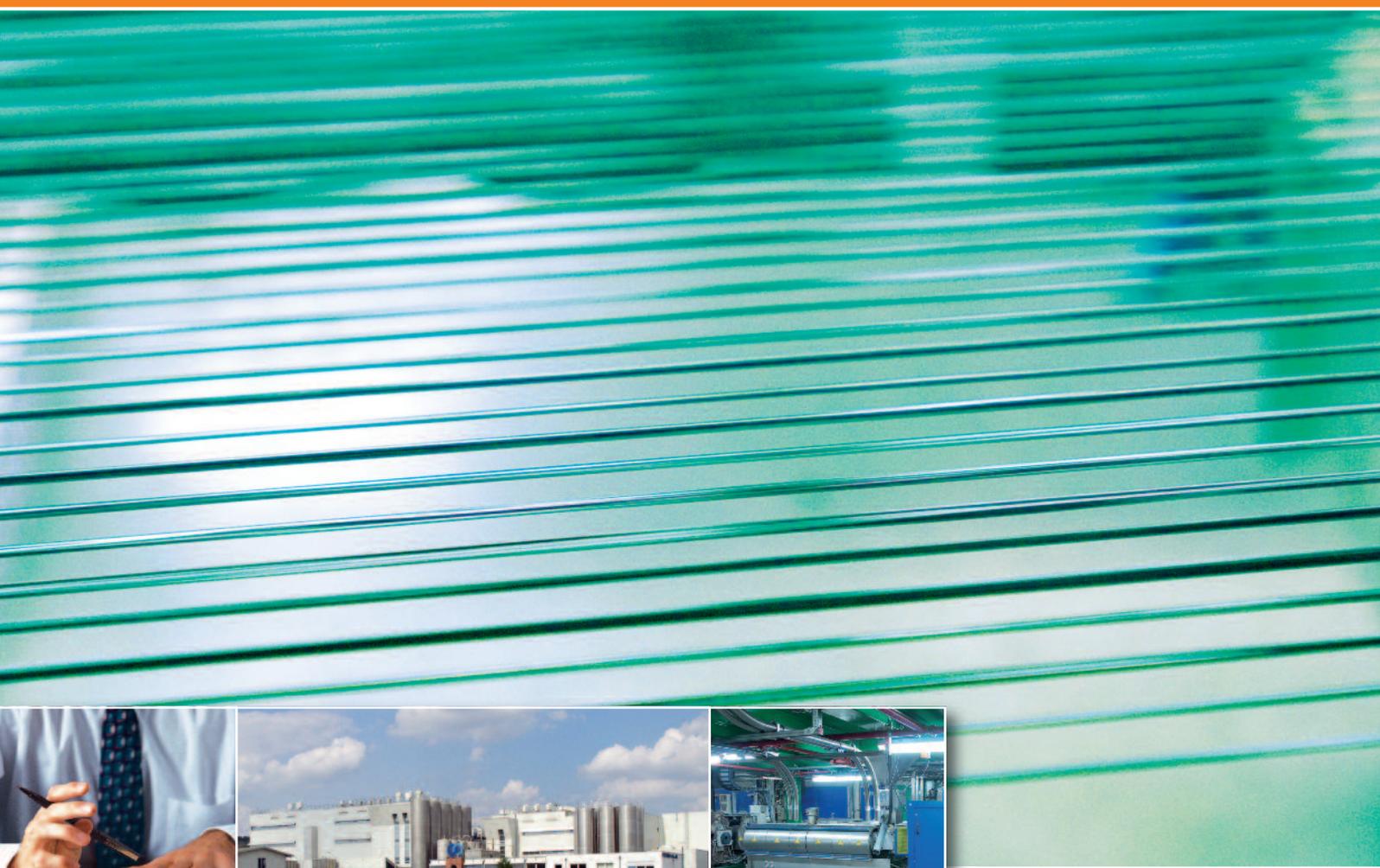


Welcome in our World of Plastics

TechnoCompound 



*Creativity & Innovation
in Plastics*

Solutions in plastics compounds

Curiosity is always the first reaction when approaching a problem.

