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Your benefits at a glance

- *Large selection of basic polymers*
- *Wide range of fillers with thermal conductivity properties*
- *Good rates of thermal conductivity:*
 - up to 10 W/(m·K) with electrically insulating materials*
 - up to 20 W/(m·K) with electrically conductive materials*
- *Moderate degree of filling for good residual material properties*
- *Design freedom and weight saving*

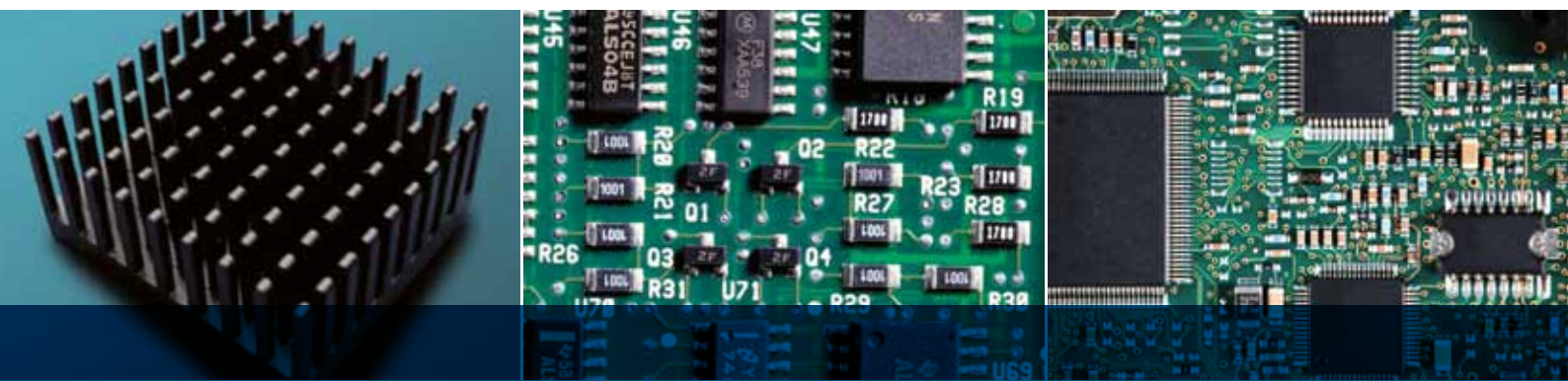


Plastic granules from Ensinger Compounds are the culmination of decades of experience in the production of high-performance plastics. Whether you are interested in bulk or customized products, we cover the needs of all important sectors of industry. With tried and trusted standard products and individually inspired solutions.



Compounds

TECACOMP[®] TC
Thermally conductive plastics



Innovative cooling solutions

More than just one option

Metals are better conductors of heat. This much is undisputed. And after all, plastics have always been appreciated more for their insulating properties.

But in certain applications metals do have distinct drawbacks. This is where a new range of thermally conductive plastics from Ensinger comes into its own:

→ They can be produced in practically any shape.

→ They can provide electrical insulation.

These benefits make them ideally suited as pacemakers for efficiency in the field of power electronics, whether technologically due to their optimum cooling management properties, or economically through cost savings as a result of simplified processes.

Thermally conductive and free forming

Definitely a cool solution: TECACOMP® TC

Depending on the fillers used, components made of TECACOMP® TC provide thermal conductivity of between 5 and 20 W/(m·K), making them ideally suited for applications such as heat dissipation in electronic components.

Formability superior to any metal

Thermally conductive plastics from Ensinger can be freely formed by injection moulding. This opens up a whole new degree of creative freedom for the design of effective cooling elements or insert moulding of complete assemblies with a sturdy, heat-dissipating enclosure.

Electrically conductive or insulating – to suit the application

Another advantage over using metal is the facility to equip TECACOMP® TC plastics with electrically insulating properties. In this way, a single plastic component can be used to cool several different electronic components. Insert moulding of assemblies allows several functions to be performed in one:

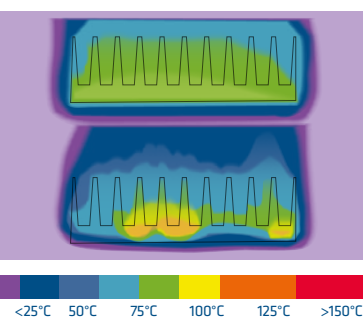
→ Mechanical fixture

→ Protection against environmental influences

→ Electrical insulation

→ Heat dissipation

Where applications call for electrical conductivity, Ensinger TECACOMP® TC plastics can be produced with conductive fillers.



 Electrically conductive systems

 7

Plastic / metal hybrids

 10

Electrically insulating systems

■ 0,28

Non-reinforced polyamide 66

Thermal conduction [W/(m·K)]

Electrically insulating or conductive fillers

Added fillers determine the properties

A wide selection of basic polymers such as PA, PC, PP, PPS, PEEK and others can demonstrate different thermal conductivity properties by the addition of specific fillers. Depending on the filler used, these can be either electrically insulating or conductive.

By using innovative fillers, the degree of filling can be minimized depending on the application. This allows any influence on the properties of the basic polymers used to be kept to a minimum.

Electrically insulating

An electrically insulating thermally conductive plastic is produced by adding ceramic fillers to the polymer matrix.

Depending on the filler geometry and degree of filling, thermal conductivity of up to 10 W/(m·K) can be achieved. A particular benefit of these materials is that of minimal tool wear during machining.

Electrically conductive

By adding graphite or carbon fibres or by using plastic / metal hybrids, it is possible to produce thermally conductive materials which also have electrical conduction properties. Depending on the degree of filling, values of up to around 20 W/(m·K) can be achieved.



Ceramic structure

The optimum material selection for your application

Dynamic development

The whole field of thermally conductive plastics is currently undergoing a highly dynamic development process. Fields of application are widespread, and there are many opportunities just waiting to be exploited. However, this wide range of diverse applications also poses a specific challenge for the materials used. This is why Ensinger develops individual thermally conductive plastics in close co-operation with customers.

Customized products

Working in agreement with you, we will develop the TECACOMP® TC variant which combines the greatest number of benefits for your product. We take a close analytical look at your specific requirements before the right basic polymer, the optimum filler and the relevant degree of filling are combined to create your own specific formula. We will be pleased to offer you detailed advice. Depending on the basic polymer used and the selected filler, it may be possible to adjust the colour in line with your preferences.