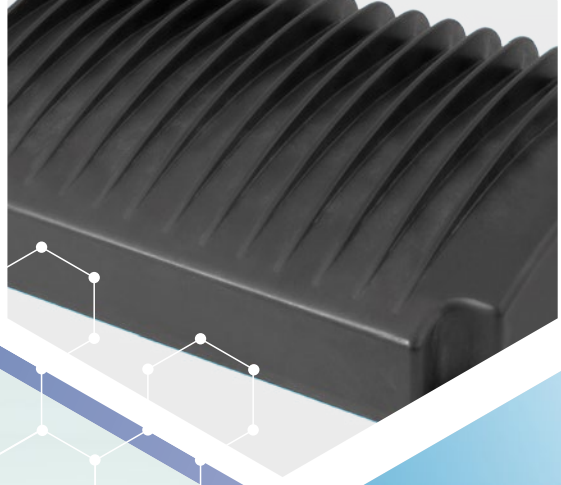
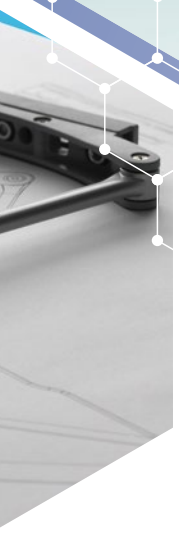


LATI® HIGH PERFORMANCE THERMOPLASTICS



SPECIAL MATERIALS

Materials guide

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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.

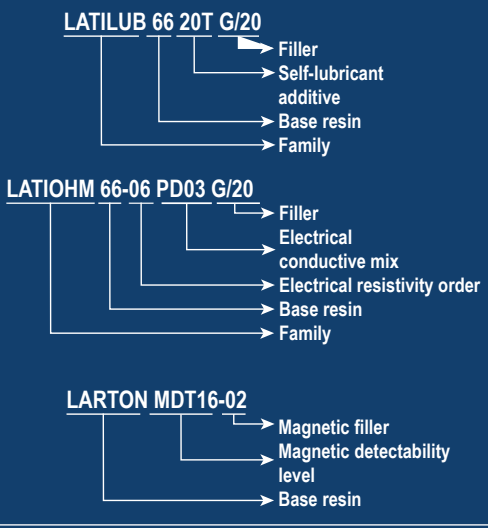
Notes

G	Glass fibres
E	Improved thoughness
K	Carbon fibres
KB1	Flame retardant with red phosphorus
V0HF1	Flame retardant halogen free
V0E	Flame retardant PBB/PBDE free
GWHF1	Flame retardant, improved glow wire
V2HF	Flame retardand phosporuos, halogen free
CT1	Flame retardant with CTI improved
CE, CET	Mineral fillers
LATILUB	
Y	Aramidic fibres
T	PTFE
M	Molybdenum disulphide
GR	Graphite
S	Silicone
LATIOHM, LATIOHM CNT, LATISTAT, LATISHIELD	
CNT	Carbon Nanotubes
MI	Mica
A	Metallic fibres
LATICONTHER	
CE, CP	Ceramic fillers
GR	Graphite

STRUCTURALS & LATIGLOSS	
AG	Chemically coupled reinforcement
HM	High tensile modulus
LATIGRAY	
CX	Radiopaque fillers
CW	Tungsten
LATIGEA	
L	Wood flour

LATI Nomenclature

Examples:



LATILUB®

Situations in which problems related to phenomena of friction and wear occur are the most various, and they all involve parts in relative motion under the most varied conditions of temperature, speed, frequency, and pressure.

From gears to main bearings, from cams to hinges, from simple sliding surfaces to the most sophisticated ball bearings systems, from sealing rings to various kinematic motions, wherever parts are in contact and relative motion, **lubrication is required** to prevent malfunction or failure.

Materials traditionally used in the manufacture of these products have always been metals, e.g. bronze and sintered alloys, ceramics such as alumina, or engineering plastics such as PTFE.

In order to offer a wider range of solutions, LATI has developed a **family of thermoplastic compounds for special applications** that **enhances the classical proposals** and is best suited to the **most innovative projects** and market requirements.

Today, the development of the LATILUB® family is such that these **self-lubricating thermoplastics** can **replace metals**, ceramics, and polymers in the manufacture of **friction and wear resistant parts**, while offering, at the same time, **considerable advantages in terms of cost-effectiveness, integration of functions, easy conversion, and flexibility in design.**

Specifically designed for injection molding, LATILUB® products are made from the **best thermoplastic resins** available on the market: PP, PA6 and PA66, PBT, POM, PPS, PPA, and PEEK.