Editorial

For your business only the best will do



- TechnoFiber LGF
- TechnoMid PA
- TechnoDur PBT
- TechnoPet PET
- TechnoElast TPE
- TechnoFin PO

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TechnoCompound GmbH has been developing with extraordinary dynamism and high growth rates since its foundation in 2005. For this we are grateful to our customers who accompanied us along our way. In cooperation with them we made a wide range of solutions and formulations available in the field of technical compounds meeting individual requirements.

Today the name TechnoCompound stands for specific, high quality and cost efficient plastic compounds, which were developed drawing on the latest knowledge and manufactured on cutting edge production facilities. Our wide product portfolio of functionally modified plastics ranges from commodities via technical compounds to thermoplastic elastomers.

Our TechnoFiber products in particular have a great potential - long glass fibre reinforced thermoplastics, which are produced using new, partly patented technologies. They open possibilities hitherto unknown to our customers by substituting metals as raw material and by making new applications accessible. The same applies for a product line which enables us to meet the high demands of the automotive industry in terms of odour emissions.

This brochure will give you an overview of our current performance range. We are looking forward to keeping up the development of innovative materials with you which combine technological progress with economic benefits.

Here's to continuing our common success story!

Our Mission

Whoever wants to get a glimpse of something special must look at the things others overlook.



*We develop and produce
high quality, custom-made compounds
for innovative applications.*

TechnoCompound develops and produces high quality, custom-made compounds for the international plastics processing industry. We help our customers develop new and innovative applications and to combine technological advantages with economic benefits.

Guidelines of our company policy are the open and confidence-building approach towards our customers, who are the center of our attention, towards our suppliers and towards our collaborators, team and customer oriented acting as well as speedy decision-making.

The use of future oriented technologies and our employees' commitment to eco-friendliness and to saving resources represents an active contribution to the protection of our environment. Our commitment to sustainability and safety is one of the reasons for the good reputation we enjoy in the region and among our customers.



Approaching the future with vigour - to the benefit of our customers

The company TechnoCompound GmbH located in Bad Sobernheim, Germany belongs to the Polymer-Group, a group of companies with international focus. With more than 50 extrusion lines and a total capacity of more than 200,000 tons per annum this group counts among the largest independent manufacturers of plastics compounds in Europe.

In the United States the Polymer-Group has been present since 2008 with its subsidiary Polymer Chemie Inc. The subsidiary OOO Tula Polymer has been supplying the Russian construction and automotive industries with high quality compounds made in a state-of-the-art manufacturing plant.

With this high performance, international background TechnoCompound offers the high efficiency and availability required by OEM, Tier 1 suppliers and processors. Due to its presence, wide range of products, cutting edge production technology and encompassing application support from the initial concept to the production stage TechnoCompound has acquired a reputation as a premium supplier of technical plastic compounds.

And with innovations such as long glass fibre reinforced as well as odour and emission reduced compounds TechnoCompound is leading the way to the benefit of its customers.

