

## **THE MARKET**

[Sulphur](#) (S) is an important element in nature. As a constituent of proteins, has a similar nutrient value to [nitrogen](#) (N) and is essential to the life of plants, with its lack causing similar effects to the lack of nitrogen. Sulphur is found in meteorites, volcanoes, hot springs, and as galena, gypsum, Epsom salts and barite. It is also a minor constituent of fats, body fluids, and skeletal minerals. Sulphur is a pale yellow, with a slight rotten egg odour, brittle solid, which is insoluble in water but soluble in carbon disulphide. As a native element in nature, it can be extracted using the Frasch process, which means that sulphur can be extracted from underground without mining it. In the Frasch process, underground deposits of sulphur are forced to the surface using superheated water and steam (to melt the sulphur) and compressed air. This gives molten sulphur, which is allowed to cool in large basins. Purity can reach 99.5%. The process is energy intense. However, sulphur is also produced chemically as a by product of crude oil and natural gas, in crush lump, flake and prilled form.

Sulphur can be absorbed by plants as a radical element ( $\text{SO}_4$ ) or from air as Hydrogen sulphide ( $\text{SO}_2$ ). Due to reduced emissions of sulphur into the atmosphere in recent years (sulphur dioxide is a dangerous component in atmospheric air pollution and is one of the factors responsible for acid rain) and a decline in usage of some chemical fertilizers that contain sulphur, sulphur has become gradually less available to crops.

Most of the sulphur produced is used to make sulphuric acid ( $\text{H}_2\text{SO}_4$ ), which has many uses including the synthesis of fertilizers and polyamides. The production of one tonne of 100%  $\text{H}_2\text{SO}_4$  requires 0.33 tonne of sulphur. Sulphuric acid is used in the production of [ammonium sulphate](#) (0.74 tonne), single superphosphate SSP (0.37 tonne) and [phosphoric acid](#) (wet process 2.8 tonnes). Phosphoric acid is then used as a raw material for the production of [Diammonium phosphate](#) (DAP), [Monoammonium phosphate](#) (MAP) and [triple superphosphate](#) (TSP).

Other industrial uses of sulphur includes production of black gunpowder, asphalt, vulcanisation of natural rubber, as a fungicide and as a fumigant, use in the bleaching of dried fruits and for paper products.

**Frequency:**

The Market quotes Sulphur prices on a weekly basis [worldwide](#) on Thursdays.

Market Updates are published on Mondays, Tuesdays and Wednesdays

ICIS pricing quotes Sulphur in the [US](#) weekly on Fridays (information filed Thursdays) and quotes sulphur in [China](#) weekly on Thursdays.

ICIS PentaSul quotes sulphur prices for the North American market on the fourth Friday of every month in the North American Sulphur Review and on a monthly basis worldwide in World Monthly Review which is published during the first week of each month.

*THE MARKET***Weekly Price Assessments:**

Formed sulphur

- FOB VANCOUVER spot (USD/MT)
- FOB VANCOUVER contract (USD/MT)
- FOB MIDDLE EAST spot (USD/MT)
- CFR MEDITERRANEAN spot (USD/MT)
- CFR NORTH AFRICA contract (USD/MT)
- CFR CHINA spot (USD/MT)
- CFR INDIA spot (USD/MT)
- FOB BLACK SEA spot (USD/MT)
- CFR LIQUID TAMPA (USD/LT)
- DEL LIQUID BENELUX (USD/MT)

## **Sulphur (Global)**

### **Weekly Price Assessments:**

- FRASCH and RECOVERED contract prices
- CFR Tampa (USD/LT & conversion to USD/MT) – quarterly contract
- FOB Vancouver (USD/TONNE) – quarterly contract
- CFR North Africa (USD/TONNE) – quarterly contract
- RECOVERED Sulphur spot prices
- FOB Mid East (USD/ TONNE)
- CFR China (USD/ TONNE)
- Sulphur (CHINA)

### **Weekly Price Assessments:**

#### **Sulphur spot prices**

- CFR CHINA (USD/ TONNE)

#### **Domestic spot prices**

- East China EXWH (CNY/ TONNE)
- Southwest China EXWH (CNY/ TONNE)

### *ICIS PentaSul*

#### **Monthly Price Assessments – North America Sulphur Review:**

- FOB VANCOUVER spot (USD/MT) as assessed by The Market
- FOB VANCOUVER contract (USD/MT) as assessed by The Market
- FOB US GULF spot (USD/MT) as assessed by ICIS PentaSul
- FOB CALIFORNIA spot (USD/MT) as assessed by ICIS PentaSul
- CFR LIQUID TAMPA contract (USD/LT) as assessed by The Market