An optimized solution is proposed for each specific requirement, changing the type of additive depending on operating conditions and project requirements:

- **graphite, molybdenum disulfide and silicone** for efficient and cost-effective solutions;
- **PTFE** for the reduction of the friction coefficient;
- **carbon fibres** to improve smoothness in mechanically highly stressed products;
- **aramid fibres** to reduce both adhesive and third-body wear.

The best solutions, enhanced by LATI's wide experience, are obtained from the **synergistic combination** of two or more functional additives.

				AMORPHOUS							
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATILUB 87/24UV-20T**	**LATILUB 87/28-12T G/20**	**LATILUB 87/28-20T**	**LATILUB 87/28-15T K/20**	**LATILUB 87/28-17ST K/15**	**LATILUB 95-15T**	**LATILUB 95-25GR CE/10**	**LATILUB 85-10T G/30**
				PC	**PC**	**PC**	**PC**	**PC**	**PSU**	**PSU**	**PES**
Physical											
Density	23°C	ISO 1183	g/cm³	1.34	1.43	1.32	1.37	1.33	1.35	1.49	1.66
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.55 ÷ 0.75	0.25 ÷ 0.45	0.55 ÷ 0.75	0.15 ÷ 0.25	0.20 ÷ 0.30	1.05 ÷ 1.30	0.40 ÷ 0.60	0.35 ÷ 0.50
	across flow			0.60 ÷ 0.75	0.45 ÷ 0.65	0.60 ÷ 0.75	0.25 ÷ 0.40	0.35 ÷ 0.50	1.15 ÷ 1.35	0.55 ÷ 0.80	0.65 ÷ 0.80
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	12	15	12	8	8	7	2	8
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	50	60	50	30	30	70	10	35
Tensile modulus	23°C	ISO 527-1	MPa	2200	5700	2200	15300	10500	1800	8500	8600
Tensile strength	23°C	ISO 527-1	MPa	55	85	55	130	105	90	65	60
Elongation at yield	23°C	ISO 527-1	%	3		3			5		
Elongation at break	23°C	ISO 527-1	%	10	2.5	8	1.5	2	8	1.2	1.8
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	140	150	145	150	150	180	180	220
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	140	145	140	145	145	180	175	215
	1.82 MPa			125	140	130	140	140	170	170	210
Tribological											
Static and dynamic coefficient of friction	load 6.1Kg speed 15m/min	ASTM D 1894	μ static	0.18	0.26	0.18	0.24	0.22	0.20	0.23	0.28
			μ dynamic	0.14	0.20	0.14	0.17	0.16	0.17	0.18	0.20
Wear Factor (K)	pressure 20 Kg/cm² speed 3 m/min - 40 h	Thrust Washer	(10^{-7} mm³/Nm)	3.5	15	3.5	9	7	4.5	12	18
Processing conditions											
Pre-drying temperature	(at least 3 hours at…)		°C	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	150 ÷ 180
Melt temperature			°C	265 ÷ 300	275 ÷ 320	265 ÷ 300	275 ÷ 320	275 ÷ 320	290 ÷ 320	300 ÷ 330	350 ÷ 390
Mould temperature			°C	80 ÷ 100	80 ÷ 110	80 ÷ 100	80 ÷ 110	80 ÷ 110	90 ÷ 110	100 ÷ 120	150 ÷ 190
Self-extinguishing											
				UL	UL	UL					
Colorability											
				☑	☑	☑	☒	☒	☑	☒	☑

LATI Flame retardant material-LATI tested *UL UL approved grade* *Intrinsically self-extinguishing base resin*

In this way, **excellent tribological performance** at high and low speed is obtained under the most varied conditions of specific pressure and temperature.

From natural resins to structural compounds, LATI offers a wide range of self-lubricating products that are best suited not only to conventional applications such as polymer against metal, but also to the increasingly widespread and complex ones, in which the polymer slides against other polymers or elastomers.

A concrete response to each requirement without neglecting the other **project requirements**: dimensional stability, adherence to project tolerances, flame retardancy, mechanical, thermal, chemical strength, and of course the final cost.

