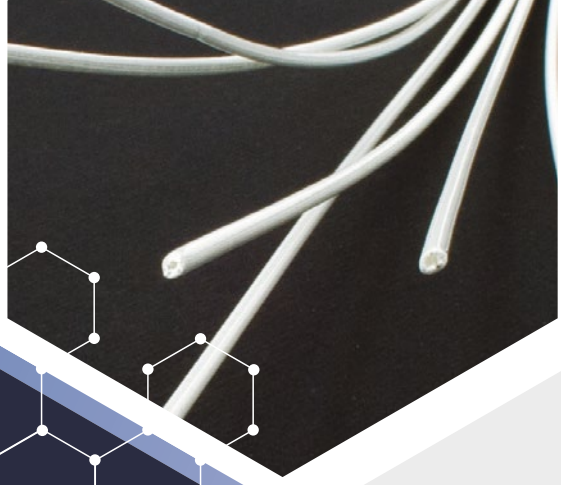
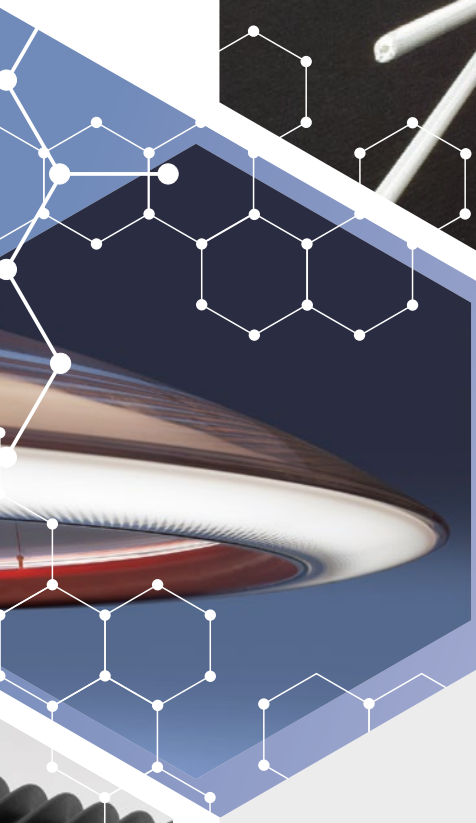
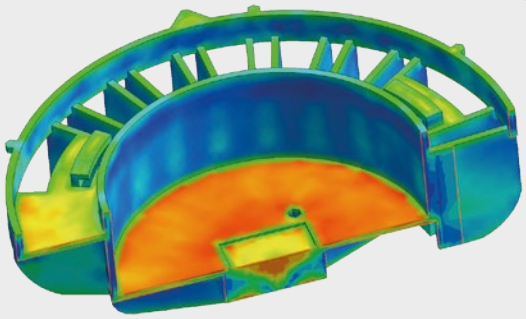
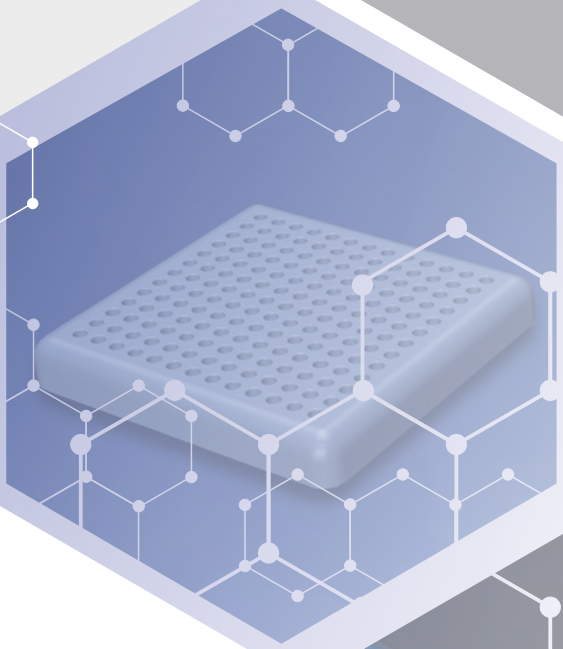


LATI® HIGH PERFORMANCE THERMOPLASTICS







LATICONTHER

Compounds thermally conductive

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The world of LATICONTHER

With **LATICONTHER** compounds, the possibility of using thermally conductive thermoplastic polymers in the production of manufactured goods is becoming a concrete reality.

Thanks to the high thermal conductivity of the special fillers dispersed in the polymer matrix, these materials facilitate the transfer of heat, such as that generated by electronic devices.

LATICONTHER compounds are a valuable alternative to metal for heat management in situations where traditional solutions cannot be taken into consideration or need to be replaced by more flexible and economical alternatives.
LATICONTHER compounds offer many advantages over metal:

- considerable weight reduction, as they have average densities of around 1.5 g/cm^3;
- the high chemical resistance of plastic matrices;
- a low linear thermal expansion coefficient, comparable to that of metal;
- the possibility of combining thermal conductivity with electrical insulation;
- the fact that they can be coloured or metallised according to the solution envisaged;
- their lower overall production costs;
- the fact that they aggregate complex functions and geometries, including ones with inserts.

The LATICONTHER range can be used in the encapsulation and overmoulding of electric devices, in the construction of heat sinks for LEDs, in electric motors and active elements (e.g., power transistors), as well as in technical parts for the modern automotive industry.

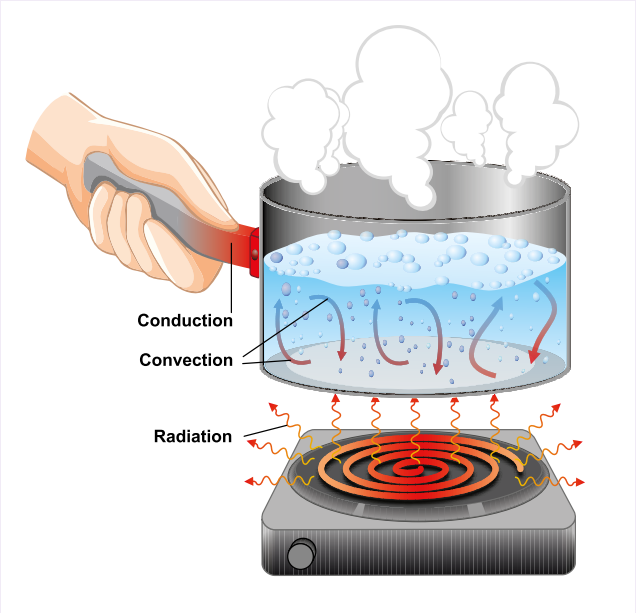
With LATICONTHER compounds, as indeed with other thermoplastic materials, production waste is clean and easy to manage and can be recycled. These are important advantages over metals and other solutions.

With these compounds, there is no longer any need for washing and cleaning cycles involving the use of solvents and acid baths, and moulding is carried out at much lower temperatures than with metals.

These advantages make the LATICONTHER family a great solution, both economically and in health and environmental terms.

Heat transmission

The energy transfer caused by a relative temperature difference can occur through the three mechanisms of heat transmission: **conduction, convection, radiation.**



Convection is the transfer of heat between a solid surface and a liquid.
The thermal power transferred is a function of the component's exchange area **(A)** and the temperature difference between the two systems **(ΔT)**:

$$Q_{convection} = h \cdot A \cdot \Delta T$$

Conduction is heat transfer due to contact between systems at different temperatures. The quantity of heat transferred **(Q)** is a function of the geometry and characteristics of the materials involved and the temperature difference **ΔT**, where **T** is the thickness and **A** is the heat exchange area.

Thermal conductivity (K) is the **capacity of a material** to transfer heat and it is a highly variable parameter:

$$Q_{conduction} = - \frac{K \cdot A \cdot \Delta T}{s}$$

The convection coefficient (**h**) regulates heat exchange between different systems and is not a property of the materials involved, but of the system as a whole.

