

ACRYLIC ACID- ACRYLATE ESTERS

Acrylic Acid

Crude acrylic acid has traditionally been used as the raw material for acrylate esters; methyl acrylate, ethyl acrylate, butyl acrylate and 2-ethylhexyl acrylate. These bulk acrylates were used to produce solvent-based acrylic resins but environmental concerns over solvent use led to the development of water-based acrylics.

Applications for water-based acrylic acid (glacials) are primarily in decorative, masonry and industrial coatings, but other uses include adhesives, paper and leather coatings, polishes, carpet backing compounds and tablet coatings. Smaller volumes of acrylic acid are used in polyacrylates which are utilized as thickeners, dispersants and rheology controllers. Glacial acrylic acid is also employed as a co-monomer with acrylamide in anionic polyacrylamide and to produce hydroxyacrylates for use in industrial coating formulations.

From the mid-1980s, two new applications - super absorbent polymers (SAPs) and detergent polymers - have emerged, accounting now for nearly 40 percent of world glacial acrylic acid consumption. SAPs are cross-linked polyacrylates with the ability to absorb and retain more than 100 times their own weight in liquid.

Detergent polymers are essentially homopolymer polyacrylates and copolymers of polyacrylic acid and maleic anhydride that can be used with both zeolites and phosphates in washing powder formulations. They grew strongly in western Europe from the mid-1980s as phosphate-based detergents were phased out, and more recently, their use in the US has increased. However, the move to compact formulations in washing powders and a slowdown in phosphate replacement has diminished the growth of these polymers.

ICIS pricing quotes acrylic acid/acrylate esters in **Europe, Asia-Pacific, China** and the **USA**.

Acrylate Esters

Acrylate esters are used in the manufacture of surface coatings/paints and resins, adhesives and plastics, dispersions and in some cases paper. They are readily polymerised if exposed in water, to form a latex (a dispersion of solid particles in water) such as latex paints. An associated product is methyl methacrylate. Acrylate esters are made from the reaction of an alcohol such as methyl to an acid such as acrylic acid. This process is called esterification.

Commodity acrylate esters are butyl acrylate (BA), 2-ethylhexyl acrylate (2EHA), ethyl acrylate (EA) and methyl acrylate (MA), in order of decreasing importance. Speciality acrylate esters are made from isobutanol, isooctyl alcohol and several polyols such as hydroxyalkyl, alkylalkanolamine. They are manufactured in minor quantities to produce specialty polymeric materials.

Major commercial acrylates are formed from the following alcohols: butanol, isobutanol, 2 ethyl hexanol, ethanol and methanol.

Acrylate esters are sold by roadcar or iso-container in liquid form or drums. They are colourless liquids with acrid odours, and are traded as technical grade (99% purity). MA & EA are toxic enough to require a hazardous shipping label, while BA and 2EHA are considered safe.

ICIS pricing quotes acrylate esters in **Europe, Asia-Pacific** and the **US**.

Frequency:

Published weekly on Wednesdays

Acrylic Acid (Europe)

Weekly Price Assessments:

Acrylic Acid Contract (Quarterly) Prices

- FD NWE (EUR/MT & conversion to US CTS/LB)

Acrylic Acid Spot Prices

- FD NWE (EUR/MT & conversion to US CTS/LB)

General Information

Assessment window: Assessments are based on information supplied by market participants up to the close of business at 1700 hours London time

Specification: The quotes in Europe and the US are for product 99.7% purity, with a maximum water content of 0.07%.

Timing: ICIS pricing spot price assessments are based on cargoes delivered typically within two to four weeks forward, depending on source.

Terms: 30-60 days after bill of lading date.

Standard cargo size: A typical cargo size in Europe is 1,000 tonnes for bulk volumes, while a typical truck/railcar is circa 20 tonnes.

Assessment Basis: The European contract and spot price ranges are assessed following verification from major buyers and sellers in northwest Europe. European price quotations are published on a free delivered (FD) basis and incorporate discussions and confirmed deals across northwest Europe.

The report offers market commentary that includes details of transactions, news on the supply/demand balance, export/import information, contract price negotiations and general sentiment for price direction. Where applicable there is product information, comments on up and downstream market developments and general market intelligence.

Acrylate Esters (Europe)

Weekly Price Assessments:

Acrylate Esters Contract (Quarterly) Prices

- METHYL ACRYLATE FD NWE (EUR/MT & conversion to US CTS/LB)
- ETHYL ACRYLATE FD NWE (EUR/MT & conversion to US CTS/LB)
- BUTYL ACRYLATE FD NWE (EUR/MT & conversion to US CTS/LB)
- 2-ETHYL HEXYL ACRYLATE FD NWE (EUR/MT & conversion to US CTS/LB)

Acrylate Esters Spot Prices

- METHYL ACRYLATE FD (EUR/MT & conversion to US CTS/LB)
- ETHYL ACRYLATE FD (EUR/MT & conversion to US CTS/LB)
- BUTYL ACRYLATE FD (EUR/MT & conversion to US CTS/LB)
- 2-ETHYL HEXYL ACRYLATE FD (EUR/MT & conversion to US CTS/LB)

General Information

Assessment window: Assessments are based on information supplied by market participants up to the close of business at 1700 hours London time.

Specification: Technical grade of 99% purity.

Timing: ICIS pricing assessments are based on cargoes delivered typically within two-to-four weeks forward, depending on source.

Terms: 30-60 days after bill of lading date.

Standard cargo size: In Europe, a typical cargo size is 1,000 tonnes for bulk, while a typical truck/railcar is circa 20 tonnes.

Assessment Basis: The European contract and spot price ranges are assessed following verification from major buyers and sellers in northwest Europe. European price quotations are published on a free delivered (FD) basis and incorporate discussions and confirmed deals across northwest Europe.