Fig. 1 - Power gear made of: LATILUB 66-10T Y/15

Fig. 2 - Aramid fibres: chopped strand and powder

INCREASING PROPERTY OR BOUNDARY CONDITION						
	Friction factor	Relative speed	Applied load	Surface hardness	Material σ_R, ε_R	Temperature
EFFECTS ON WEAR & WEAR FACTOR	↑	↑	↑	↓	↓	↑

SEMICRYSTALLINE														
LATILUB 45/7-20T	LATILUB 52/30-15T G/30	LATILUB 73/13-01M	LATILUB 73/13-10ST	LATILUB 73/13-20T	LATILUB 73/13 Y/20	LATILUB 73/13-10T Y/15	LATILUB 73/13-15T G/15	LATILUB 75/4-05T G/30-V0	LATILUB 75/4-20T	LATILUB 62-01M G/30	LATILUB 62-10T	LATILUB 62-15ST	LATILUB 66-01M	LATILUB 66-01M G/15
HDPE	PPh	POM	POM	POM	POM	POM	POM	PBT	PBT	PA 6	PA 6	PA 6	PA 66	PA 66
1.06	1.25	1.44	1.43	1.50	1.40	1.46	1.60	1.64	1.41	1.36	1.18	1.20	1.14	1.24
1.10 ÷ 1.50	0.40 ÷ 0.65	2.00 ÷ 2.30	2.10 ÷ 2.40	2.15 ÷ 2.50	1.65 ÷ 1.95	1.55 ÷ 1.90	0.70 ÷ 1.00	0.40 ÷ 0.65	1.80 ÷ 2.10	0.40 ÷ 0.55	0.95 ÷ 1.25	0.90 ÷ 1.20	1.20 ÷ 1.50	0.45 ÷ 0.75
1.10 ÷ 1.50	1.00 ÷ 1.30	2.05 ÷ 2.25	2.15 ÷ 2.35	2.20 ÷ 2.45	1.75 ÷ 2.10	1.65 ÷ 2.00	1.30 ÷ 1.60	1.10 ÷ 1.40	1.80 ÷ 2.05	0.75 ÷ 1.00	1.00 ÷ 1.35	0.95 ÷ 1.30	1.25 ÷ 1.55	0.95 ÷ 1.25
20	7	5.8	5.2	4.5	4.5	5	4	8	1.5	9	3	5	4	4
NB	40	50	50	45	25	35	20	40	25	70	NB	NB	NB	30
1400	6700	2600	2600	2700	2900	3300	5600	9700	2300	8800	2700	2400	3700	6000
20	80	65	50	50	45	60	65	110	40	160	65	55	85	110
10		5	12	5	5.5	4.5			4		4	5	9	
20	2.8	20	40	16	7.5	6	1.8	2.8	8	3	20	45	11	3.8
70	130	130	130	135	140	140	150	205	170	210	195	200	240	250
75	160	110	150	145	160	120	160	220	160	220	170	155	235	250
45	145	85	100	90	120	85	155	200	70	200	65	55	90	235
0.17	0.16	0.18	0.15	0.15	0.18	0.18	0.23	0.22	0.15	0.45	0.25	0.21	0.29	0.36
0.12	0.1	0.16	0.13	0.09	0.14	0.13	0.2	0.18	0.12	0.38	0.22	0.16	0.27	0.32
6	12	11	1.8	2.2	4.5	3.9	5.5	22	4	31	9.3	8.1	70	44
80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90	100 ÷ 120	100 ÷ 120	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100
180 ÷ 230	220 ÷ 250	175 ÷ 200	175 ÷ 200	175 ÷ 200	175 ÷ 200	175 ÷ 200	175 ÷ 200	240 ÷ 250	230 ÷ 245	240 ÷ 280	230 ÷ 250	230 ÷ 250	260 ÷ 290	270 ÷ 300
20 ÷ 40	40 ÷ 60	70 ÷ 90	70 ÷ 90	70 ÷ 90	70 ÷ 90	70 ÷ 90	70 ÷ 90	70 ÷ 90	70 ÷ 90	70 ÷ 100	70 ÷ 90	70 ÷ 90	70 ÷ 90	70 ÷ 100
				UL			UL	UL		UL			UL	UL
☑	☑	☒	☑	☑	☑	☑	☑	☑	☑	☒	☑	☑	☒	☒

* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

PROPERTIES (typical values)	Testing conditions	Standards	Units (SI)	SEMICRYSTALLINE							
				LATILUB 66-01M G/30	LATILUB 66-01M G/50	LATILUB 66-02S	LATILUB 66-10T G/10	LATILUB 66-10T G/30-V0KB1	LATILUB 66-10T K/10	LATILUB 66-10T Y/15	LATILUB 66-15ST G/30
				PA 66	PA 66	PA 66	PA 66	PA 66	PA 66	PA 66	PA 66
Physical											
Density	23°C	ISO 1183	g/cm³	1.38	1.59	1.13	1.26	1.49	1.23	1.23	1.45
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.35 ÷ 0.65	0.30 ÷ 0.60	1.20 ÷ 1.50	0.60 ÷ 0.80	0.35 ÷ 0.60	0.35 ÷ 0.55	1.25 ÷ 1.45	0.40 ÷ 0.60
	across flow			0.75 ÷ 1.05	0.65 ÷ 0.95	1.25 ÷ 1.55	1.10 ÷ 1.40	0.75 ÷ 1.00	0.80 ÷ 1.10	1.35 ÷ 1.65	0.90 ÷ 1.20
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	9	10	9	4	12	5	4	8
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	65	65	NB	30	50	35	45	45
Tensile modulus	23°C	ISO 527-1	MPa	9400	15500	3000	4800	9900	9100	3800	9400
Tensile strength	23°C	ISO 527-1	MPa	165	220	70	95	165	145	85	150
Elongation at yield	23°C	ISO 527-1	%			5					
Elongation at break	23°C	ISO 527-1	%	3.1	2.5	30	4.2	2.9	2.8	5	2.5
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	255	260	240	245	250	250	245	250
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	260	265	215	255	265	270	240	260
	1.82 MPa			255	260	65	235	255	250	120	250
Tribological											
Static and dynamic coefficient of friction	load 6.1Kg speed 15m/min	ASTM D 1894	μ static	0.42	0.46	0.27	0.29	0.35	0.24	0.25	0.28
			μ dynamic	0.36	0.39	0.25	0.24	0.30	0.21	0.21	0.25
Wear Factor (K)	pressure 20 Kg/cm² speed 3 m/min - 40 h	Thrust Washer	(10^{-7} mm³/Nm)	30	24	44	23	21	13	7.5	17
Processing conditions											
Pre-drying temperature	(at least 3 hours at…)		°C	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100
Melt temperature			°C	275 ÷ 300	280 ÷ 310	260 ÷ 290	275 ÷ 300	270 ÷ 290	275 ÷ 300	270 ÷ 300	275 ÷ 300
Mould temperature			°C	70 ÷ 100	70 ÷ 100	70 ÷ 90	70 ÷ 100	70 ÷ 100	70 ÷ 100	70 ÷ 90	70 ÷ 100
Self-extinguishing											
				UL				LATI			
Colorability											
				☒	☒	☑	☑	☒	☒	☑	☑

LATI *Flame retardant material-LATI tested* UL *UL approved grade* *Intrinsically self-extinguishing base resin*