For example, the amount of heat transferred will be less when a surface is exposed to still air (natural convection) than when it is exposed to an airflow (forced convection), providing the surface exposed and the temperature difference are the same in the two conditions.

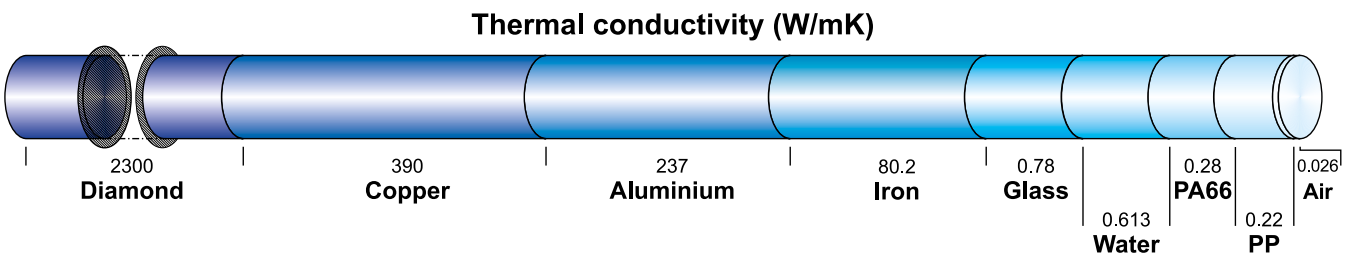
Radiation is energy emitted by a body in the form of electromagnetic waves as a result of the vibratory and rotational motion of molecules, atoms and electrons present in a substance, which in turn depends on the nature of the material and the temperature of the surface involved.

Overall, the phenomenon of heat transfer often involves all **three mechanisms simultaneously**; consequently, a combined assessment of their individual contributions is essential in order to optimise the efficiency of the whole system.

Let us consider the case of an ordinary heat sink used for cooling a microprocessor or a LED lamp; even though these devices are usually made from metal, a replacement version entirely made from LATICONTHER could easily be used.

In fact, it is a common mistake to believe that the ability to exchange heat is mainly linked to the intrinsic thermal conductivity of the material used. In actual fact, this ability is also influenced by the efficiency of the convective exchange on the radiant surface (which depends exclusively on the geometric characteristics of the body and the properties of the surrounding air).

For this reason, **the use of metals** with high thermal conductivity, such as aluminium or copper, can prove **excessive**, especially if the overall heat transfer balance is affected by other causes of "bottlenecks" in the heat transfer process, such as poor air circulation or ineffective radiation due to a non-optimised geometry.

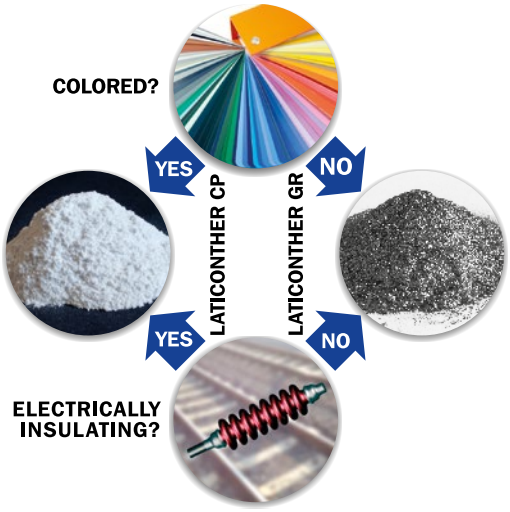


How to choose?

When deciding which LATICONTHER thermally conductive compound is most suitable for the needs of a given project, the first thing to do is consider whether it would be possible to use, as an alternative, an **electrically conductive** material, or whether the material used must instead be **insulating**.

Because **LATICONTHER** compounds fall into the following two main categories:

- Electrically insulating: **LATICONTHER CP**
- Electrically conductive: **LATICONTHER GR**



If the application in question has no specific constraints in terms of electrical insulation, and if the colour black is acceptable, then graphite-filled LATICONTHER GR electrically conductive compounds are certainly the best option in terms of performance/price ratio.

If, on the other hand, the application requires electrical insulation and/or the use of colours other than black, it will be necessary to choose a LATICONTHER CP compound with special electrically insulating fillers that can also be coloured.

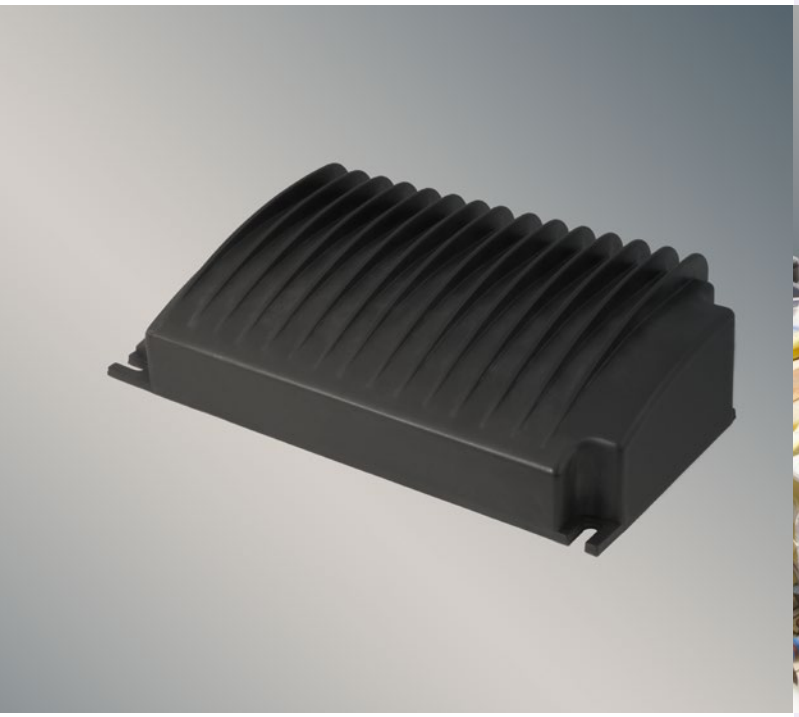
Having identified the basic type of filler to use, the next thing to choose is the type of matrix that best lends itself to the application needs.

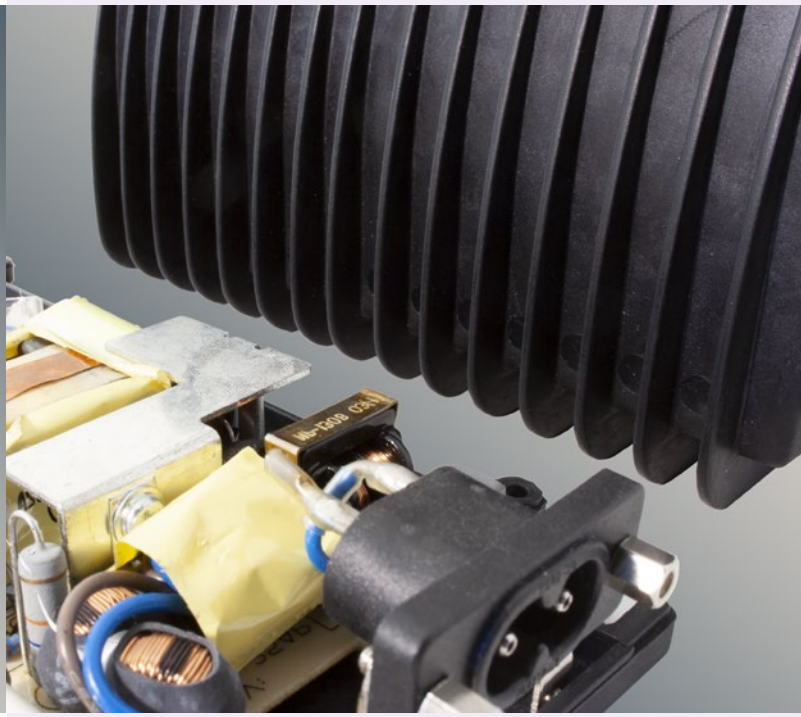
What temperatures are involved?
Heat can damage compounds and compromise their safety: it is therefore essential to consider the maximum temperatures reached during continuous and peak use.

