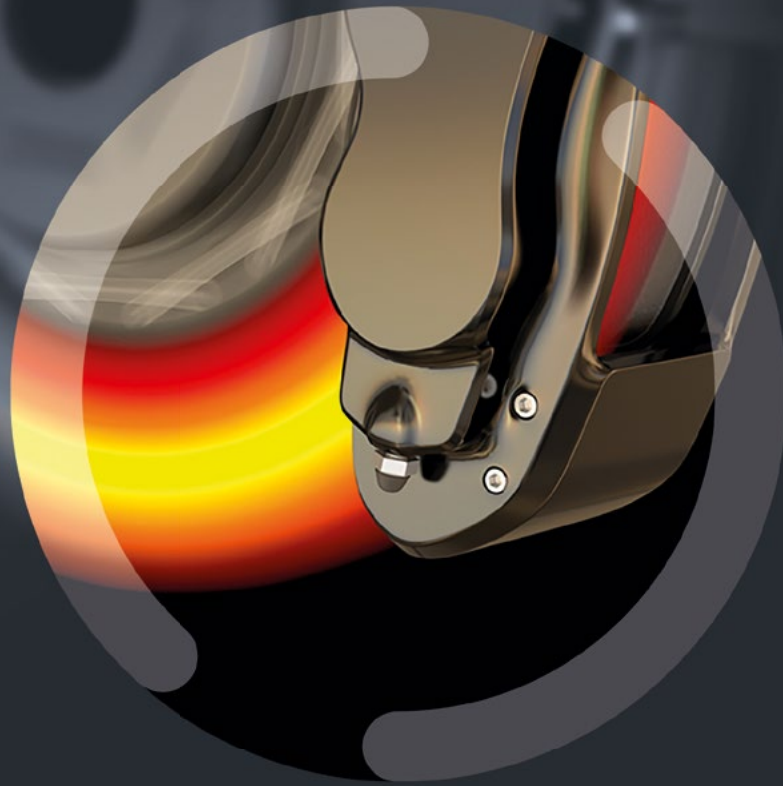


APPLICATIONS IN FOCUS



# THERMAL MANAGEMENT

THE PRODUCT PORTFOLIO FOR  
HIGH TEMPERATURE APPLICATIONS



[www.terplastics.com](http://www.terplastics.com)  
[www.tergroup.com](http://www.tergroup.com)

TER Plastics  
POLYMER GROUP



## High-Performance Polymers

High-performance polymers stand head and shoulders above engineering plastics thanks to their specific spectrum of properties. PPS is characterised by outstanding chemical resistance at continuous operating temperatures of up to 240 °C and by outstanding creep resistance. The long-term operating temperature of LCP also extends as high as 240 °C. In the short term, it can even withstand temperatures of up to 340 °C. Both materials are inherently flame-resistant. Combining them with long-fibre technology can lead to considerable improvements in both creep resistance and dynamic load capacity.

## High-temperature polyamides

In comparison with conventional polyamides, high-temperature polyamides are characterised by an elevated glass transition point and melting point. Continuous operating temperatures of up to 230 °C can be achieved using special additives. Partially aromatic constituents lead to increased dimensional stability and creep resistance. Long-chain constituents improve the chemical resistance, especially with respect to aggressive salts. This group includes PA 4.6, PA 4T, PPA and PA 10T.

## Heat-resistant polyamides

Polyamides 6 and 66, and PA 66/6 blends, are characterised by outstanding workability and balanced technical properties. General heat stabilisation processes lead to continuous operating temperatures of up to 160 °C. Specific stabilisation can raise this level to up to 210 °C. Additional modifications of the viscosity and sliding friction behaviour pave the way for a broad range of applications in the automotive, mechanical engineering, furniture and sports industries. Long-fibre technology can be used to bring about considerable improvements in heat resistance, creep behaviour and dynamic force absorption.

## Thermoplastic elastomers

Soft, flexible materials are no exception when it comes to meeting the required thermostabilities. Thermoplastic elastomers are characterised by good resilience and a broad range of hardness grades (Shore A 40 – Shore D 50). The products withstand continuous operating temperatures of 110 °C. In the short term, exposure to temperatures of up to 150 °C is also possible. In the event of even higher thermal requirements, it is possible to use TPC (thermoplastic copolyester). These ranges of products are available in continuous operating temperature classes ranging from 120 °C to 175 °C.

## Transparent acrylic solutions for high heat requirements

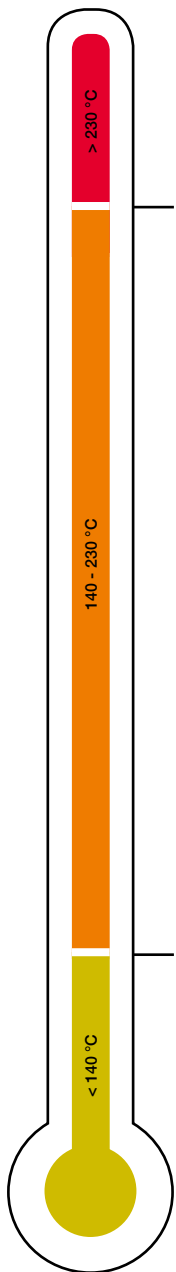
For requirements concerning transparency and maximum thermal stability, the material PMMI will stand the toughest specifications. PMMI is characterised by a transparency of over 90 % while keeping the optical properties on exposure to temperatures of up to 170 °C. PMMA is often used in interior automotive applications where thermal requirements and transparency or extreme high gloss finishes are a must. With the greatest transparency, more than 90 %, and outstanding weathering resistance, PMMA will stand continuous operating temperatures up to 110 °C.

