



## Product information

### Product full identity:

Polyethylene terephthalate

PET has a high tensile and mechanical strength, which makes it a very tough material with a low coefficient of friction and high dimensional stability when compared to material alternatives. PET can be used at temperatures from -20°C to +115°C and is food compliant.

### Properties

- » Better resistance to acids than nylon and acetal
- » High mechanical strength
- » Very good creep resistance and dimensional stability
- » Good resistance to radiation (Gamma & X-Ray)
- » More dimensionally stable than Acetal
- » Food compliant

### Applications

- » Mechanical Engineering
- » Rollers
- » Medical Industry
- » Conveyor industry
- » Gears
- » Heavy loaded bearings
- » Cams

### This document contains

- » Technical Datasheet (Page 2)
- » Chemical Datasheet (Page 3)
- » Safety Datasheet (Pages 4-6)

For any further information regarding food, fire and water certificates then please contact the sales team on 0114 256 0889

## Technical Properties

Physical Properties	Test	Unit	Result
1. Specific gravity	ISO 1183-1	g/cm <sup>3</sup>	1.39
2. Water absorption	-	%	0.5
3. Maximum service temp. Upper temp limit - Short Term (no stronger mechanical stress involved)	-	°C	160
Long Term	-	°C	115
5. Lower temp limit	-	°C	-20
Mechanical Properties	Test	Unit	Result
1. Tensile stress at yield	ISO 527-1/-2	MPa	90
2. Elongation at yield	-	%	-
4. Elongation at break	ISO 527-1/-2	%	15
5. Unnotched impact strength	ISO 179-1/1eU	kJ/m <sup>2</sup>	50
6. Notch impact strength	ISO 179-1/1eA	kJ/m <sup>2</sup>	2
7. Ball indentation / Rockwell hardness	ISO 2039-1/-2	MPa	170 / M96
8. Shore-D	-	-	-
9. Flexural modulus of elasticity	-	MPa	-
10. Tensile modulus of elasticity	ISO 527-1/-2	MPa	3500
Thermal Properties	Test Method	Unit	Result
1. Vicat-softening point VST/B/50	-	°C	-
2. Heat deflection temperature HDT/A	ISO 75-1/-2	°C	80
3. Coefficient of linear thermal expansion 23°C - 100°C	-	m/(m*K)	80 x 10 <sup>-6</sup>
4. Thermal conductivity at 23 °C	-	W/(m*K)	0.29
Electrical Properties	Test Method	Unit	Result
1. Volume resistivity	IEC 6093	Ω x m	>10 <sup>14</sup>
2. Surface resistivity	IEC 6093	Ω	>10 <sup>13</sup>
3. Dielectric constant at 1MHz	-	-	3.2
4. Dielectric dissipation factor at 1 MHz	IEC 60250	10 <sup>6</sup> Hz	0.014
5. Electrical strength	IEC 60243-1	kV/mm	22
6. Comparative tracking index (CTI)	IEC 60112	-	600
Additional Data	Test Method	Unit	Result
1. Bondability	-	-	-
2. Food compliance	FDA	-	+
3. Flammability	UL 94	-	HB

All The above information is for guide purposes only. The data has been taken from standard test results provided by our manufacturers.

### Key:

Yes	Limited	No data
+	O	-

## Chemical Properties

Agent	Conc %	Working 20°C	Temp 60°C	Agent	Conc %	Working	Temp
Acetic Acid	100	-	-	Hydrofluoric acid	40	-	-
Acetone	100	o	-	Hydrogen peroxide	10	+	o
Ammonia	Conc.	o	-	Hydrogen Sulphide			
Ammonium chloride				Isopropyl Alcohol	100	+	o
Amyl Alcohol				Mercurochrome			
Benzene		o	-	Methyl alcohol	100	+	o
Bleaching Solution	12,5 Cl			Methyl ethyl ketone	100	+	o/-
Boric Acid	100			Methylene chloride	100	-	-
Brake Fluid		+	+	Nitric Acid	10	+	o/-
Butyl Acetate		+	+	Nitric acid	50	+	o/-
Calcium Chloride		+	+	Nitrobenzine		-	-
Carbon disulphide	100	+	o	Oxalic Acid			
Carbon Tetrachloride		+	o	Ozone, gas	ca. 0,5 ppm		
Chlorine, gas	100			Paraffin Oil	100		
Chlorobenzene	100	-	-	Perchlorethylene		+	+
Chloroform		-	-	Petroleum	100	+/-	-
Citric Acid	10	+	o	Petroleum, aromatic free	100	+	+
Cresol				Phenol, aqu	ca.9	+	
Cyclohexanone	100			Phosphoric Acid	50	-	o
Cyclohexene	100			Potassium hydroxide liquor	50	+	-
Diesel Fuel		+	+	Propyl alcohol		-	
Ethyl acetate	100	+	+	Pyridine			
Ethyl alcohol	96	o/-	-	Silicone oil			+
Ethylene Chloride	100	+	o	Sodium carbonate. aqu		+	+
Formic Acid	10	+	o	Sodium chloride, aqu		+	+
Frost protection agent		+	+	Sodium Hydroxide liquor	60	-	-
Fuel, aromatic free		+	+	Sodium hydrogen sulphite		+	+
Glycerine	100	+	-	Sodium nitrate, aqu		+	
Glycol	100	+	o/-	Sodium thiosulfate		+	
Heating oil		-	-	Sulphuric Acid	96	-	-
Heptane	100	+	o/-	Tetrahydrofuran	100	-	-
Hydrolic acid	10	+	o/-	Toluene	100	+/-	-
Hydrochloric acid	conc.	-	-	Trichlorethylene	100	-	-
				Xylene		-	-