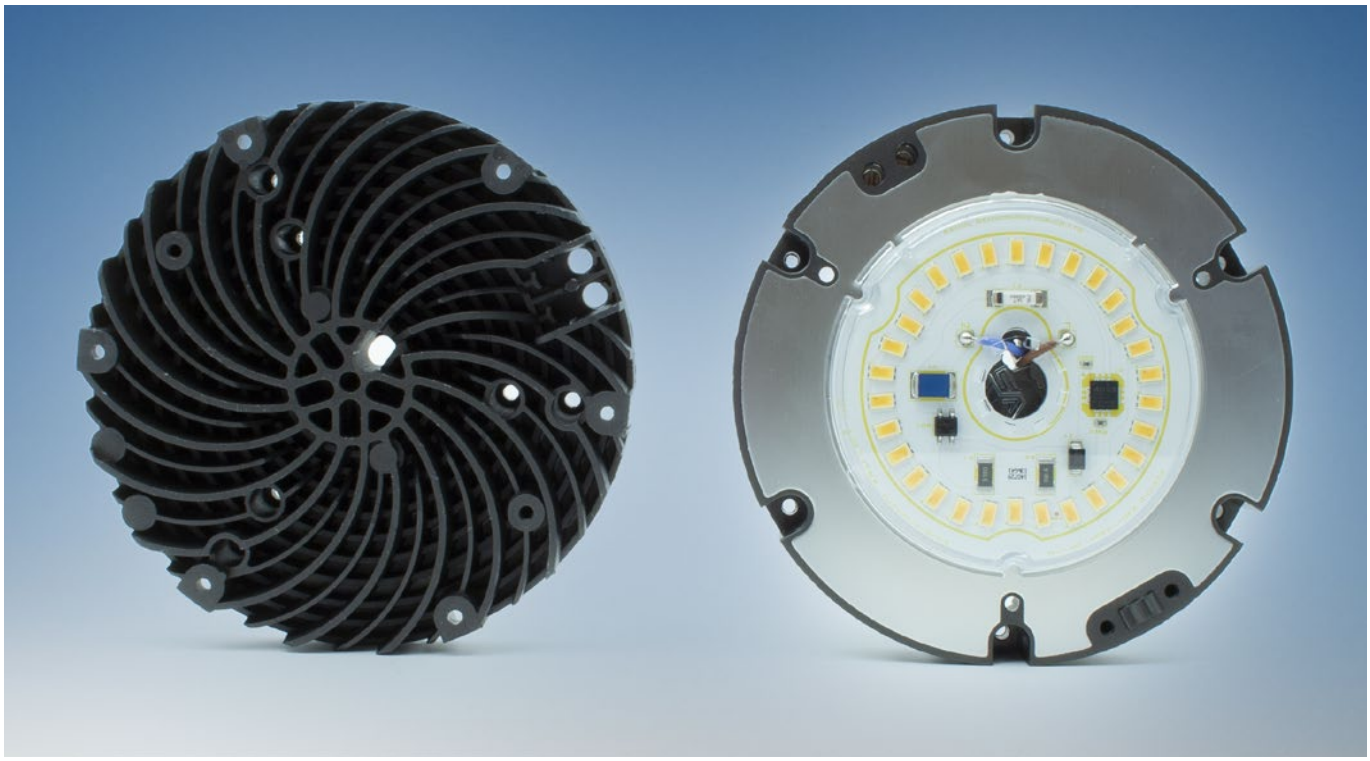
What will be the product's operating environment?
Factors such as chemical attack and exposure to sunlight and bad weather or atmospheric humidity are important considerations in the choice of a polymer.

What mechanical performances are necessary?
Considering the quantity of filler present in the compounds, the presence of both static and dynamic mechanical stresses is a key factor in making the correct choice.

Does the compound need to be self-extinguishing?
LATI also offers thermally conductive compounds with UL-94 certification.







LATICONTHER GR & CP: characteristics

MATERIAL	Klong (W/mK)	Ktra (W/mK)	Maximum temperature	Mechanical	Chemical	Electrical	Color	Self-estinguishment	Processability
LATICONTHER 52/11 GR/70	15	2.5	★	★★	★★★	Conductor	Black	UL	★★★
LATICONTHER 62 GR/50	12	2	★★	★★★	★★	Conductor	Black	UL	★★★★
LATICONTHER 62 GR/50-V0	11	2	★★	★★	★★	Conductor	Black	UL	★★★★
LATICONTHER 62 GR/70	28	4	★★	★★★	★★	Conductor	Black	UL	★★★★
LATICONTHER 80 GR/50	10	1	★★★★	★	★★★★	Conductor	Black	UL	★★★★
LATICONTHER 87/28 GR/50	10	1.2	★★★	★	★	Conductor	Black	☒	★★
LATICONTHER 62 CPG/750	1.5	1	★★	★★	★★	Insulating	Colored	☒	★★★
LATICONTHER 62 CEG/500-V0HF1	0.9	0.6	★★	★★★	★★	Insulating	Colored	UL	★★★
LATICONTHER 62 CP6/650-V0HF1	4	1.2	★★	★★★	★★	Insulating	Black	UL	★★★
LATICONTHER 80 CPG/700	1.4	0.9	★★★★	★★	★★★★	Insulating	Colored	Intrinsic	★★
LATICONTHER 52/11 CP1/600	5	1.2	★	★★	★★★	Insulating	Colored	☒	★★★
LATICONTHER 82 CP1/800	7	1.5	★	★★	★★	Insulating	Colored	☒	★★★

Excellent: ★★★★ Very good: ★★★ Good: ★★ Fair: ★

LATICONTHER CP

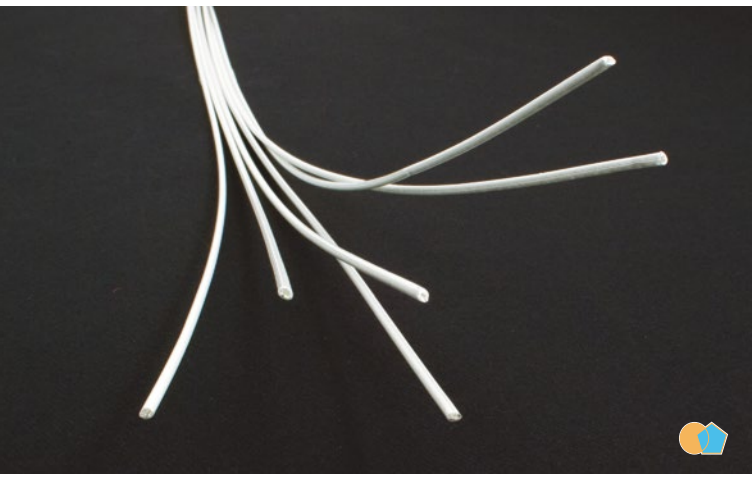
Thermally conductive and electrically insulating

LATICONTHER CP compounds are able to offer good thermal conductivity values without this undermining their **electrical insulation** properties.

The electrical performance of these compounds is maintained thanks to the special thermally conductive ceramic fillers dispersed in them. The materials thus obtained **can be coloured**, compatibly with the high amount of filler required by the formulation.

If a thermal conductivity value of 1-2W/mK is sufficient, then standard LATICONTHER CP compounds are the right answer to the project needs. Their absolute conductivity values are much lower than those of metals, but up to **20 times higher** than those of traditional plastic materials, both thermoplastic and thermosetting ones (e.g., casting resins).

For higher performance needs, LATI has **LATICONTHER CP1 and CP3**, formulated with special mixtures of ceramics capable of conferring thermal conductivity values approaching 1**0 W/mK**.