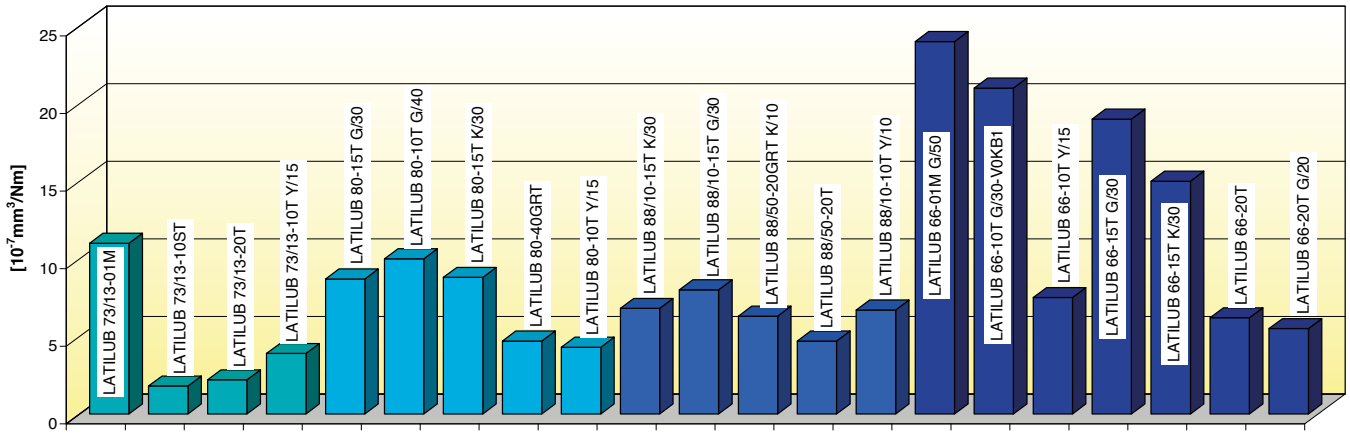
PROPERTIES (typical values)	Testing conditions	Standards	Units (SI)	SEMICRYSTALLINE							
				LATILUB 80-40GRT	LATILUB 80-10T Y/15	LATILUB 88/10-15T K/30	LATILUB 88/10-15T G/30	LATILUB 88/50-20GRT K/10	LATILUB 88/50-20T	LATILUB 88/50-30GRT	LATILUB 88/10-10T Y/10
				PPS	PPS	PEEK	PEEK	PEEK	PEEK	PEEK	PEEK
Physical											
Density	23°C	ISO 1183	g/cm³	1.60	1.42	1.47	1.62	1.45	1.40	1.48	1.37
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.45 ÷ 0.75	0.45 ÷ 0.75	0.10 ÷ 0.30	0.30 ÷ 0.55	0.25 ÷ 0.40	0.90 ÷ 1.30	0.65 ÷ 1.05	0.75 ÷ 1.15
	across flow			0.50 ÷ 0.80	0.50 ÷ 0.80	0.35 ÷ 0.55	0.60 ÷ 0.90	0.60 ÷ 0.90	1.00 ÷ 1.40	0.90 ÷ 1.30	0.85 ÷ 1.25
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	1.5	1.5	5	9	5	7	6	5
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	10	5	27	38	36	NB	35	55
Tensile modulus	23°C	ISO 527-1	MPa	6800	3800	22700	12400	12500	3900	5600	4000
Tensile strength	23°C	ISO 527-1	MPa	50	45	170	110	145	75	85	75
Elongation at yield	23°C	ISO 527-1	%						7		
Elongation at break	23°C	ISO 527-1	%	1	1.2	1	2	2.3	30	2.5	6
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	245	245	350	350	350	270	280	285
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	250	250	350	295	350	190	220	240
	1.82 MPa			150	110	350	255	295	155	165	165
Tribological											
Static and dynamic coefficient of friction	load 6.1Kg speed 15m/min	ASTM D 1894	μ static	0.16	0.19	0.30	0.35	0.26	0.26	0.26	0.25
			μ dynamic	0.09	0.15	0.24	0.28	0.20	0.23	0.18	0.20
Wear Factor (K)	pressure 20 Kg/cm² speed 3 m/min - 40 h	Thrust Washer	(10^{-7} mm³/Nm)	4.7	4.30	6	6.8	6.3	4.4	4.7	6.7
Processing conditions											
Pre-drying temperature	(at least 3 hours at…)		°C	110 ÷ 130	110 ÷ 130	120 ÷ 150	120 ÷ 150	120 ÷ 150	120 ÷ 150	120 ÷ 150	120 ÷ 150
Melt temperature			°C	290 ÷ 310	290 ÷ 310	370 ÷ 400	370 ÷ 400	370 ÷ 400	360 ÷ 390	360 ÷ 390	360 ÷ 390
Mould temperature			°C	130 ÷ 150	130 ÷ 150	170 ÷ 200	170 ÷ 200	170 ÷ 200	170 ÷ 200	170 ÷ 200	170 ÷ 200
Self-extinguishing											
				*	UL *	*	*	*	*	*	*
Colorability											
				☒	☑	☒	☑	☒	☑	☒	☑