Following the price ranges, each report carries a market commentary which includes details of transactions, news on the supply/demand balance, export/import information, contract price negotiations and general sentiment for price direction. Where applicable there is product information, comments on up and downstream market developments and general market intelligence.

Acrylic Acid (Asia-Pacific)

Weekly price assessments

Glacial AA spot

- CIF CHINA MAIN PORT Drummed (USD/MT & conversion to US CTS/LB)
- DEL CHINA Drummed (CNY/MT & conversion to US CTS/LB)

- CIF S.E. Asia Drummed (USD/MT & conversion to US CTS/LB)

Acrylate Esters (Asia-Pacific)

Weekly price assessments

CIF S.E. Asia Iso-container spot

- BUTYL-A (USD/MT & conversion to US CTS/LB)
- ETHYL-A (USD/MT & conversion to US CTS/LB)
- METHYL-A (USD/MT & conversion to US CTS/LB)
- 2 EH-A (USD/MT & conversion to US CTS/LB)

CIF China Main Port Bulk

- BUTYL-A (USD/MT & conversion to US CTS/LB)
- ETHYL-A (USD/MT & conversion to US CTS/LB)
- METHYL-A (USD/MT & conversion to US CTS/LB)
- 2 EH-A (USD/MT & conversion to US CTS/LB)

DEL China Bulk

- BUTYL-A (CNY/MT & conversion to US CTS/LB)

- ETHYL-A (CNY/MT & conversion to US CTS/LB)
- METHYL-A (CNY/MT & conversion to US CTS/LB)
- 2 EH-A (CNY/MT& conversion to US CTS/LB)

Acrylic Acid (USA)

Weekly price assessments

Monthly Domestic Contract Prices

- FD GLACIAL monthly (US CTS/LB & conversion to USD/MT)

Export Prices

- FOB USG GLACIAL (US CTS/LB & conversion to USD/MT)

Acrylate Esters (USA)

Weekly price assessments

Monthly Domestic Contract Prices

- FD BUTYL-A (US CTS/LB & conversion to USD/MT)
- FD ETHYL-A (US CTS/LB & conversion to USD/MT)
- FD METHYL-A (US CTS/LB & conversion to USD/MT)
- FD 2EH-A (US CTS/LB & conversion to USD/MT)

Export Prices

- FOB USG BUTYL-A (US CTS/LB & conversion to USD/MT)
- FOB USG 2 EH-A (US CTS/LB & conversion to USD/MT)

Acrylic Acid (China)

Weekly price assessments

Glacial Acrylic Acid spot

- CIF CHINA MAIN PORT DRUMMED (USD/MT)
- DEL CHINA BULK (East China) (CNY/MT)
- DEL CHINA DRUMMED (South China) (CNY/MT)

Acrylate Esters (China)

Weekly price assessments

ACRYLATE ESTERS spot

CIF China Main Port Bulk

- BUTYL-A (USD/MT)
- ETHYL-A (USD/MT)
- METHYL-A (USD/MT)
- 2-EHA (USD/MT)

DEL East China Bulk

- BUTYL-A (CNY/MT)
- ETHYL-A (CNY/MT)
- METHYL-A (CNY/MT)
- 2-EHA (CNY/MT)

DEL South China Bulk/Drummed

- BUTYL-A Bulk (CNY/MT)
- ETHYL-A Drummed (CNY/MT)
- METHYL-A Drummed (CNY/MT)
- 2-EHA Bulk (CNY/MT)

General Information

Assessment window: Assessments are based on information supplied by market participants for the week up to 1700 hours in Singapore and Houston (US central time) on Wednesdays.

In the China report, assessments are based on information supplied by market participants for the week up to 1700 hours in Shanghai on Wednesdays.

Specification: The quotes are for product 99.7 percent purity, with a maximum water content of 0.07 percent, a molecular weight product of 72.06, with a flash point at 51°C and boiling point of 141°C.

Timing: ICIS pricing assessments in Asia are based on imported USD cargoes delivered within four weeks from when the deal is concluded with letters of credit valid for up to 90 days, while Chinese domestic cargoes transacted in yuan (CNY) include cargoes delivered within seven days. In the US, assessments are based on truck loads delivered within four weeks from when the deal was concluded, with letters of credit valid for up to 90 days.

Terms: In the US, letters of credit are valid for up to 90 days. In Asia-Pacific standard credit terms are for 30-90 days. In China, payment terms for imported USD cargoes include letters of credit valid for up to 90 days. In both East and South China, credit terms are within two months.

Standard cargo size: In Asia, drum size is equivalent to 14.4 tonnes, iso-tank is around 20-40 tonnes, and bulk is above 500 tonnes. In the US this is based on a standard truckload size, to customers taking three to six million pounds per year.

In East China assessments, BA bulk cargoes are around 20-200 tonnes while MA/EA/2-EHA bulk cargoes are 20-50 tonnes. In south China assessments, BA bulk cargoes are around 20-200 tonnes, drummed EA and MA cargoes are 10-50 tonnes and bulk 2-EHA cargoes are around 5-30 tonnes.

In East China assessments, GAA bulk cargoes are around 20-100 tonnes while in south China assessments GAA drummed cargoes are around 5-30 tonnes.

Assessment basis: US contract prices are based on monthly settlements. For FOB export quotes, the majority of off-shore business is conducted with Latin America.

Spot prices in Asia can change weekly depending on trades done.



Following the price ranges, each report carries a market commentary which includes details of all transactions reported, information on the supply/demand balance, import/export news, general sentiment for price direction, production information, feedstock price trends and general market intelligence affecting the acrylic acid and acrylate esters industries in Asia and the US.

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