*Your partner for development
from concept to production.*

Investment

Investing in the future

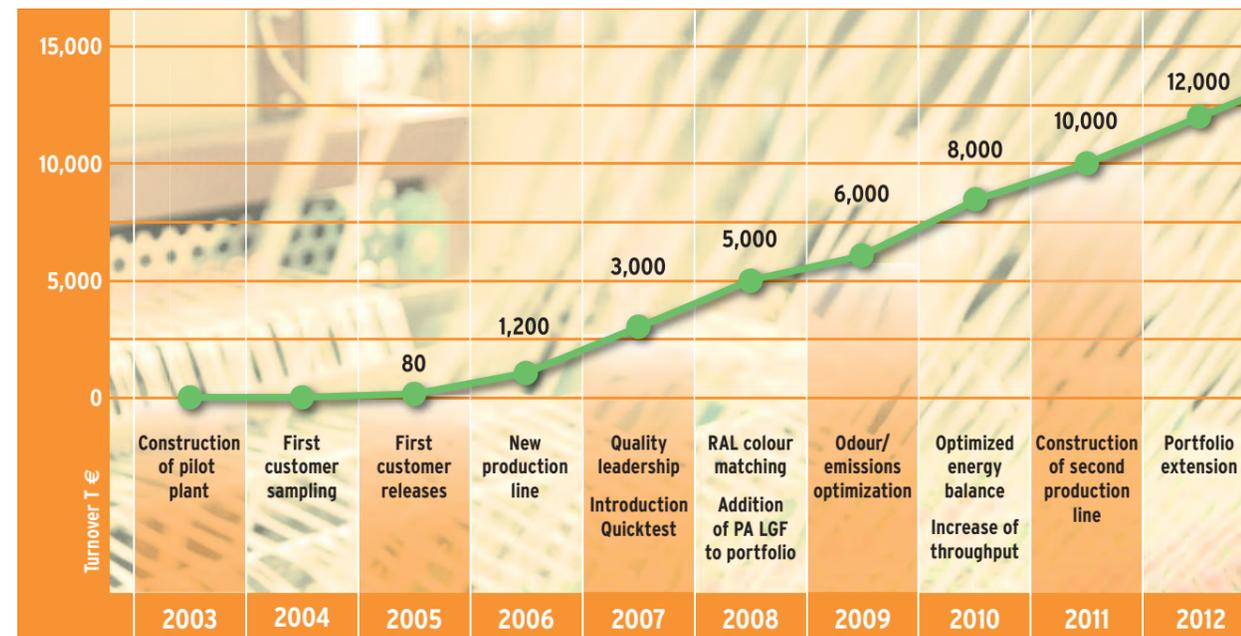
By continuously investing in the future TechnoCompound assures the continuation of its technological and economic success story and will thus remain a reliable partner to its customers with cutting edge technology.

Permanent new developments and improvements of choice compounds, state-of-the-art production lines assuring maximum quality and efficiency as well as the never-ending training of all employees are the supporting pillars in making

TechnoCompound fit for the future. The expansion of international presence as a reaction to the ever-increasing globalisation of our customers is another important element.

In our investments for the future a special focus is laid on long glass fibre reinforced thermoplastics. With new, high performance pultrusion lines we are well-equipped for the disproportionately growing demand in this segment. The strong worldwide growth of the segment long glass

fibre compounds is shown in the diagram depicting the development of TechnoCompound: Compared to the start of production in 2005, portfolio extensions and additions to production capacity will have increased the turnover many times over by 2012.



Our Production

Competence and technology to the benefit of the human being



Geared for expansion right from the start, the production lines of TechnoCompound are located in a light and spacious building. Thus a pleasant working environment is offered to highly motivated, well trained staff as an ideal precondition for the manufacturing of high quality products. There also remains plenty of space to allow for flexible and short notice capacity adjustments facilitating dynamic growth covering all product lines.

Our modern, well-designed lines operate in such a way as to leave a small ecological footprint. TechnoCompound stands for a clean, low emissions, low waste and energy efficient production,

making it easy for us to meet strict environmental regulations - to the benefit of our staff and our region.

With a pleasant working environment, modern technology and innovative creativity of our employees we established a basis allowing us to achieve our objective: the highly efficient production of reliably high quality compounds - to the benefit of our customers.

As a competent partner TechnoCompound offers a strong combination of

- high flexibility
- high supply availability
- high delivery reliability
- best product quality
- short development periods and
- high cost efficiency.



Our Production

At our customers' service



Our customers have high demands on us and our products. In order to meet these we make high demands on ourselves, our staff and the technology they use. We never rest on our laurels: instead we use our success as an incentive for further improvement. The idea of 'Continuous Improvement Process' - small but efficient steps with sustainable effect - is guiding our activities. It is the daily basis for the high quality of our products, processes and services meeting the requirements of our customers.