SEMICRYSTALLINE

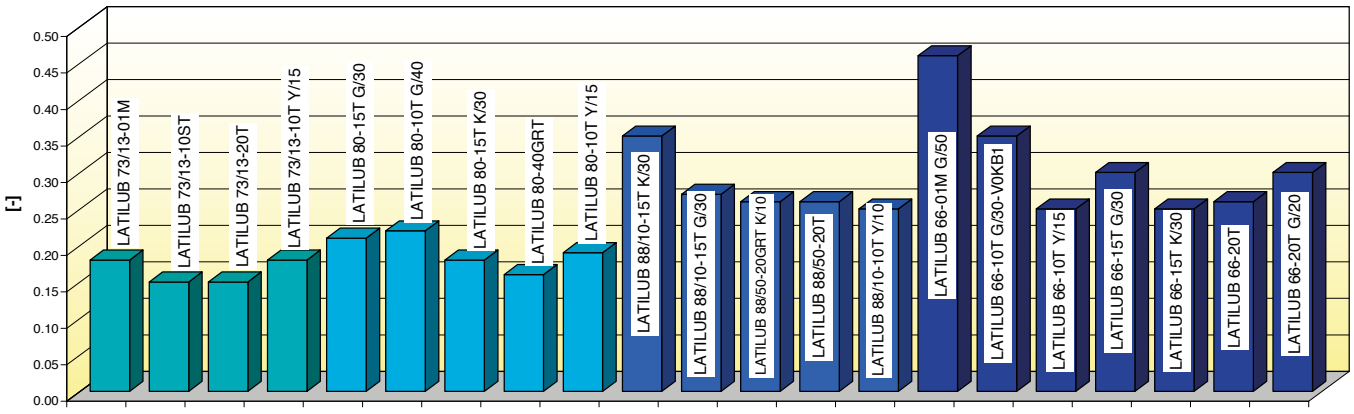
LATILUB 66-15T G/30	LATILUB 66-15T K/30	LATILUB 66-20T	LATILUB 66-20T G/20	LATILUB 66-20T G/20-V1	LATILUB 66-20T G/40	LATILUB 67-10STE21 G/20	LATILUB 57D-15T G/30	LATILUB 57-10T Y/15	LATILUB 57-30GRTS G/20	LATILUB 80-10T K/15	LATILUB 80-15T G/30	LATILUB 80-10T G/40	LATILUB 80-15T K/30	LATILUB 80-17ST G/30
PA 66	PA 66	PA 66	PA 66	PA 66	PA 66	PA 66	PPA	PPA	PPA	PPS	PPS	PPS	PPS	PPS
1.48	1.38	1.25	1.44	1.46	1.65	1.26	1.55	1.28	1.54	1.45	1.62	1.72	1.50	1.67
0.40 ÷ 0.60	0.25 ÷ 0.45	1.30 ÷ 1.60	0.50 ÷ 0.70	0.50 ÷ 0.65	0.35 ÷ 0.60	0.50 ÷ 0.70	0.35 ÷ 0.65	1.10 ÷ 1.40	0.50 ÷ 0.80	0.20 ÷ 0.35	0.25 ÷ 0.40	0.10 ÷ 0.25	0.15 ÷ 0.35	0.25 ÷ 0.40
0.90 ÷ 1.20	0.65 ÷ 0.95	1.40 ÷ 1.70	0.95 ÷ 1.25	0.90 ÷ 1.20	0.75 ÷ 1.05	1.00 ÷ 1.30	0.75 ÷ 1.05	1.20 ÷ 1.50	1.20 ÷ 1.60	0.30 ÷ 0.50	0.60 ÷ 0.75	0.40 ÷ 0.60	0.25 ÷ 0.45	0.60 ÷ 0.75
10	8	2.8	10	8	12	15	8	1	6.5	4	8	8.5	4	6
50	40	55	40	35	50	65	60	10	20	20	35	45	20	25
9500	18500	2800	6300	6400	13000	6000	10000	3500	11000	16000	13500	14500	24000	11000
160	180	65	120	115	170	90	170	60	115	130	120	160	170	135
		9				2.5								
2.5	1.5	10	2.5	2.5	2	3.5	2.2	2	1.5	0.7	1.4	1.5	0.5	1.7
250	250	245	250	250	250	230	250	215	245	255	255	260	255	255
260	260	250	265	265	270	245	280	240	295	280	275	280	280	275
250	245	100	250	250	260	205	255	135	275	265	265	265	270	265
0.30	0.25	0.26	0.30	0.30	0.35	0.25	0.33	0.27	0.24	0.26	0.21	0.26	0.18	0.19
0.25	0.19	0.22	0.22	0.24	0.29	0.21	0.29	0.24	0.22	0.21	0.17	0.23	0.14	0.16
19	15	6.2	5.5	6.2	5.1	24	15	5.5	8	8	8.7	10	8.8	8.5
90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	120 ÷ 130	120 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130
275 ÷ 300	275 ÷ 300	270 ÷ 300	275 ÷ 300	270 ÷ 290	275 ÷ 300	270 ÷ 300	320 ÷ 340	310 ÷ 330	310 ÷ 330	290 ÷ 310	290 ÷ 310	290 ÷ 310	290 ÷ 310	290 ÷ 310
70 ÷ 100	70 ÷ 100	70 ÷ 90	70 ÷ 100	70 ÷ 100	70 ÷ 100	60 ÷ 80	130 ÷ 160	130 ÷ 160	150 ÷ 170	130 ÷ 150	130 ÷ 150	130 ÷ 150	130 ÷ 150	130 ÷ 150
			UL	LATI							UL	UL		
☑	☒	☒	☑	☑	☑	☑	☑	☑	☒	☒	☑	☑	☒	☑

* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

Wear factor



Static friction coefficient



LATIOHM® - LATIOHM CNT® - LATISTAT - LATISHIELD®

As is well known, practically all the polymers used in commercial applications behave as **perfect electrical insulators**.

It is also known that this property may **result in the local accumulation of electrostatic charges**, which may generate sparks when discharging to the ground, arcs that can be very dangerous due to the potential differences involved.

Risks associated with these phenomena are due both to the high voltage and energy content of discharges, **which may be harmful to humans and things.**

An even small arc, for example, can **irreparably damage** electronic equipment or cause explosions if it occurs in an atmosphere saturated with flammable gas or dust.

The high insulating capacity of plastics makes prevention operations, such as the grounding of parts, unnecessary.
This problem can be solved only replacing polymers with metals or using appropriately modified thermoplastics.