Extruded multilumen ENKI hoses with less than 2mm. in diameter made of LATICONTHER 47/1 CP/80

LATICONTHER 47/1 CP/80
Flexible and tough PPc-based compound, suitable for refrigeration and low-temperature applications generally, e.g., liquid gases. This material can also be used in the extrusion of simple profiles.

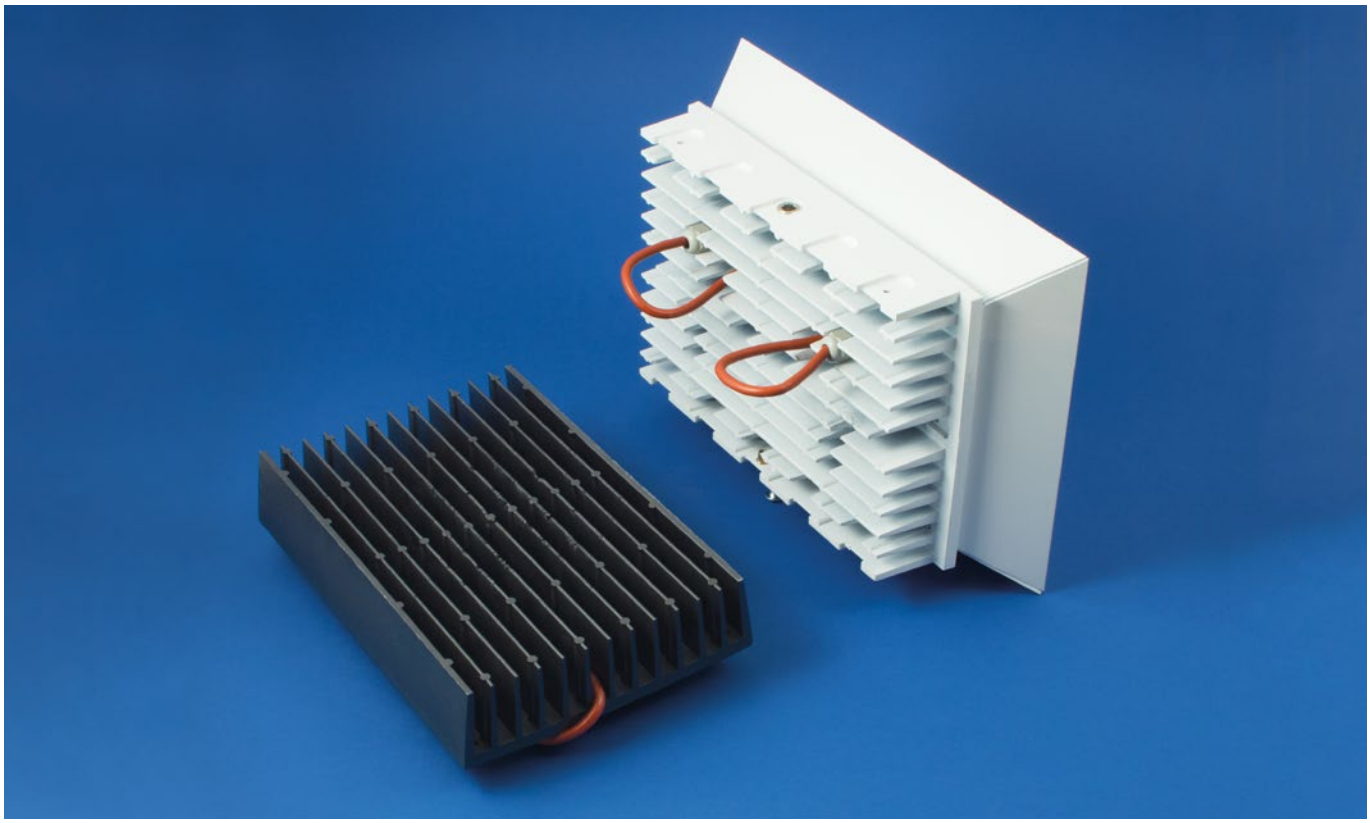
LATICONTHER 62 CP6-V0HF1
PA6-based compound with isotropic thermal conductivity approaching 4 W/mK. Excellent price/quality ratio.
Self-extinguishing, UL94 certified, halogen and red phosphorus free, flame retardant with GWIT and GWFI values complying with IEC 60335 standards.

LATICONTHER 62 CPG/750
PA6-based compound with adequate mechanical properties and dimensional stability. Ceramic look, interesting thermal conductivity, excellent processability, easy to colour.

LATICONTHER 62 CP7/700-V0HF1
PA6-based compound with high-performance ceramic. Self-extinguishing, thermal conductivity approaching 8 W/mK, maximum electrical insulation and resistance to creeping currents: ideal for electrical, electronic, e-mobility applications.

LATICONTHER 62 CEG/500-V0HF1
PA6-based compound with thermal conductivity greater than 1 W/mK. This compound is mechanically resistant and can be coloured.
Designed for the electrical and electronics industry, it comes with UL94-V0 certificate for all colours and specific RTI ratings.

LATICONTHER 80 CPG/700
PPS-based compound, ideal for use at high operating temperatures. Intrinsically self-extinguishing, it has exceptional dimensional stability and high MFI, which makes it ideal for filling thin elements.

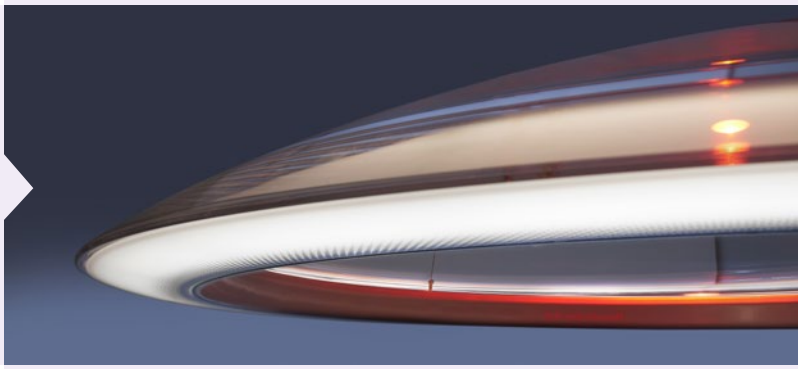


LATICONTHER UL GR & CP: certifications

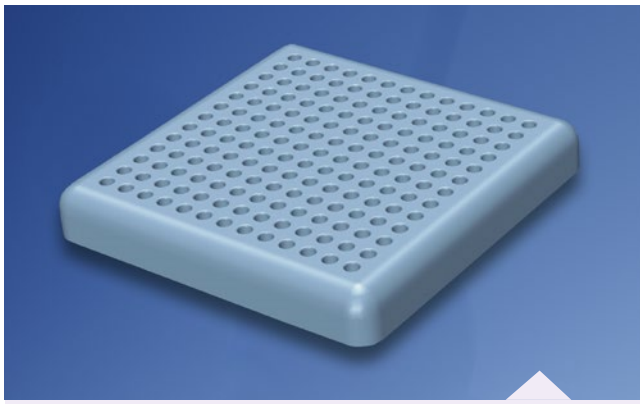
MATERIAL	Colors	Min Thk mm	UL 94 Flame Class	R.T.I.		
				Elec	*Mech*	
					With Imp	W/o Imp
LATICONTHER 62 CEG/500-V0HF1 (q) (r)	ALL	0.75 1.20 3.00	V-1 V-0 V-0	150 150 150	150 150 150	130 140 140
LATICONTHER 62 GR/50	NC	1.50 3.00 6.40	HB HB V-0	65 65 65	65 65 65	65 65 65
LATICONTHER 62 GR/50-V0	NC	0.75 1.50 3.00	V-0 V-0 V-0	- - -	- - -	- - -
LATICONTHER 62 CP6/650-V0HF1	NC	0.75 1.50 3.00	V-1 V-1 V-0	65 65 65	65 65 65	65 65 65
LATICONTHER 62 GR/70	NC	1.50 3.00	HB V-0	65 65	65 65	65 65
LATICONTHER 80 GR/50	NC	0.75 1.50 3.00	V-0 V-0 V-0	130 130 130	130 130 130	130 130 130
LATICONTHER 52/11 GR/70	NC	1.50 3.00	HB HB	65 65	65 65	65 65

LATICONTHER 62 CEG/500-V0HF1

PROJECT SPECIFICATIONS:
Artemide chose LATI to create the thermally conductive structure of its “Ameluna” LED lamp. Maximum efficiency, lightness, dimensional stability, strength and aesthetic appeal.



