# Plastics Reference

| | Suitable for Microwaves | Suitable for Autoclaving | Transparency | Max. Operating Temp (° C) | Brittleness Temp (° C) | Density (g/cm³) |
|---|---|---|---|---|---|---|
| ETFE | Yes | Yes | Translucent | 150 | -100 | 1.70 |
| FEP | Yes | Yes | Translucent | 205 | -100 | 2.15 |
| HDPE | Yes | No | Translucent | 105 | -50 | 0.95 |
| LDPE | Yes | No | Translucent | 80 | -50 | 0.92 |
| PC | Yes | Yes* | Transparent | 125 | -130 | 1.20 |
| PFA | Yes | Yes | Translucent | 260 | -200 | 2.17 |
| PMMA | No | No | Transparent | 65-95 | -50 | 1.18 |
| PMP | Yes | Yes | Transparent | 150 | 0 | 0.83 |
| POM | No | Yes* | Opaque | 130 | -40 | 1.42 |
| PP | Yes | Yes | Translucent | 125 | 0 | 0.90 |
| PS | No | No | Transparent | 70 | -20 | 1.05 |
| PTFE | Yes | Yes | Opaque | 260 | -200 | 2.17 |
| SAN | No | No | Transparent | 70 | -40 | 1.03 |

* Frequent autoclaving may reduce mechanical stability. "Autoclaving" refers to steam sterilization at 121° C (250° F) at 15 PSIG for 20 minutes

**+ Excellent chemical resistance**

Continuous exposure to the substance does not cause damage within 30 days. The plastic may remain resistant for years.

**o Good to limited resistance**

Continuous exposure to the substance causes minor damage, some of which is reversible, within 7-30 days (e.g., swelling, softening, decrease of mechanical strength, discoloration).

**- Poor chemical resistance**

Not suitable for continuous exposure to the substance. Immediate damage may occur (loss of mechanical strength, deformation, discoloration, cracking, dissolution).

## Chemical resistance of plastics to classes of substances at 20 °C

| | SAN | PC | POM | PMP | LDPE | HDPE | PP | ETFE | PFA | FEP | PTFE | PMMA | PS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Alcohols, aliphatic** | + | + | + | + | + | + | + | + | + | + | + | - | + |
| **Ethers** | - | - | + | - | o | o | o | + | + | + | + | - | - |
| **Aldehydes** | - | o | o | o | o | + | + | + | + | + | + | o | - |
| **Esters** | - | - | - | o | o | o | o | + | + | + | + | o | - |
| **Hydrocarbons, aliphatic** | - | o | + | o | o | + | + | + | + | + | + | + | - |
| **Hydrocarbons, aromatic** | - | - | + | - | o | + | o | + | + | + | + | - | - |
| **Hydrocarbons, halogenated** | - | - | + | - | o | o | o | + | + | + | + | - | - |
| **Ketones** | - | - | + | o | o | o | o | o | + | + | + | - | - |
| **Alkalis** | + | - | + | + | + | + | + | + | + | + | + | + | + |
| **Acids, strong or concentrated** | - | - | - | + | + | + | + | + | + | + | + | - | o |
| **Acids, weak or diluted** | o | o | - | + | + | + | + | + | + | + | + | - | o |
| **Oxidizing acids, oxidizing agents** | - | - | - | - | - | - | - | + | + | + | + | - | - |

## Abbreviations of the described plastics to DIN 7728

| | | | |
|---|---|---|---|
| **SAN** | Styrene-acrylonitrile copolymer | **PMP** | Polymethylpentene |
| **PMMA** | Polymethyl methacrylate | **ETFE** | Ethylenetetrafluoro ethylene copolymer |
| **PC** | Polycarbonate | **FEP** | Perfluoroethylene-propylene copolymer |
| **POM** | Polyoxymethylene | **PFA** | Perfluoroalkoxy copolymer |
| **LDPE** | Low-density Polyethylene | **PS** | Polystyrene |
| **HDPE** | High-density Polyethylene | **PTFE** | Polytetrafluoroethylene |
| **PP** | Polypropylene | | |

The recommendations listed here are based on technical literature and information provided by the manufacturers of raw materials. They were prepared carefully and are intended to inform and advise. However, they cannot replace suitability testing performed by the user under actual working conditions.

Food-safe products according to EC Directive No. 10/2011