Based on this option, LATI has developed a wide range of materials for injection molding, aimed at **solving complex situations**, without giving up **high flexibility of use** typical of engineering plastics, from PP to PEEK.

These solutions consist in adding to base resins electrically conductive products so as to obtain compounds featuring a **resistivity that is much closer to that of metals** than of plastics, variable in a range between 10 and 10^{12} ohm.

Lightweight, practical, colourable in some grades, easy to convert, chemically resistant, e.g. to fuels and solvents, also available in self-extinguishing formulations, LATIOHM products are the trump card for applications **complying with ATEX requirements** in relation to materials that can be used in explosive atmospheres.

LATI's range includes four electrically conductive compound families:

- LATISTAT: these **carbon black or graphite** reinforced materials represent an easy and cost-effective solution to most applications where antistaticity is an issue.
- LATISHIELD®: maximum electrical conductivity due to the **stainless steel fibre** lattice finely dispersed in the matrix. Featuring a resistivity

				AMORPHOUS				SEMICRYSTALLINE			
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATIOHM 36/07 PD01 G/20**	**LATIOHM 87/28-05 PD01 G/10**	**LATIOHM 90/13-09 PD01 G/10**	**LATIOHM 85-06 PD01 G/15**	**LATIOHM 52/11-10 PD02**	**LATIOHM 73-09 PD01 G/20**	**LATIOHM 75/4-03 PD01 G/20**	**LATIOHM 75/4-08 PD01 G/25**
				ABS	**PC**	**PPOm**	**PES**	**PPh**	**POM**	**PBT**	**PBT**
Physical											
Density	23°C	ISO 1183	g/cm³	1.35	1.28	1.19	1.50	0.97	1.55	1.55	1.49
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.30 ÷ 0.45	0.20 ÷ 0.35	0.20 ÷ 0.35	0.10 ÷ 0.25	1.40 ÷ 1.70	0.40 ÷ 0.65	0.20 ÷ 0.50	0.20 ÷ 0.50
	across flow			0.50 ÷ 0.70	0.35 ÷ 0.55	0.35 ÷ 0.50	0.25 ÷ 0.45	1.45 ÷ 1.75	1.00 ÷ 1.30	0.75 ÷ 1.05	0.75 ÷ 1.05
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	4	10	3.5	6	15	6	6	7
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	15	35	10	25	NB	20	40	50
Tensile modulus	23°C	ISO 527-1	MPa	12200	7500	8400	13800	800	12000	14000	15000
Tensile strength	23°C	ISO 527-1	MPa	85	100	70	150	10	110	135	145
Elongation at yield	23°C	ISO 527-1	%					10			
Elongation at break	23°C	ISO 527-1	%	1.2	1.8	1	1.5	95	1.5	1.7	1.5
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	100	150	155	215	50	155	215	215
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	100	145	165	220	60	165	220	220
	1.82 MPa			95	140	160	210	40	160	210	210
Electrical											
Surface resistivity		ASTM D 257	Ω	1E5	1E3	1E2	1E2	1E10	1E3	1E2	1E4
Electromagnetic reflection (Bekiscan-CP)	3 mm-10GHz		%								
Processing conditions											
Pre-drying temperature	(at least 3 hours at…)		°C	70 ÷ 80	110 ÷ 130	80 ÷ 100	150 ÷ 180	80 ÷ 90	80 ÷ 100	120 ÷ 130	120 ÷ 130
Melt temperature			°C	220 ÷ 250	275 ÷ 320	270 ÷ 290	350 ÷ 390	180 ÷ 210	180 ÷ 210	240 ÷ 260	240 ÷ 260
Mould temperature			°C	50 ÷ 80	100 ÷ 120	80 ÷ 90	150 ÷ 190	50 ÷ 70	70 ÷ 90	70 ÷ 110	70 ÷ 110
Self-extinguishing											
				UL							
Colorability											
				☒	☒	☒	☒	☑	☒	☒	☑

Flame retardant material-LATI tested *UL approved grade* *Intrinsically self-extinguishing base resin*

between 10 and 10^3 ohm, LATISHIELD products are best suited to address the problem of shielding of electromagnetic emissions and interferences (EMI).

- LATIOHM®: a family of electrically conductive products par excellence, LATIOHM® products are reinforced with **permanent and semi-permanent additives.** Designed so as to possibly preserve colorability, these products are the solution to most problems of electrical conductivity without giving up **mechanical and thermal performance**.
- LATIOHM CNT®: conceptually connected with the LATIOHM® family, these conductive compounds reinforced with multiwall **carbon nanotubes** (CNT) are a distinct group for the extraordinary properties conferred by CNT.
  Efficiently controlled resistivity, excellent appearance, homogeneous conductivity over the entire surface, cleanliness, and holding of the base resin resilience.

