

## Plasticizers Methodology

The global plasticizers market size is around 6m tonnes/year, of which Asia is the largest consumer, accounting for approximately 3.5m tonnes/year, followed by Europe, with around 1m tonnes/year and the US at about 800,000 tonnes/year.

Plasticizers are additives that increase the plasticity or fluidity of the material to which they are added. Some 96% of plasticizers are consumed in flexible PVC applications, including cables, PVC films, roofing, flooring and wall covering.

In the US, 80-90% of plasticizers are consumed in PVC applications.

Plasticizers are grouped into a number of categories such as orthophthalates – commonly referred to as phthalates – aliphatics (mainly adipates), trimellitates, epoxy, polymerics and phosphates. They can be substituted by one another, depending on cost, performance and legislation.

Ortho-phthalate plasticizers such as dioctyl phthalate (DOP), diisononyl phthalate (DINP) and di-propyl heptyl phthalate (DPHP) are by far the predominant types, representing around 75-85% of plasticizers produced and consumed in the world.

However, environmental and health concerns being attributed to orthophthalates - more so to low phthalates such as DOP - have led to a decline in their use against a growing trend for using more environmentally-friendly compounds such as dioctyl terephthalate (DOTP).

Non-phthalate plasticizers include dioctyl adipate (DOA), 1,2-cyclohexane dicarboxylic acid diisononyl ester (DINCH) and trioctyl trimellitate (TOTM).

ICIS pricing quotes DOP, DINP, DOTP, DOA, DPHP, DINCH and TOTM in the US; DOP, DINP and DOTP in Asia-Pacific; and DOP, DINP, DOTP and DPHP in Europe.

DOP is the most common low-phthalate plasticizer worldwide. It is most widely used in Asia. While it is no longer used in the US to any significant extent, DOP is an important plasticizer in Latin America. DOP represents about 10% of the European plasticizer market where it has been included in the EU Candidate List and is expected to be phased out by the EU by February 2015.

DINP is a high-phthalate plasticizer. It is widely used in the US, and is the most widely used plasticizer in Europe and is the second largest plasticizer in Asia.

DOTP is a terephthalate plasticizer. This general purpose compound is growing fast in volume and is taking share not only from DOP but also increasingly from DINP.

DPHP is a decyl phthalate used in applications such as the production of artificial leather for automobiles, and for wire and cable coatings.



DINCH was developed for use in applications that are sensitive based on exposure and toxicological issues. It is used in the production of medical products and toys.

Feedstocks for DOP include 2-ethylhexanol (2-EH) and phthalic anhydride (PA).

Feedstocks for DINP include isononanol (INA) and PA.

Feedstocks for DOTP include 2-EH and terephthalic acid (PTA).

Feedstock for DPHP is 2-propyl heptanol alcohol (2PH).

Feedstocks for DOA include 2-EH and adipic acid.

Feedstock for TOTM is 2-EH.

Feedstock for DINCH is DINP.

