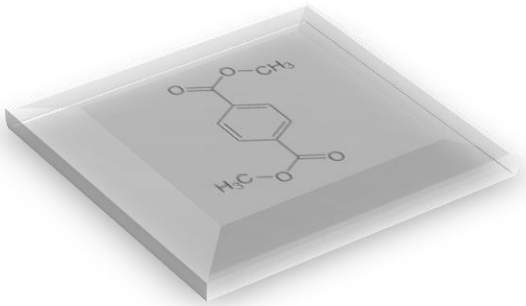
Dimethyl Terephthalate (DMT) – solid



$C_{10}H_{10}O_4$
CAS no.: 120-61-6
EINECS no.: 204-411-8
Molar weight: 194.2 g/mol
Packaging: 500 kg /1.000 kg big bags – smaller containers upon request

Specification

DMT – solid	***Value/unit***	***Method***
Appearance	white flakes/briquettes	[visual]
DMT content	min. 99.9%	[GC]*
Solidification point	140.63 – 140.64 °C	ASTM D 1015 [physical inspection]
Hazen colour of melt at 150 °C	max. 10	DIN EN ISO 6271 [photometry]
Acid value	max. 0.03 mg KOH/g	DIN EN ISO 2114 [potentiometry]

* In-house method

About Dimethyl Terephthalate (DMT)

Miscellaneous properties

Characteristic	Value (approx.)/unit
Bulk density flakes	500 kg/m³
Bulk density briquettes	800 kg/m³
Flash point	141 °C
Ignition temperature	520 °C
Saponification number (calculated)	577.8 mg KOH/g
Dynamic viscosity at 180 °C	0.71 mPa s
Dynamic viscosity at 200 °C	0.60 mPa s
Specific heat at 140 °C	1.47 kJ/kg K
Specific heat at 141 °C	1.74 kJ/kg K
Heat of fusion	159.1 kJ/kg
Heat of evaporation of melt	342.5 kJ/kg

For safety data, transport classes and toxicological data, see the safety data sheet.
We can provide further parameters on request.

We supply our dimethyl terephthalate in liquid or solid form (white flakes and briquettes). It is produced in Steyerberg using a method that was developed at our Witten plant.

The DMT produced using our in-house method has a particularly high degree of purity and a uniform quality. Impurities caused by heavy metals or other elements, such as nitrogen, sulphur or halogen compounds, are eliminated in a rigorous cleaning process. Our DMT therefore guarantees complication-free further processing.

Numerous DMT manufacturers around the world use this production method.

Applications

DMT is used as a starting substance to produce linear, crystallisable polyesters that can be stretched when cold. It is primarily combined with ethylene glycol to obtain polyethylene terephthalate (PET) or with butanediol to obtain polybutylene terephthalate (PBT), which are then further processed to produce continuous filaments, staple fibres, foils, films and moulding compounds.
DMT can also be used with monohydric alcohols to produce terephthalate esters, which are used as plasticizers. One such example is the transesterification of DMT with 2-ethylhexanol to obtain dioctyl terephthalate (DOTP).

Solubility

The solubility of DMT in most conventional solvents is below 50 g/l solvent at 25 °C. Good solvents for DMT are chloroform (145 g/l), methylene chloride, dimethyl formamide and dimethyl sulfoxide. Almost all glycols and higher alcohols (butanol and above) can be mixed with DMT in all ratios under normal pressure at their boiling point (transesterification).

Physiological behaviour and toxicology

This product is not subject to any classification as a hazardous material according to REACH or GHS. It poses a risk of burns in its liquid form due to the hot DMT melt.

Skin and eye irritation may occur upon prolonged exposure but do not result in lasting damage. Absorption of DMT through intact skin has not been established. Dust may irritate the mucous membranes.

Acute toxicology:
LD50 oral, more than over 5000 mg/kg

Storage

Solid DMT in its original packaging can be stored for virtually unlimited periods under normal conditions. The material must be kept dry. During processing of the hot melt, moisture causes acid formation and thus leads to changes in the properties of the DMT, such as an increased acid value and a lower solidification point.

Under exclusion of air, liquid DMT can be transported and stored for several days in its liquid state without any negative impact on the quality. However, it must be noted that the temperature should be kept only slightly higher than the melting point in such cases in order to protect the product.

Form and packaging

DMT – solid	**Detail**
1. Appearance and bulk density of DMT flakes and briquettes	 *Flakes* (approx. 500 kg/m^3)  *Briquettes* (approx. 800 kg/m^3)
2. Size of DMT – solid in flake form	Flakes, approx. Ø 0.5 cm²
3. Size of DMT – solid in briquette form	30 mm x 24 mm x 17 mm; volume 5 cm^3
4. Packaging for flakes and briquettes	Big bags: 1 CP3 pallet = 2 stacked big bags
5. Size of big bags	Area: 1050 mm x 1050 mm x 1300 mm high Inlet nozzle: 400 mm x 550 mm long or 400 mm x 750 mm depending on big bag Weight: 500 and 1.000 kg per big bag depending on form

Melting

DMT solid, no matter if in flake or briquette form, can be melted again into liquid form. The previous solid form – flake or briquette – does not matter. There is no change in the quality of DMT-solid once it is melted.

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