



## Product information

---

### Product full identity:

Polycarbonate

PC has excellent optical properties and a high gloss surface. Easy to fabricate PC shows exceptional performance with a wide operating temperature range (-40°C to +135°C). Other important benefits are high mechanical, thermal and electrical properties also virtually unbreakable in normal use. Also available in UV grade.

## Properties

---

- » 25% more impact resistant than PETG
- » Virtually unbreakable
- » Good fire properties & self extinguishing
- » Suitable for thermoforming

## Applications

---

- » Machine guards
- » Riot shields
- » Visors
- » Signs
- » Windows

## 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    | g/cm <sup>3</sup> | 1.2                |
| 2. Water absorption   | ISO 62      | %                 | 0.35               |
| 3. Maximum service temp. Upper temp limit<br>(no stronger mechanical stress involved) | -           | °C                | 120                |
| Lower temp limit  | -           | °C                | -30                |
| Mechanical Properties   | Test        | Unit              | Result             |
| 1. Tensile strength at yield  | ISO 527     | MPa               | 60                 |
| 2. Elongation at yield  | ISO 527     | %                 | 6                  |
| 3. Tensile strength at break  | ISO 527     | MPa               | 72                 |
| 4. Elongation at break  | ISO 527     | %                 | 150                |
| 5. Impact strength  | ISO 179     | kJ/m <sup>2</sup> | no break           |
| 6. Notch impact strength  | ISO 179     | kJ/m <sup>2</sup> | 55                 |
| 7. Ball indentation / Rockwell hardness   | ISO 2039-1  | MPa               | M72 / R118         |
| 8. Shore-D  | DIN 53505   | -                 | -                  |
| 9. Flexural strength  | ISO 178     | MPa               | 97                 |
| 10. Modulus of elasticity   | ISO 527     | MPa               | 2300               |
| Thermal Properties  | Test Method | Unit              | Result             |
| 1. Vicat-softening point VST/B/50   | ISO 306     | °C                | 151                |
| 2. Heat deflection temperature HDT/B  | ISO 75      | °C                | 143                |
| HDT/A   | -           | °C                | 151                |
| 3. Coefficient of linear thermal expansion  | ISO 75-2    | (x10-5/°C)        | 0.68               |
| 4. Thermal conductivity at 20 °C  | DIN 8302    | W/(m*K)           | 0.20               |
| Electrical Properties   | Test Method | Unit              | Result             |
| 1. Volume resistivity   | VDE 0303    | Ω x m             | 3x10 <sup>14</sup> |
| 2. Surface resistivity  | -           | Ω                 | 6x10 <sup>16</sup> |
| 3. Dielectric constant at 1MHz  | -           | -                 | 2.7                |
| 4. Dielectric loss factor at 1 MHz  | DIN 53483   | -                 | 0.01               |
| 5. Dielectric strength  | VDE 0303    | kV/mm             | 17                 |
| 6. Tracking resistance (CTI)  | IEC 60112   | -                 | 250                |
| 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<br>20°C | Temp<br>60°C | Agent                      | Conc %      | Working | Temp |
|------------------------|---------|-----------------|--------------|----------------------------|-------------|---------|------|
| Acetic Acid            | 100     | -               | -            | Hydrofluoric acid          | 40          | -       | -    |
| Acetone                | 100     | -               | -            | Hydrogen peroxide          | 10          | +       |      |
| Ammonia                | Conc.   | -               | -            | Hydrogen Sulphide          |             | +       |      |
| Ammonium chloride      |         | +               | +            | Isopropyl Alcohol          | 100         | o       |      |
| Amyl Alcohol           |         |                 |              | Mercurochrome              |             | o       |      |
| Benzene                |         | -               | -            | Methyl alcohol             | 100         | -       | -    |
| Bleaching Solution     | 12,5 Cl | -               | -            | Methyl ethyl ketone        | 100         | -       | -    |
| Boric Acid             | 100     | +               |              | Methylene chloride         | 100         | -       | -    |
| Brake Fluid            |         |                 |              | Nitric acid                | 10          | o       |      |
| Butyl Acetate          |         | -               | -            | Nitric acid                | 50          | -       | -    |
| Calcium Chloride       |         | +               | +            | Nitrobenzene               |             | -       | -    |
| Carbon disulphide      | 100     | -               | -            | Oxalic Acid                |             | +       |      |
| Carbon Tetrachloride   |         | -               | -            | Ozone, gas                 | ca. 0,5 ppm | o       |      |
| Chlorine, gas          | 100     | o               |              | Paraffin Oil               | 100         | +       |      |
| Chlorobenzene          | 100     | -               | -            | Perchloroethylene          |             | -       | -    |
| Chloroform             |         | -               | -            | Petroleum                  | 100         | o       |      |
| Citric Acid            | 10      | +               | +            | Petroleum, aromatic free   | 100         | o       | -    |
| Cresol                 |         | -               | -            | Phenol, aqu                | ca.9        | -       | -    |
| Cyclohexanone          | 100     | -               | -            | Phosphoric Acid            | 50          | +       |      |
| Cyclohexene            | 100     | -               | -            | Potassium hydroxide liquor | 50          | -       | -    |
| Diesel Fuel            |         | o               |              | Propyl alcohol             |             | +       |      |
| Ethyl acetate          | 100     | -               | -            | Pyridine                   |             | -       | -    |
| Ethyl alcohol          | 96      | +/-             | o            | Silicone oil               |             | +       | +    |
| Ethylene Chloride      | 100     | -               | -            | Sodium carbonate, aqu      |             | +       | +    |
| Formic Acid            | 10      | +               |              | Sodium chloride, aqu       |             | +       | +    |
| Frost protection agent |         | +               |              | Sodium Hydroxide liquor    | 60          | -       | -    |
| Fuel, aromatic free    |         | -               |              | Sodium hydrogen sulphite   |             | +       |      |
| Glycerine              | 100     | +/-             | o            | Sodium nitrate, aqu        |             | +       | +    |
| Glycol                 | 100     | +               |              | Sodium thiosulfate         |             |         |      |
| Heating oil            |         | o               |              | Sulphuric Acid             | 96          | -       | -    |
| Heptane                | 100     | -               | -            | Tetrahydrofuran            | 100         | -       | -    |
| Hydrochloric acid      | 10      | +               |              | Toluene                    | 100         | -       | -    |
| Hydrochloric acid      | conc.   | o/-             | -            | Trichloroethylene          | 100         | -       | -    |
|                        |         |                 |              | Xylene                     |             | -       | -    |