LATICONTHER 52/11 CP1/600

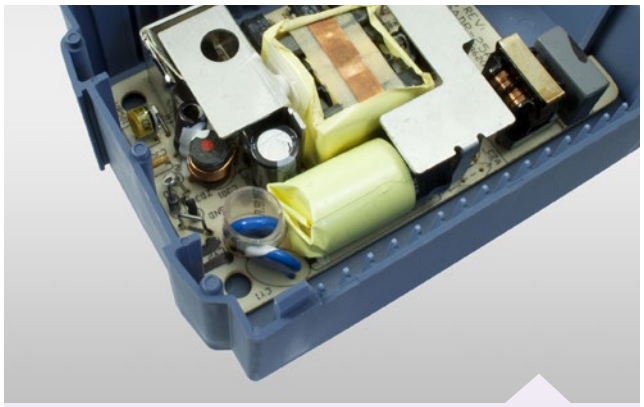


PROJECT SPECIFICATIONS:
For contact with live cells, the choice fell on a non-toxic PP-based compound filled with 60% boron nitride. The high thermal conductivity of the cuvettes produced using this material, allowing rapid thawing of samples stored in liquid nitrogen, ensures their perfect treatment in the analytical laboratory device.

LATICONTHER 62 CPG/750

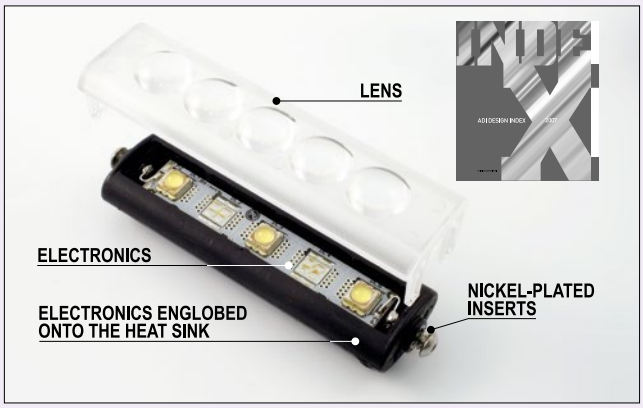
PROJECT SPECIFICATIONS:
Colourable, electrically insulating but also thermally conductive: the lighting element support in this Jetzt lamp by Ingo Maurer is made from 75% ceramic and glass fibre reinforced PA6 with high dimensional stability.

LATICONTHER 62 CEG/500-V0HF1



PROJECT SPECIFICATIONS:
The power electronic components are here housed in a case made from self-extinguishing, thermally conductive compound, **UL certified** and suitable for outdoor use. The polymer compound thus replaces metal in a traditional application sector that until now has been closed to synthetic materials.

LATICONTHER 83 CP/80



PROJECT SPECIFICATIONS:
The first thermally conductive compound project undertaken by LATI, nominated for the Compasso d’Oro design award in 2007.
This modular lamp by Idealed is cooled with a polymer heat sink. The assembly is watertight.

LATICONTHER GR

Thermally and electrically conductive

With **LATICONTHER GR** compounds it is possible to reach much higher conductivity and thermal performance compared to common polymer materials.
The compounds' high graphite content ensures an average lengthwise conductivity of between **10 and 15W/mK** and at the same time allows considerable **electrical conductivity**.

Whatever the base polymer matrix, LATICONTHER GR compounds cannot be coloured as the filler used means that they can only be black.

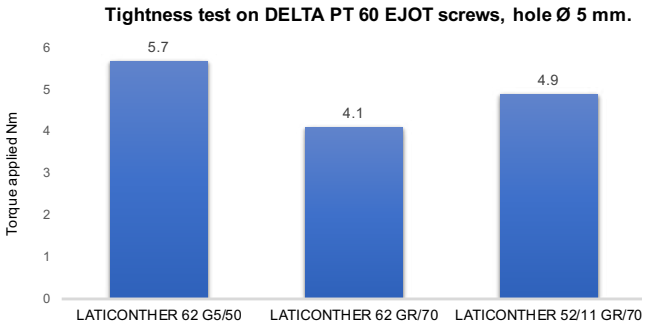
The graphite used features geometric anisotropy due to the asymmetrical shape of its component particles. Consequently, if the orientation of the fillers can be adjusted, it is possible to obtain even better thermal properties.

Conductivity is highest in the direction parallel to the flow of molten material that fills the cavity: values even higher than **30W/mK** can be measured.

Despite their high graphite content (up to 70% in weight), LATICONTHER GR compounds do not require special equipment for processing. They are already specially formulated to fill very thin walls without causing any equipment wear.

LATICONTHER 52/11 GR/70
PPh-based compound boasting excellent characteristics in terms of **chemical inertness**, lightness, and electrical and thermal conductivity (above 15W/mK), as well as an extraordinary price-performance ratio. This grade can potentially also be used in the **extrusion** of profiles.

LATICONTHER 62 GR/50 e GR/70
PA6-based compound with excellent lengthwise and crosswise (transverse) conductivity, suitable for use at high temperatures. Mechanically valid, it allows the use of **inserts and self-tapping screws**.



LATICONTHER 62 GR/50-V0
LATICONTHER 62 GR/50 retains its thermal and mechanical performance features also in its UL-V0-certified version.
This material is perfect for applications exposed to electrical voltages that need to be managed in complete safety, e.g., recessed spotlights.

LATICONTHER 80 GR/50
PPS-based compound for cutting-edge applications. Self-extinguishing, suitable for use at temperatures of up 200°C, high thermal and electrical conductivity, outstanding dimensional stability. Maximum chemical inertness and resistance to environmental aggression.

LATICONTHER 62 GR/50

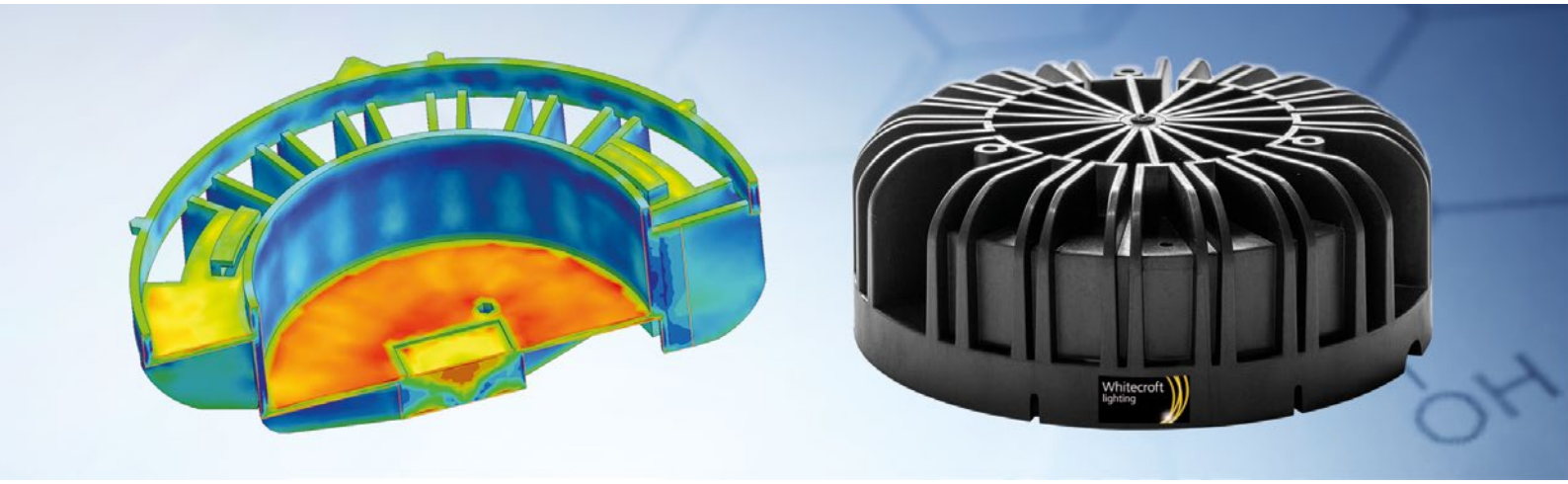
PROJECT SPECIFICATIONS:
The Mirage 3 range of LED lights, designed for public places and equipped with high-power COB LEDs, was developed by Whitecroft and Protool in collaboration with LATI. The compact and functional design, which is the result of meticulous engineering, was possible thanks to the thermal performance of this graphite-filled compound.