**Frequency:**

US: Published weekly on Fridays

Asia-Pacific: Published weekly on Fridays

Europe: Published weekly on Wednesdays

**Weekly Price Assessments:**

**Plasticizers (US)**

**DOP (dioctyl phthalate) Spot Prices**

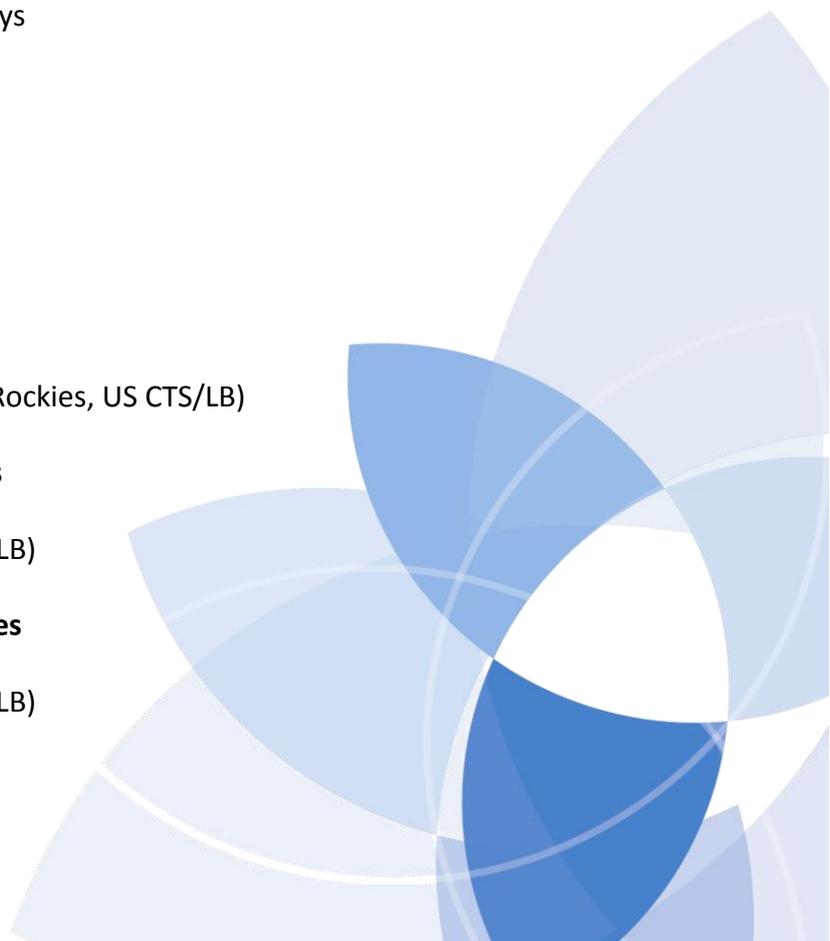
DEL EOR (East of Rockies, US CTS/LB)

**DINP (Diisononyl Phthalate) Spot Prices**

DEL EOR (US CTS/LB)

**DOTP (Dioctyl Terephthalate) Spot Prices**

DEL EOR (US CTS/LB)





### **DOA (Diioctyl Adipate) Spot Prices**

DEL EOR (US CTS/LB)

### **DINCH (1,2-cyclohexane dicarboxylic acid diisononyl ester) Spot Prices**

DEL EOR (US CTS/LB)

### **TOTM (Triioctyl Trimellitate) Spot Prices**

DEL EOR (US CTS/LB)

### **Plasticizers (Asia-Pacific)**

#### **DOP (Diioctyl Phthalate) Spot Prices**

· CFR East Asia (USD/MT)

#### **DINP (Diisononyl Phthalate) Spot Prices**

· DEL East China (CNY/MT)

· CFR China (USD/MT)

· FOB NE Asia

#### **DOTP (Diioctyl Terephthalate) Spot Prices**

· Ex-tank East China (CNY/MT)

· CFR China (USD/MT)

### **Plasticizers (Europe)**

#### **DOP (Diioctyl Phthalate) Spot Prices**

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

#### **DINP (Diisononyl Phthalate) Spot Prices**

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



### **DPHP (di-propyl heptyl phthalate) Spot Prices**

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

### **DOTP (Diethyl Terephthalic) Spot Prices**

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

### **General Information:**

#### **Assessment window:**

In the US, price assessments are based on information supplied by market participants through the week up to the close of business on Friday at 1700 hours in Houston.

In Asia-Pacific, price assessments are based on information supplied by market participants through the week up to close of business on Friday at 1700 hours in Singapore and Shanghai.

In Europe, price assessments are based on information supplied by market participants through the week up to close of business on Wednesdays at 1700 hours in London.

#### **Specification:**

Asian assessments refer to plasticizers with a minimum purity of 99%.

European assessments refer to plasticizers with a minimum purity of 99.5%.

#### **Timing:**

In the US, assessments include cargoes delivered up to six weeks forward from the date of publication.