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       | -       |

## Safety Properties

### Substance / preparation and company detail

Polycarbonate (PC)  
Direct Plastics Limited  
Rother Valley Way,  
Holbrook,  
Sheffield,  
S20 3RW  
0114 2560889

### Composition / indications to components

**Chemical characterization :** Polycarbonate (PC)

**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.

### First-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.

### Measures in case of unintended release

**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

**Aggregate :** solid

**Colour :** product-specific

**Odour :** slight, product specific

Safety related facts

**Boiling point :** N/A

**Melting point :** 150 - 160 °C (DIN/EN/ISO 3146)

**Corrosion temperature :** N/A

**Flash point :** N/A

**Self ignition temperature :** 560 °C (ASTM D1929)

**Explosion hazard or limit :** non explosive

**Oxidizing characteristics :** None

**Density (20 °C) :** 1.20 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

**Acute toxicity:** no data existing, except those mentioned below:

Water-insoluble

#### Material Tests:

LD-50, oral: (male rat) >3,200 mg/kg (highest dose rate tested)

LD-50, oral: (male mouse) >3,200 mg/kg (highest dose rate tested)

Dermal LD-50: (Guinea pig) >1,000 mg/kg

Skin irritation (guinea pig) Slight irritation

Irritation of eyes (rabbit, unwashed eyes) Slight

Irritation of eyes (rabbit, washed eyes) Slight

Guinea pig None

#### Additional information:

In our experience and according to information available to us the product is not harmful to health provided

## Safety Properties

### 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

Not classified as hazardous under transport regulations.

### 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.