We focus consistently on computer aided control of all processes, starting with the consulting

service via development and sampling to the commercial production with high supply availability. All production processes are optimized and thus assure a harmonic process. They offer the ideal conditions for a combination of cost efficiency and consistent high performance of our products.

Our optimized processes make us particularly flexible. Product change-overs can be managed within short periods of time allowing us to respond speedily to changing demands. We put emphasis on:

- **well-trained and motivated employees**

- **quality management in accordance with ISO TS 16949 and ISO 9001**

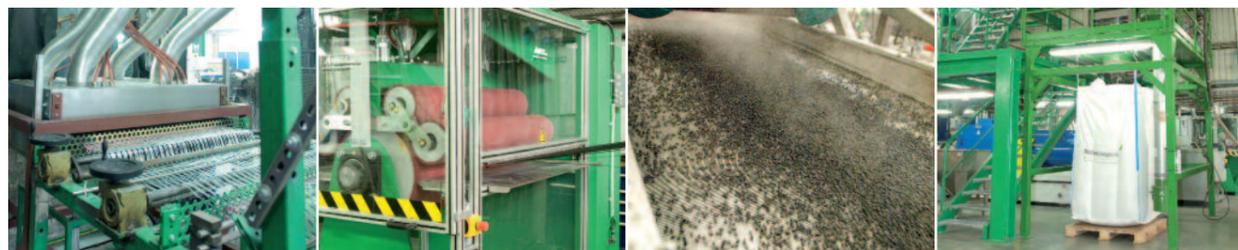
- **barcode supported material flow**

- **latest PPS software**

- **cutting edge testing/ lab equipment**

- **continuous cost management.**

We will shortly be certified in accordance with the international environmental management norm ISO 14001.



Base of the Quality

From concept to serial production



TechnoCompound is a leading manufacturer of custom-made compounds. However, our customers get more from us than just high quality products.

At this early stage our application consultants point out how an objective can be met fast and cost efficiently - be it by employing existing compounds or by

Once the decision has been made we optimize the product properties in cooperation with our customers until the desired quality is reached. To this end we use our own development department and our well equipped laboratory, in which we carry out the relevant tests and analyses to determine mechanical and chemical properties.

And last but not least our well-trained employees with their modern production lines make sure that the quality achieved is maintained throughout the complete production cycle.



In order to meet customer specific requirements we communicate with our partners at an early stage of a development.

using custom-made products with specific properties.



Just in time

Perfectly organized logistics



One way of recognizing happy customers is to analyse the material volumes ordered. At TechnoCompound these grow continuously and significantly faster than the average of this industrial sector.

In order to handle the streams of goods involved we use the modern logistics center of the Polymer-Group.

There an experienced service provider manages the complete logistics process offering solutions ideally suited to the needs of the plastics processing industry.

In this way our customers benefit from

- **comprehensive service**
- **short reaction times and**
- **cost efficient delivery.**

The heart of the logistics center with an area of around 6,400 square metres is a modern high rack warehouse with about 8,500 pallet storing positions. By means of high performance software, our zero-defect system, our progressive stock management and our barcode-supported, paperless processes approximately 150 tons of

compounds are dispatched daily. For customers of TechnoCompound quality as a company policy is obvious, beginning with competent consultancy via product optimization and production to reliable delivery, just in time.



Our Products

TechnoFiber LGF granules - our pillar of innovation



With the innovative TechnoFiber long glass fiber granules TechnoCompound opens a new chapter in the history of fiber reinforced thermoplastics. While the median fiber length of the traditional short fiber reinforced types is around 100 µm, the fiber length of TechnoFiber LGF grades corresponds to the length of the granule which, depending on the requirements, ranges between 10 mm and 25 mm.