In Asia-Pacific, China imported cargoes are assessed for loading or delivery 2-4 weeks forward from the date of publication, and domestic cargoes are assessed for loading within 7 days after full payment from the buyers.

In Europe, assessments include cargoes delivered up to six weeks forward from the date of publication.



### **Terms:**

The prices quoted are spot prices. To reflect this particular market, this term incorporates single spot deals as well as freely negotiated monthly business. It does not include any transaction between a buyer and seller in which the buyer is required to take a set volume from a seller.

In Asia-Pacific, terms typically refer to 30-60 days after bill of lading date. The price range is based on credit terms of LC 90 days. Confirmed deals with differing credit terms will be factored into the assessment but will be adjusted to LC 90 days equivalent.

Tariff, tax exemptions and import duties are factored in.

China domestic prices refer to deals in which the buyers accomplish the full payment ahead of or on the cargoes loading.

### **Standard cargo size:**

In the US, assessments represent trucks of 20-40 tonnes. The report takes into consideration trades and negotiations between sellers and end users with an average annual intake of approximately 1,000-3,000 tonnes/year of DOP, DINP, DPHP, DOTP, DOA, DINCH and/or TOTM. The assessment represents the price paid by end users.

For CFR China, cargoes assessed are typically above 300 tonnes.

FOB NE Asia, cargoes assessed are above 100 tonnes.

China domestic cargoes assessed are 50-200 tonnes

In Europe, assessments represent trucks of 23-30 tonnes. The report takes into consideration trades and negotiations between sellers and end users with an average annual intake of approximately 1,000-3,000 tonnes/year of DOP, DINP, DIDP, DPHP and DOTP. The typical DOA or TOTM buyer purchases around 500-1,000 tonnes/year.

### **Assessment basis:**

Price assessments are based on information gathered throughout the week from market participants including producers, consumers, traders and distributors. The reports offer market commentary that where appropriate includes details of traced transactions, news on the supply/demand balance, export/import information, general sentiment for price direction, comments on up and downstream market developments and other factors impacting the market, with more emphasis placed on price movements occurring near the publication deadline.



In the Plasticizers (Asia-Pacific) report, the DINP report examines trade flows mainly to China and exports from NE Asian producers. While business to other markets is covered comprehensively, the report focuses mainly on China as this represents the main market for DINP and DOP.

The price assessment CFR China indicates current prices of exported material from NE Asia bound for China. The main NE Asian export markets are Taiwan, South Korea and Japan.

The domestic China price assessments for DINP and DOTP in the Asia Pacific report refer to product that is produced locally.

Although China is the key market for DINP and DOTP in Asia, information in the Asia report also covers Taiwan, South Korea, Japan and Southeast Asia. Material from Asia to other regions is included at times when such trade flows can be confirmed.

In the Plasticizers (Europe) report, ICIS pricing focuses on spot free-delivered (FD) northwest Europe (NWE) price assessments for DOP, DINP, DPHP and DOTP, plus ad hoc commentary and price coverage of diisodecyl phthalate (DIDP), dioctyl adipate (DOA), trioctyl trimellitate (TOTM) and other speciality plasticizers.

In the US, ICIS pricing focuses on spot price assessments for DOP, DINP, DPHP, DOTP, DOA, DINCH and TOTM, plus ad hoc commentary and price coverage of other specialty plasticizers.

### **Feedstocks**

The feedstock section includes pricing, production and developments in the upstream markets for propylene, 2-EH, orthoxylene (OX), PA, PTA and adipic acid (ADA).

The report includes supply-and-demand assessments for the US, Asia-Pacific and northwest Europe, including information on planned or unplanned plant shutdowns and new capacities. It also contains ad hoc coverage of prices and regional supply and demand assessments for eastern Europe, the US, Turkey and Asia Pacific.

The report also includes information on the dynamics between orthophthalate and non-orthophthalate plasticizers markets, as well as on the impact that key legislative changes are having on markets.

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