## Styrenic materials for automotive applications

Heat-resistant ABS is predominantly used in the automotive industry. Components can withstand exposure to elevated temperatures reaching as high as 115 °C, e.g. for external bodywork parts, seat base covers or seat parts. ABS is excellently suited to dyeing but can also be painted. Where external bodywork parts are not painted, ASA is used. This is characterised by outstanding weather resistance.



Picture: DSM



| Manufacturer | Brand             | Product     | Key Features   | Example Applications   |
|--------------|-------------------|-------------|--|--|
| DSM          | Xytron            | PPS         | Outstanding strength and dimensional stability, excellent chemical resistance        | Water pump wheels, throttle valve housings, radiator coolant applications                  |
| Polyplastics | DURAFIDE          | PPS         | Very high thermal shock resistance, good dimensional stability, outstanding strength | Ignition coil parts, voltage converter, electric motor isolators, Li-ion battery separator |
| Sumitomo     | SUMIKASUPER       | LCP         | Inherently flame-resistant and dimensionally stable                                  | Cable connectors, pin connectors, electromechanical components                             |
| DSM          | Stanyl Diablo     | PA46        | High temperature resistance with good viscosity                                      | Intake manifolds, engine housings  |
| DSM          | Akulon Diablo     | PA66 + PA6  | Improved workability with good chemical resistance                                   | Air ducts, turbo resonators  |
| Solvay       | Technyl HP        | PA 66       | Improved workability with good chemical resistance                                   | Intercooler housings   |
| Solvay       | Technyl Red X     | PA 66       | Improved heat aging resistance with good processability                              | Charge air elbow   |
| Solvay       | Technyl HP        | PA 66       | Improved processability with good chemical resistance                                | Air intercooler housing  |
| DSM          | ForTii MX         | PPA         | Improved elongation at break with high strength and rigidity                         | Oil modules, thermostat housings   |
| TPP          | TEREZ HT 100      | PPA         | High rigidity and creep resistance   | Automotive parts in the oil and brake circuits   |
| TPP          | TEREZ             | PA46        | High degree of crystallisation with optimum strength above 140 °C                    | Chain tensioners, tribologically modified  |
| DSM          | Arnitel C         | TPC (TPE-E) | Resistant to heat and hydrolysis<br>Shore 50 D – 60 D                                | Cable applications   |
| DSM          | Stanyl            | PA46        | High degree of crystallisation with optimum strength above 140 °C                    | Radiator end caps, ball bearings, chain tensioners   |
| Evonik       | Pleximid          | PMMI        | Very high thermostability with good chemical resistance at the same time             | Light guides, lenses, headlights   |
| TPP          | TEREZ HT 200      | PPA         | Large processing window with good creep resistance                                   | Circuit breakers, ball bearings  |
| TPP          | TEREZ HTE         | PPA         | Bio-based polymer with high dimensional stability                                    | Crankshaft covers  |
| Solvay       | Technyl One       | PA66        | Halogen-free flame resistance with outstanding electrical properties                 | Mini circuit breakers  |
| DSM          | ECOPAXX           | PA4.10      | Bio-based, improved elongation at break, generous processing window                  | Engine covers  |
| DSM          | ForTii            | PA4T        | Halogen-free, flame-resistant, with good creep resistance                            | Cable connectors, pin connectors   |
| Teknor Apex  | Sarlink           | TPV         | Resistant to chemicals and abrasion, OEM-listed                                      | Sealing elements, air ducts, inlay mats in the automotive sector                           |
| Evonik       | Plexiglas         | PMMA        | High thermostability with good flow behaviour  | Dashboard, black piano lacquer applications  |
| Polyplastics | Duracon HPX-Serie | POM         | Good rigidity and strength at elevated temperatures                                  | Fastening clips, spherical joint shells  |
| LOTTE        | Starex            | ABS         | Also in low-emission types, ideal for automotive and E&E-Applications                | Interior parts in the automotive sector, centre console, glove box                         |
| LOTTE        | Starex            | ASA         | Excellent colour stability, good chemical resistance                                 | Exterior parts in the automotive sector (unpainted)  |
| Toray        | Toyolac           | ABS         | Less mould deposition due to lower resin content, broad range of types               | Interior parts in the automotive sector, centre console, glove box                         |
| Versalis     | Sinkral           | ABS         | Low gloss, very light intrinsic colour   | Door panels, centre console  |

**TER Plastics POLYMER GROUP**

Hertener Mark 7 · 45699 Herten · Germany

**P** +49 (0)2366 5661-0

**F** +49 (0)2366 5661-333

info@terplastics.com

www.terplastics.com

All data, recommendations or pieces of information provided by TER HELL PLASTIC GMBH or on behalf of TER HELL PLASTIC GMBH are supported by research or experience and are believed to be reliable. For application, utilization, processing or other intended use of such information or products or the consequences thereof, TER HELL PLASTIC GMBH assumes no liability. The buyer is obliged to assure himself of the quality and all the features of the products. He takes full responsibility for the application, use and processing of our products and the use of the afore-mentioned information and for any consequences thereof. TER HELL PLASTIC GMBH shall not be held liable in whatever way for any infringement of the rights owned or controlled by a third party in intellectual, industrial or other property by reason of the application, processing or use of the afore-mentioned information or products by the buyer.

AIF\_TM\_09/2017\_EN