Replacing aluminium

Opting for thermally conductive compounds is a great choice providing a few key rules are followed.

First of all, never stop at a simple comparison of the **cost per kg!**
In fact, the density of plastic compounds is around **half that of aluminium**, which means you can get more parts from the same weight.
Second, be careful to avoid making the mistake of evaluating the performance of plastic materials solely on the basis of their **thermal conductivity value.** Metals show much higher conductivity compounds, but this constitutes a real advantage for LATICONTHER mainly in the management of high power densities or when there is forced convection.
Third, the advantages listed in the introduction of this brochure must be kept in mind in order to correctly assess the **final cost of the product.**

Replacing metal may not be economically viable in the case of simple products, such as the extruded profiles from which the heat sinks of some LED modules are cut.
Similarly, it may not be possible to use plastics if the operating temperatures exceed 150 °C, or in the case of high specific powers. In many other situations, careful design will allow a solution to be found.



LED lighting technology

The birth of the LATICONTHER range coincided with the establishment of the **LED** as a new, high-efficiency light source with a low environmental footprint.

The need to ensure efficient **LED** cooling was met by the use of radiant elements that double up as a container for the electronics. Whenever the operating parameters allow it, these containers are made without the use of metal parts.

Thermally conductive compounds ensure thermal performance levels that, while not on the scale of those of metals, are often more than enough to ensure the correct working of **LEDs – even the most powerful COB type** – especially in the presence of natural convection.

It is therefore possible to produce safe and reliable injection moulded heat sinks that can be welded, and even coloured or painted, without having to accept the compromises and costs associated with metalworking processes.

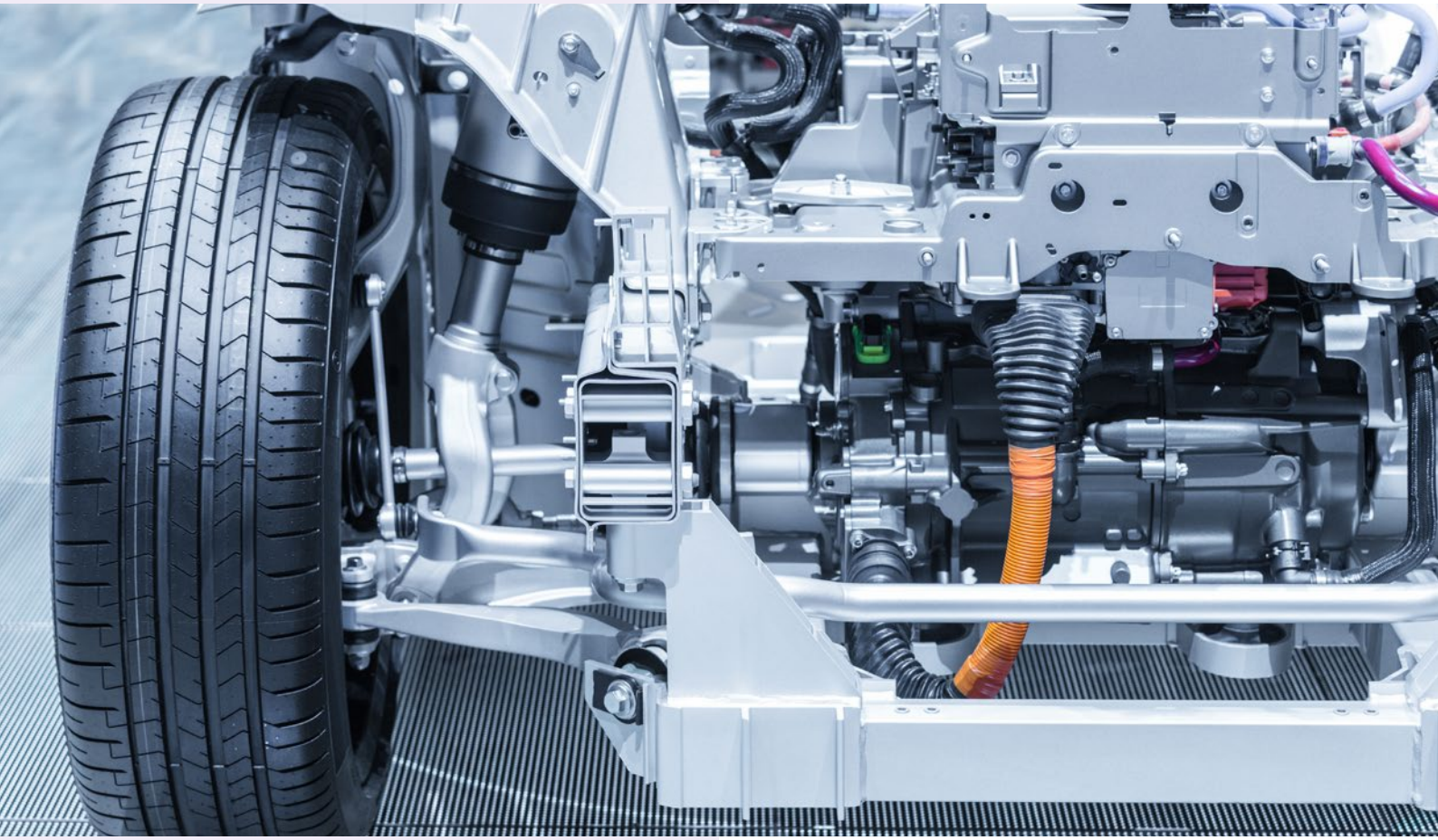
LATICONTHER MI

Thermally conductive compounds for the automotive industry

Today, **mechanical strength and thermal conductivity** are finally combined in LATICONTHER MI, a family of thermoplastic compounds specially designed for the **automotive applications of the future.**

The basic objective of the MI grades is to increase as much as possible the thermal performance of the material without foregoing the mechanical features typical of glass fibre-reinforced compounds.

The compounds are based on 35% glass fibre-reinforced PA66, to which different percentages of graphite are added according to the desired compromise between structural strength and thermal performance.



LATICONTHER 62 GRG/500

PROJECT SPECIFICATIONS:
Continental chose reinforced thermally conductive compounds as a replacement for the metal in some parts of its braking systems.
The automotive giant was won over by the perfect combination of strength and thermal conductivity.

Choose your LATICONTHER compound

See the table to compare the propertiecs (physical, mechanical, thermal, electrical, self-extinguishing and colourability) of the main LATICONTHER compounds.