- CFR LIQUID TAMPA spot (USD/LT) as assessed by ICIS PentaSul
- CFR LIQUID HOUSTON contact (USD/LT) as assessed by ICIS PentaSul

### **Monthly Price Assessments – World Monthly Review:**

- FOB VANCOUVER contract (USD/MT) as assessed by The Market
- CFR LIQUID TAMPA contract (USD/LT) as assessed by The Market
- CFR LIQUID HOUSTON contact (USD/LT) as assessed by ICIS PentaSul
- FOB MIDDLE EAST spot (USD/MT) as assessed by The Market
- CFR MEDITERRANEAN spot (USD/MT) as assessed by The Market
- CFR INDIA spot (USD/MT) as assessed by The Market

### *General Information:*

#### **Assessment window:**

Price assessments are based on information supplied by market participants through the week up to close of business on Thursdays at 1700 hours in London. For the China report, price assessments are based on information supplied up to close of business on Thursdays at 17:00 hours in Shanghai. For ICIS PentaSul reports, price assessments are based on information supplied by market participants throughout the month up to close of business on the fourth Thursday of the month at 1700 hours in Houston. Prices used in ICIS PentaSul reports that are assessed by The Market are pulled from the most recent published issue.

#### **Specifications:**

Prices are quoted for mostly solid sulphur traded around the world; and in the case of the US and Benelux, in liquid form. Solid sulphur includes granular and crushed lump product and are both used in the ICIS assessments. However, granular sulphur is more commonly traded in the global market. Spot quotes in the China report cover recovered sulphur.

**Timing:**

Contract prices are usually for cargoes booked on a quarterly or semester basis. Spot prices are typically for cargoes loading prompt to four/six weeks forward except in China where domestic parcels are for delivery 15-30 days from date of publication.

**Terms:**

Prices are usually assessed on a cash basis, but we report about the credit terms, including in some contracts (e.g. usually 90 days for Middle East contracts to China) or spot sales (in India, credit terms can vary from 15 to 180 days). In China, credit terms can vary from at sight to 30 days.

**Standard cargo size:**

All cargo sizes are considered from 6,000 to 60,000 tonnes for all FOB and CFR quotes. In China, spot volumes of sulphur are usually sold in bulk. In the domestic market bagged sulphur is normally sold in 50kg bags whereas liquid sulphur is usually transported by tank lorry in 20-30 tonne lots.

**Assessment basis:**

Information about new sales, changes to supply/demand and any other factors that can have an impact on the sulphur market is collected through the week up to press time on Thursday through telephone calls with producers, end-users, traders and shippers, plus email correspondence and web searching.

Information received is carefully counterchecked with other sources to make sure the information is true and accurate and not in any way misleading.

The main reference prices in the sulphur market are the FOB Vancouver contract (solid sulphur sold under quarterly or semester contracts), FOB Middle East (solid sulphur sold under contracts and spot), and FOB Black Sea (contract and spot) quotes. These are used in contract price formulae but are also taken as reference when spot deals are concluded in China, India, Brazil, North and South Africa and other markets.



The US Gulf FOB formed price published by ICIS PentaSul is a derived range representing prilled sulphur being exported into the global market from current operations in the US Gulf region. The calculation takes ICIS PentaSul's own assessment of CFR prices in markets being served (mainly Brazil and Morocco) and nets out freight rates to these markets as published by The Market, as well as data from shipping companies. The range is then discussed with market participants active in this export business.

In the China reports, East China refers to Shanghai, Zhejiang, Jiangsu and Shandong, south China to Guangdong and Fujian and southwest China to Guizhou, Sichuan and Yunnan.

The main trade patterns in the sulphur market are as follows:

Black Sea sulphur is mostly sold to North Africa under contract, with phosphate producing countries, Tunisia and Morocco, the largest buyers. It also moves to Brazil, and Mediterranean countries such as Israel, Jordan, Lebanon, Turkey etc.

Middle East sulphur is largely committed under contract, either with traders on a monthly/quarterly allocation or to end-users in Morocco, Tunisia, South Africa, Brazil and Jordan on an annual basis with pricing every three/six months. Traders with Middle East allocations usually sell to China on a CFR basis under contract and spot. Spot sales are made mostly to India on a CFR basis.

Canadian sulphur is shipped in solid form to China, South Africa, Australia and New Zealand, mostly under contract. It moves in liquid form to the US, where it is mostly used in the production of sulphuric acid as raw material for phosphate fertilizer production. Liquid sulphur is available from a number of US refineries and is moved to Louisiana and central Florida for the manufacture of phosphate fertilizers.