The result are high performance materials with excellent properties:

- **extremely high ductility over a wide temperature range from - 35 °C to + 80 °C**

- **significantly lower relaxation behaviour and high dimensional stability over the entire temperature range**
- **extremely low warpage of injection moulded components**
- **little wear of the machine as well as of the tool**

Currently TechnoFiber grades based on polypropylene and polyamide (PP LGF and PA LGF) are available. Further grades are in the process of development. With these materials TechnoCompound provides its customers with new applications for plastics resulting in less weight and more economic

efficiency. Injection moulded components made of TechnoFiber PA LGF may replace heavy, labour intensive metal parts, while TechnoFiber PP LGF may take the place of more expensive short fiber reinforced polyamides.

Among the first successful applications are structural parts in the automotive industry, e.g. for automotive front ends, roof systems, instrument panel carriers, seat components and underbody shields. Further applications in other industries are about to be launched.



Benchmark two-step pultrusion

TechnoCompound uses its own two-step pultrusion process for the manufacturing of its TechnoFiber LGF grades.

Compared to other commonly used technologies, this process sets a benchmark in terms of quality:

- ideal coupling of the glass fibers with the matrix, because individual filaments are surrounded by plastic rather than the entire roving
- homogeneous distribution of the glass fibers within the component
- constant glass fiber content even in thin-walled ribs
- achievement of very good surface qualities



*Automotive component
frontend made of
TechnoFiber PP LGF 40*

- high flexibility in terms of application specific compound properties such as flowability, stabilization, colouring, etc.
- attractive material pricing due to throughput optimized production lines and cost optimized formulation.

The intensive, excellent filament impregnation also supports the trouble-free pneumatic conveying and processing of the TechnoFiber LGF grades. In tests which simulate the high conveying speeds used in practice, these pellets remain one unit for several minutes, while fiber and matrix of competitor products often separate after only a few seconds!



Product variety from high stiffness to extremely low emissions

The product portfolio of TechnoFiber LGF grades is growing continuously. Among these grades glass fiber contents of 10 weight % to 60 weight % are available for any of the chosen matrix materials PP, PA6 or PA66. The processor may buy these products directly as ready-to-mould compounds or mix them himself to achieve a lower fiber content.

TechnoFiber PA6 and PA66 LGF grades achieve an extremely high property standard in terms of stability, stiffness, high

temperature creep behaviour and low-warpage. This enables applications to these materials which were hitherto inaccessible to plastics and where e.g. metal die-casting had to be used. They offer significant advantages in terms of weight and almost limitless creative freedom. In addition, they have considerable economic benefits because no machine finishing is required.

Where TechnoFiber PP LGF grades substitute short glass fiber reinforced polyamides they combine the cost efficient processing of polyolefines with high dimensional stability, even in humid environments.

As far as emissions and odour reduction are concerned their performance is outstanding. As „H E compounds“ in which TechnoCompound combines the two-step pultrusion process with special formulations (patent pending), they go below the extremely low limits set today by large Automotive OEMs worldwide for interior applications.

Results odour emissions of TechnoFiber PP LGF 20-10-01 LHE (48886) in vehicle interiors

Test	Specification (VDA/OEM)	Testing institute	OEM limit value	Result	Test bars*
VOC total emissions	VDA 278	SGS Fresenius	100 µg/g	41 µg/g	80 x 80 x 2 mm ³
FOG emissions	VDA 278	SGS Fresenius	250 µg/g	130 µg/g	80 x 80 x 2 mm ³
Total carbon emissions	VDA 277	EDAG	< 50 µg C/g	25,8 µg C/g	DIN Zugstäbe
Total C emissions TVOC	PV 3341, 1995-03	IMAT UVE	< 50 µg C/g	5,90 µg C/g	80 x 80 x 2 mm ³
Total C emissions TVOC	Summer test	OEM	< 2500 (µg/m ³)/kg	2076 (µg/m ³)/kg	80 x 80 x 2 mm ³
Odour test [80°C]	VDA 270	SGS Fresenius	< 3	2,5	DIN tensile bars
Odour test [80°C]	VDA 270	OEM A / OEAM B	≤ 3	3,0	DIN tensile bars

* The test bars are neither pre nor post treated/tempered

TechnoMid

TechnoMid (PA) - optimized for technical applications



TechnoMid PA6 GF 20 office chair castor

The TechnoMid line of polyamide compounds by TechnoCompound consists of innovative, market oriented materials which can be adjusted to meet the demands of the application combining performance with optimized quality and economic efficiency.