				AMORPHOUS		SEMICRYSTALLINE				
PROPERTIES (typical values)	**TESTING CONDITIONS**	**STANDARDS**	**UNITS (SI)**	**LATICONTHER 92 GR/65**	**LATICONTHER 87/28 GR/50**	**LATICONTHER 47/30 CP1/800**	**LATICONTHER 52/11 GR/70**	**LATICONTHER 52/11 CP1/600 F3**	**LATICONTHER 75 GR/50**	**LATICONTHER 83 CP/85**
				PUR	**PC**	**PPc**	**PPh**	**PPh**	**PBT**	**PA12**
PHYSICAL										
Density	23°C	ISO 1183	g/cm³	1.72	1.47	1.95	1.58	1.58	1.58	3.00
Linear shrinkage at moulding* (60x60x2mm)-packing pressure: 60MPa	along flow	ISO 294-4	%	0.30 ÷ 0.45	0.45 ÷ 0.70	0.45 ÷ 0.75	0.45 ÷ 0.80	0.90 ÷ 1.40	0.50 ÷ 0.80	0.70 ÷ 1.00
	across flow			0.30 ÷ 0.45	0.50 ÷ 0.75	0.45 ÷ 0.75	0.45 ÷ 0.85	0.90 ÷ 1.40	0.60 ÷ 1.00	0.70 ÷ 1.00
MECHANICAL										
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	7.5	4	7	2	1	4	10
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	15	8	20	4	5	7	65
Tensile modulus	23°C	ISO 527-1	MPa	1100	7000	900	8200	3500	10200	950
Tensile stress at break	23°C	ISO 527-1	MPa	20	35	12	25	20	45	15
Tensile elongation at break	23°C	ISO 527-1	%	8	0.8	5	0.6	1	0.8	5
THERMAL										
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	85	145	80	110	110	190	65
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	100	140	45	140	130	180	65
	1.82 MPa			65	135	40	120	100	80	40
Thermal conductivity	23°C	LATI	W/mK	10	10	4	12	2	10	2
ELECTRICAL										
Surface resistivity		ASTM D 257	ohm	1E2	1E4	1E11	1E2	1E12	1E3	1E12
PROCESSING CONDITIONS										
Pre-drying temperature	(at least 3 hours at…)		°C	80 ÷ 100	120 ÷ 130	80 ÷ 90	80 ÷ 90	80 ÷ 90	120 ÷ 130	70 ÷ 90
Melt temperature			°C	200 ÷ 220	280 ÷ 300	220 ÷ 250	230 ÷ 280	230 ÷ 250	230 ÷ 260	230 ÷ 260
Mould temperature			°C	20 ÷ 60	100 ÷ 120	40 ÷ 60	50 ÷ 80	30 ÷ 60	80 ÷ 100	60 ÷ 90
SELF-EXTINGUISHING										
COLORABILITY										
				☒	☒	☑	☒	☑	☒	☑

UL approved grade

Intrinsically self-extinguishing base resin

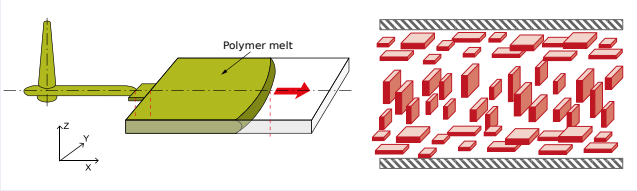
SEMICRYSTALLINE												
LATICONTHER 82 CP1/800	LATICONTHER 62 GR/50	LATICONTHER 62 GR/50-V0	LATICONTHER 62 GR/70	LATICONTHER 62 CPG/500	LATICONTHER 62 CPG/750	LATICONTHER 62 CEG/500-V0HF1	LATICONTHER 62 CP6/650-V0HF1	LATICONTHER 66 VH MI02 G/35	LATICONTHER 57 CPG/550	LATICONTHER 57T CP8/400	LATICONTHER 80 GR/50	LATICONTHER 80 CPG/700
P12	PA6	PA6	PA6	PA6	PA6	PA6	PA6	PA66	PPA	PA9T	PPS	PPS
2.14	1.50	1.71	1.76	1.91	2.56	1.75	1.71	1.59	1.99	1.41	1.71	2.55
0.25 ÷ 0.55	0.35 ÷ 0.65	0.35 ÷ 0.65	0.25 ÷ 0.40	0.35 ÷ 0.60	0.35 ÷ 0.55	0.30 ÷ 0.45	0.30 ÷ 0.45	0.30 ÷ 0.55	0.30 ÷ 0.45	0.40 ÷ 0.60	0.30 ÷ 0.50	0.20 ÷ 0.35
0.25 ÷ 0.55	0.40 ÷ 0.60	0.40 ÷ 0.60	0.25 ÷ 0.45	0.45 ÷ 0.70	0.40 ÷ 0.60	0.50 ÷ 0.65	0.50 ÷ 0.65	0.70 ÷ 1.00	0.50 ÷ 0.65	0.60 ÷ 0.80	0.40 ÷ 0.60	0.25 ÷ 0.40
1.5	3.5	2.5	2	4	5	3.5	4	6.5	2	2	2	4
5	8	5	3.5	40	25	15	9	20	10	15	5	10
12800	11400	17000	12000	8500	11400	10500	15500	16800	11000	9600	14700	14000
45	60	45	70	120	80	85	100	120	70	65	60	60
0.6	1.2	0.5	0.4	2	1.5	1.5	1.3	1.2	0.6	1	0.6	0.5
180	210	210	210	205	195	210	210	255	100	260	245	250
170	210	210	215	215	215	215	215	260	120	275	275	280
150	185	185	190	195	190	200	205	250	90	250	230	245
9.5	12	10	20	1.2	1.7	1.1	3	4	1.2	2	10	1.4
4E13	1E4	1E3	1E1	1E14	1E10	1E10	1E12	1E12	1E12	1E12	1E3	4E13
70 ÷ 90	80 ÷ 100	80 ÷ 100	80 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	120 ÷ 130	100 ÷ 130	110 ÷ 130	110 ÷ 130
250 ÷ 270	250 ÷ 270	250 ÷ 270	250 ÷ 290	250 ÷ 270	250 ÷ 290	250 ÷ 270	250 ÷ 280	270 ÷ 290	310 ÷ 330	310 ÷ 330	290 ÷ 320	290 ÷ 320
80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	140 ÷ 160	140 ÷ 160	130 ÷ 140	130 ÷ 140
		UL				UL	UL					
☑	☒	☒	☒	☑	☑	☒	☒	☒	☑	☒	☒	☑

Measuring thermal conductivity

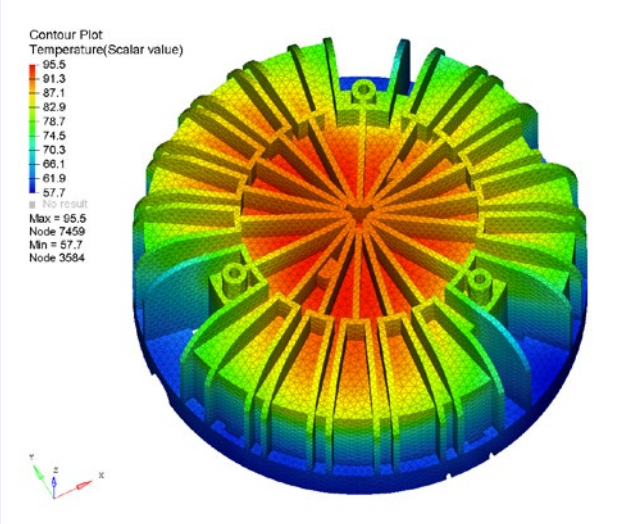
The thermal conductivity measured in LATICONTHER compounds may not be perfectly identical in the different directions of space, especially when using fillers that are highly efficient but also distinctly geometrically anisotropic, e.g., **graphite and boron nitride.**

These ceramics have an almost two-dimensional structure. For this reason, the conductive particles contained in the product can show a marked orientation as an effect of the stresses they are subjected to during the injection moulding process, and of the geometry of the cavity. As can easily be imagined, the arrangement of the conductive particles in the moulded piece determines their ability to transfer heat both along and crosswise to the orientation plane. For this reason, it is appropriate to speak in terms of **thermal conductivity values that differ** depending on the direction of measurement.

