on Close assessment processes. Platts changed the basis of the T2 ethanol assessment to FOB ARA from FOB Rotterdam.

November 2017: Platts reviewed the guide as part of its annual methodology review. Updated Loading rate, dates, timing and locations, adding normalization. In addition, ICE Settlements, Open Interest and Volumes were also updated with correct contract references. Platts launched NNE Brazil delivered Suape weekly anhydrous ethanol assessment.

October 2017: Platts specified terms of POS in European T2 ethanol.

July 2017: Platts updates California ethanol Carbon Intensity basis and timing reflected in the assessment.

June 2017: Platts updates the ex-mill Ribeirao Hydrous expressed as Raw Sugar equivalent methodology

March 2017: Platts revised roll dates for CIF NOLA DDGS barge and FOB Chicago DDGS truck assessments

December 2016: Platts added a minimum 50% greenhouse gas saving requirement for T2 and T1 ethanol assessments.

November 2016: Platts made changes to the formatting and updated language for the Europe section.

October 2016: Annual review: Platts made a number of minor edits and updated language for the Asia, Europe and Americas sections. Platts discontinued its assessment of fuel-grade ethanol FOB Thailand.

July 2016: Platts changed Americas biofuels Market on Close assessment time to 14:30 Eastern Standard Time (13:30 CT) from 1515 EST (14:15 CT). Platts updated the guide to reflect a clarification regarding the delivery ports taken into consideration for the CIF Philippines ethanol assessments. Platts amended language for the Asian section of Futures and Foreign Exchange assessments to clarify the assessment month used on Bursa Malaysia (BMD) and the process in which the front month rolls over. Platts updated the guide to reflect changes made to the Biodiesel FOB Southeast Asia assessment. Beginning 1 July, 2016, Platts assesses RED compliant PME at the Malaysian loading ports of Port Klang, Pasir Gudang and Lahad Datu which adheres to EN14214 quality specifications with monoglyceride levels of 0.5% or less.

May 2016: Platts updated its methodology to reflect an alternate assessment methodology for D3 cellulosic RINs when market activity is not available.

April 2016: Platts updated the guide to reflect changes made to the FOB Rotterdam T2 ethanol assessments. As of April 1, 2016, Platts FOB Rotterdam T2 assessments reflect a FOB Rotterdam

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basis with loading options in Amsterdam and Antwerp. Platts updated Chicago terminal ethanol ITT methodology to include nomination time as originally stated in 2009.

January 2016: References to non-RED biodiesel FOB ARA assessments removed, following the discontinuation of those assessments effective January 1, 2016.

December 2015: The methodology guide was updated with further description and clarification of calculated values of the US Renewable Volume Obligation in accordance with the release of the blending mandates under the Renewable Fuel Standard. Platts also removed references to the FOB Singapore ethanol, following the discontinuation of its assessment effective Dec 21. References to non-RED biodiesel FOB ARA assessments removed, following the discontinuation of those assessments effective January 1, 2016.

October 2015: Platts updated the guide with the new assessment Ethanol Grade B CFR Ulsan, effective October 1. Platts updated guide with new assessments of US Dried Distillers Grain CIF basis New Orleans barge and FOB Chicago truck or rail launched October 1, 2015.

September 2015: Platts updated the guide with: new US 'lifetime' RINS codes; updated methodology around the roll dates for the Atlantic Coast ethanol assessments; a clarification on specifications for its FOB Southeast Asia biodiesel assessment; a clarification on methodology for T1 ethanol CIF NWE cargo and FOB Rotterdam barge assessments.

July 2015: Platts clarified and updated its RINS rolling dates and launch cycles, as well as improving the wording around each individual RIN name to align with industry standards on corn-based and biomass-based RINS.

June 2015: Platts removed references to non-RED SME biodiesel FOB ARA barges, following the discontinuation of its assessment effective June 1.

February 2015: This methodology guide was updated to include further description of Platts' processes and practices in survey assessment environments.

January 2015: Platts added a requirement for all FOB ARA biodiesel assessments (except for non-RED and RED-compliant SME) to reflect material with sustainability documentation showing a minimum greenhouse gas saving of 50% when compared to the fossil fuel comparator, as per the European Union's Fuel Quality Directive calculation.

October 2014: Platts clarified for European biodiesel barges, operational tolerances and the maximum number of days for delivery of Proof of Sustainability documentation.

August 2014: Platts revamped all Agriculture and Biofuel Methodology and Specifications Guides, including its Global Biofuels guide, in August 2014. This revamp was completed to enhance the clarity and usefulness of all guides, and to introduce greater consistency of layout and structure across all published methodology guides. Methodologies for market coverage were not changed through this revamp, unless specifically noted in the methodology guide itself.

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