## Safety Properties

### Substance / preparation and company detail

Polyethylene terephthalate (PET)  
Direct Plastics Limited  
Rother Valley Way,  
Holbrook,  
Sheffield,  
S20 3RW  
0114 2560889

### Composition / indications to components

**Chemical characterization :** Polyethylene terephthalate (PET)

**Hazardous substances :** Product contains no hazardous ingredients liable to be disclosed.

### Possible dangers

**Classification :** Not classified

**Physical/ chemical hazards :** Flammable

**Health risks :** Dust can cause mechanical irritation.

**Hazards for the environment:** Based on our information, there is no danger to the environment.

The product is according to Directive 1999/45/EC and its annexes are not classified as dangerous.

### First-aid measures

**General information :** The product is being classified as non-toxic.

**In case of inhalation :** In case the plastic burns and combustion gases are inhaled, remove person to fresh air and keep warm and get medical help if necessary.

**In case of skin contact :** Burns caused by molten material on skin need to be rapidly cooled down with water; do not attempt removal of plastic without medical assistance. If irritation develops, seek medical attention.

**In case of eye contact :** Flush eyes well with copious quantities of water. Seek medical attention, if irritation persists.

**In case of ingestion :** The product is non-toxic; no first aid procedures are required.

### Fire-fighting measures

**Suitable extinguisher:** Water, foam, gaseous and dry extinguishing media

**Particular endangerments by fire fighting and hazardous combustion products:** Hazardous combustion products may emerge, apart from harmless Water (H<sub>2</sub>O); carbon dioxide (CO<sub>2</sub>) and mainly carbon monoxide (CO) depending on the amount of available environmental oxygen, containing ketones and aldehyde. Formation of further decomposition and oxidation products depends upon the fire conditions. Under special fire conditions traces of other toxic substances are possible.

**Fire fighting:** Approved pressure demand breathing apparatus and protective clothing should be used for all fires.

**Additional Information:** Residues after the fire, after appropriate rules dispose.

### Marking and transport information

**Personal precautions :** N/A

**Environmental precaution :** N/A

**Methods for cleaning up :** Mechanical removal

### Handling and storage

**Advice on safe handling:** During machining of the stock shapes, evacuate swarf to prevent slipping or tripping.

**Storage:** Store inert product dry and cool. Keep storage and working areas sufficiently ventilated. Keep away from source of flame, heat and ignition. Due to the risk of collapsing, do not stack more than 2 pallets on to of each other. Pallets should not stack on to of each other along aisles.

## Safety Properties

### Limitation of exposition

**Ingredients with occupational exposure limits to be monitored :** none

**General protective and Hygiene measures :** Keep the workplace sufficiently ventilated; thereby smoking; eating and drinking are not allowed.

Continuous supply of fresh air to the workplace together with removal of processing fumes through exhaust systems is recommended. Avoid breathing in gaseous degradation products and dust that may result by material overheating.

**Hand protection :** Safety gloves in case of contact with warm material

**Eye protection :** Safety goggles or shield during machining

**Body protection :** Working clothes

**Respiratory protection :** Adequate ventilation at workplace is required

### Physical and chemical characteristics

**Physical state :** (rods and plates)

**Aggregate :** solid

**Colour :** product-specific

**Odour :** slight, product specific

**Safety related facts**

**Boiling point :** N/A

**Melting point :** 255 °C (DIN/EN/ISO 3146)

**Corrosion temperature :** > 350 °C

**Flash point :** > 355 °C

**Self ignition temperature :** 420 °C (ASTM D1929)

**Explosion hazard or limit :** non explosive

**Oxidizing characteristics :** None

**Density (20 °C) :** 1.39 g/cm<sup>3</sup> (ISO 1183)

**Solubility (in Water 20 °C) :** insoluble

**Viscosity :** N/A

**Additional Information :** None

### Stability and reactivity

**Conditions to avoid:** Temperatures above melting point

**Material to avoid:** Strong oxidant

**Hazardous decomposition products:** Carbon monoxide CAS-Nr. 630-08-0

### Toxic information

**Toxicology :** Based on our experience and information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

**Primary Irritation on skin :** N/A

**Primary Irritation on eyes :** N/A

**Sensitization :** not known

**Practical Tests :** N/A

**Additional information :** N/A

### Ecological information

The material does not harm the environment but is not biologically degradable.

### Waste-disposal information

The product must be disposed in accordance with the local authorities.

### Transport information

The product must be disposed in accordance with the local authorities.

## Safety Properties

### Regulations

The product does not require a hazard warning label in accordance with EC directives.

### Further information

The information is based on our current knowledge. They are meant to describe our products in respect to safety requirements. They do not represent any guarantee of the described product in the sense of the legal guarantee regulations.