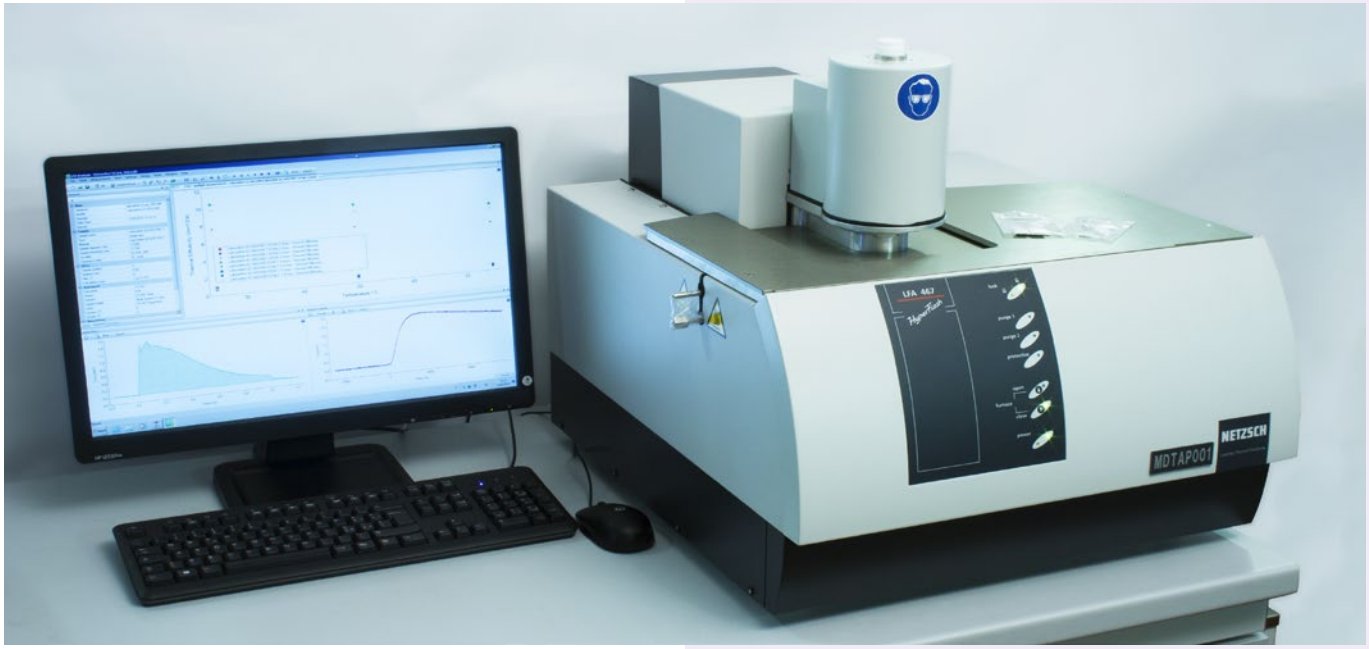
The flow direction of the molten compound determines the orientation of the conductive particles and the thermal conductivity values on the (Kx and Ky) plane and through the (Kz) plane. The Kz value increases with thicker walls.



Through an accurate FEM simulation, it is possible to evaluate in advance the effect of filler orientation on local thermal performance.



LFA 467 HyperFlash®, Light Flash Apparatus



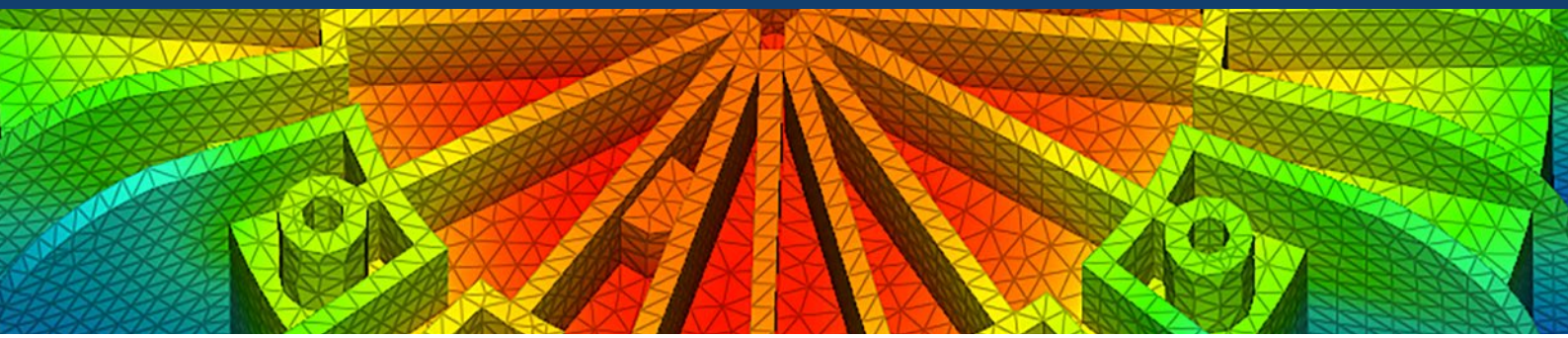
Typically, the two values observed on the Kx and Ky plane are very similar, while the value of the conductivity through the Kz plane can be considerably lower.

LATI measures the thermal conductivity of its compounds in the three directions of space by using a Netsch LFA apparatus in compliance with the ASTM E1530 and E1461-92 standards.

The technical sheet accompanying LATI materials shows two separate values, or a single average value calculated from Kx, Ky and Kz.

About LATI

Founded in Italy in 1945, LATI has, over the decades, earned itself a high-profile position, both in Italy and worldwide, within the field of engineering thermoplastic compounds.
Today, the company is the independent compounder offering the widest range of products in Europe, as well as one of the most qualified suppliers of self-extinguishing compounds internationally. A particular strength is its readiness to develop special grades tailored to its customers' needs.
The company has two plants in Italy with a potential production capacity of 38,000 tons per year.
LATI materials are used in the main application sectors: the automotive industry, precision mechanics, household appliances, electronics, and medical and biobased applications.
LATI distributes its engineering compounds in all the main foreign markets through its own sales network.
The company is committed to ensuring the satisfaction of its partners through a high-tech service that ranges from compound development to assistance with final project development, provided in compliance with the needs of the customer and always with the utmost flexibility.



Support and service

LATI is always ready to support its customers from the very initial design phases, suggesting the most suitable material, carrying out product and moulding performance simulations, and providing on-site assistance to ensure flawless processing.

Co-design support

Thermal, structural and fluid-dynamic FEM calculation is performed by specialists with great experience in numerical simulation, working directly on the geometries provided by the customer and using rheological and mechanical characterisations obtained under real-life conditions of use.

Research & development

LATI supplies compounds designed to meet customer needs. Each formulation is optimised to meet the requirements of the specific application. When necessary, completely new materials are created, thereby increasing the LATI product range.

Moulding assistance

Processing special compounds and optimising their thermal, mechanical and dimensional performance demands specific skills and great care. For this reason, LATI places technicians with great experience of injection moulding (machines and moulds) at the disposal of its customers.

Certifications & compliance

LATI has a team of experts ready to help its customers navigate the process of getting materials certified by globally accredited laboratories and bodies.
In addition, the company itself issues certificates of compliance with all laws relevant to the market segments in which its thermoplastic compounds may be used.

LATI® HIGH PERFORMANCE THERMOPLASTICS

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Find nearest office by visiting our site www.lati.com.

CERTIFIED MANAGEMENT SYSTEMS CQY CERTIQUALITY
UNI EN ISO 9001:2015
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GOLD 2022 ecovadis Sustainability Rating

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Noi sosteniamo il FAI