All TechnoMid compounds offer high mechanical strength and stiffness, a high thermal resistance, good resistance even at low temperatures, good sliding qualities, excellent flow as well as low warpage and shrinkage. This is why they are particularly suitable for technical applications such as in the automotive industry, white goods, sanitary equipment and assembly technique.

Automotive manufacturers and Tier 1 suppliers increasingly bet on the high performance property profile of TechnoMid PA compounds. Especially concerning environmental and cost aspects these materials offer an interesting alternative: On the one hand the portfolio offers interesting compound varieties, to which it is easy and economic to switch to, and on the other hand the good processing properties of TechnoMid facilitate energetically optimized processes - with a positive impact on the energy balance, e.g. of an automobile.



TechnoDur

TechnoDur (PBT) - great hardness with low abrasion

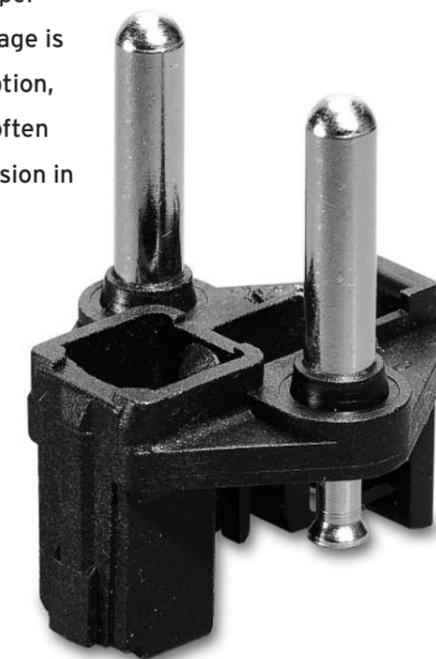


TechnoDur is TechnoCompound's trade name for polybutylene-terephthalate (PBT) and blends based on it. These easy-to-process materials have a high tenacity at high temperatures and combine great hardness, stiffness and strength. Further advantages are excellent sliding and wear characteristics, a good resistance to chemicals as well as good dielectrical properties. Another advantage is the low water absorption, which in practice is often the reason for a decision in favour of TechnoDur.

The TechnoDur product line consists of a great number of various modifications and therefore covers a wide range of applications. Non-reinforced or glass fiber reinforced and glass fiber/mineral fiber reinforced as well as glass bead filled PNT grades are available as well as blends with PET, PC or ASA.

The majority of these materials can be ordered as flame retardant with a flammability rating V-0 in accordance with UL 94.

The range of TechnoDur applications is as varied as the product grades reaching from automotive applications to electrical engineering/electronics and white goods to sporting goods.



Plug bridges, flame protected made of TechnoDur PBT GF 30 FL

TechnoPet

TechnoPet (PET) - dimensional stability, resisting high temperatures

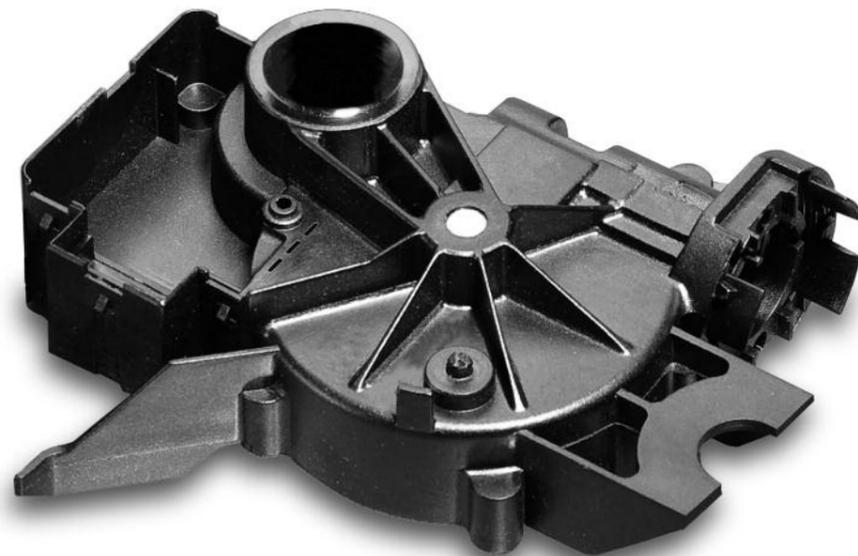
TechnoPet is the trade name of TechnoCompound's product family of short fiber reinforced PET grades (polyethyleneterephthalate). These compounds are the perfect and cost-efficient answer to the demand for a high degree of stiffness, strength, hardness, temperature resistance and dimensional stability as well as high surface quality.

The characteristics of TechnoPet (PET) are similar to those of TechnoDur (PBT), to which it is chemically closely related. The difference lies in the maximum long term thermal stability, which is significantly higher than that of PBT. The resistance to chemicals is high and the dielectrical properties also are very good.

The TechnoPet grades are available with glass fiber contents of 20 %, 30 % or 45 % in weight

and in two versions which differ in the recommended tool temperature of 135 °C and 100 °C, respectively. All grades are easy to process by injection moulding, provided the pellets have been dried sufficiently (residual moisture < 0,01 %) and the tool temperature corresponds to the material.

TechnoPet is typically applied in technical parts of the automotive and electrical/electronics industry.



Component made of TechnoPet GF 45: dimensional stability at high temperatures

TechnoElast

TechnoElast (TPE) - insulation and dampening

TechnoElast is the trade name of TechnoCompound's cost efficient thermoplastic elastomeres (TPE) which can be customized to suit the needs of the application. Currently three product lines are available:

- **TechnoElast S**
styrene block copolymeres (TPE-S)
- **TechnoElast O**
partly cross-linked PP/EPDM-compounds (TPE-O)
- **TechnoElast V**
cross-linked PP/EPDM-compounds (TPE-V)

The properties of TechnoElast TPEs made by TechnoCompound cover a wide range in terms of flowability, hardness and stiffness.

Depending on the purpose of the application, adhesion modified, antistatic and UV stabilized grades are available, including customer specific ones. All versions combine excellent insulating and dampening properties including high resilience and thermal resistance.



Air duct made of TechnoElast O D5011

There are numerous applications for TechnoElast TPEs of TechnoCompound such as interior, exterior and engine compartment applications in the automotive industry, cable sheathing, sealing devices, anti-slip devices and plugs in the electrical/electronics industry as well as sensing devices, housings and many other applications in white goods.





The pallet of TechnoCompound's TechnoFin standard and special compounds is synonymous for quickly available standard products and optimized quality at favourable prices as well as for tailor-made customer solutions.

Based on the matrix plastics material polypropylene (PP) the range of filler and reinforcing components consists of talc and glass fibers as well as minerals, wollastonite and other additives.

UV protection and impact strength modifiers, flame retardants and fillers enhancing electric conductivity offer a wide product portfolio for next to any application.

Individual colouring, antistatic, nucleated, scratch resistant or emissions optimized grades are available upon customer request.

For applications in which sound absorption is of central importance, densities of up to 3 g/cm³ can be achieved.

Typical applications of the easy-to-process TechnoFin PP compounds are products of the automotive, electrical and packaging industries.



Front wall air duct made of TechnoFin PP MAGF 7721

Our organisation in detail



Creativity & Innovation in Plastics

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