Fig. 3 - Diesel-fuel filter: LATIOHM 66-06 PD03 G/20

	SEMICRYSTALLINE											AMORPHOUS		
LATIOHM 82-02 PD09	LATIOHM 62-03 PD01 G/20	LATIOHM 62-08 PD02 G/30	LATIOHM 62-09 PD01 G/20-V2HF	LATIOHM 63-08 PD02 G/25	LATIOHM 66-04 PD01 G/25-V0CT1	LATIOHM 66-05 PD01 G/20	LATIOHM 66-06 PD03 G/20	LATIOHM 66-07 PD08 G/30	LATIOHM 66-08 PD02 G/35	LATIOHM 57-05 PD01 G/15	LATIOHM 80-04 PD01 G/30	LATISTAT 36/MR-04	LATISTAT 87/28-06	LATISTAT 48/9900-03
PA12	PA 6	PA 6	PA 6	PA 6	PA66	PA66	PA66	PA66	PA66	PPA	PPS	ABS	PC	EVA
1.22	1.35	1.45	1.34	1.26	1.58	1.33	1.34	1.42	1.44	1.34	1.64	1.10	1.22	1.05
0.90 ÷ 1.10	0.30 ÷ 0.55	0.40 ÷ 0.55	0.30 ÷ 0.55	0.45 ÷ 0.60	0.30 ÷ 0.55	0.35 ÷ 0.50	0.40 ÷ 0.55	0.20 ÷ 0.50	0.40 ÷ 0.60	0.35 ÷ 0.65	0.25 ÷ 0.40	0.55 ÷ 0.75	0.70 ÷ 0.90	1.30 ÷ 1.60
0.90 ÷ 1.20	0.65 ÷ 0.95	0.55 ÷ 0.80	0.60 ÷ 0.90	0.65 ÷ 0.90	0.65 ÷ 0.95	0.85 ÷ 1.15	0.90 ÷ 1.20	0.70 ÷ 1.00	0.75 ÷ 1.05	0.75 ÷ 1.05	0.65 ÷ 0.90	0.60 ÷ 0.80	0.70 ÷ 0.90	1.30 ÷ 1.60
2.5	9	8	4	10	9	6	7	8	8	3.5	6	1.2	20	NB
25	65	40	40	40	40	60	45	65	55	35	20	10	95	NB
2100	15400	8600	10500	6100	17000	11000	12000	15000	7900	13600	22500	3100	2600	700
45	200	75	105	65	150	170	180	200	90	190	100	40	50	10
15												2	4.5	8
50	2.5	2	2.3	2.5	2.4	3	2.5	2	4	2	0.5	2.5	6	>100
140	215	160	210	145	215	255	255	250	230	230	255	100	145	50
115	220	205	215	195	250	260	260	260	250	270	280	95	135	45
50	210	155	195	145	215	245	245	250	210	260	270	85	125	35
1E2	1E3	1E11	1E8	1E9	1E3	1E5	1E5	1E3	1E8	1E4	1E3	1E4	1E4	1E2
80 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	130 ÷ 140	70 ÷ 80	120 ÷ 130	70 ÷ 80
210 ÷ 240	240 ÷ 280	240 ÷ 280	230 ÷ 250	240 ÷ 280	270 ÷ 290	270 ÷ 290	275 ÷ 300	275 ÷ 300	275 ÷ 300	320 ÷ 340	290 ÷ 310	190 ÷ 230	270 ÷ 290	210 ÷ 230
45 ÷ 60	80 ÷ 100	80 ÷ 100	70 ÷ 100	60 ÷ 90	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	130 ÷ 160	130 ÷ 140	50 ÷ 70	100 ÷ 120	10 ÷ 30
			LATI	UL	UL			UL						
☑	☒	☑	☒	☑	☒	☒	☒	☒	☑	☒	☒	☒	☒	☒

* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

				SEMICRYSTALLINE							
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATISTAT 52/7-02**	**LATISTAT 52/7-02 MI/30**	**LATISTAT 47/7-03**	**LATISTAT 73/13-06**	**LATISTAT 62-06 K/10**	**LATISTAT 63-08**	**LATISTAT 66-06**	**LATISTAT 67-08**
				PPh	**PPh**	**PPc**	**POM**	**PA6**	**PA6**	**PA66**	**PA66**
Physical											
Density	23°C	ISO 1183	g/cm³	0.95	1.22	1.00	1.40	1.15	1.12	1.20	1.16
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	1.50 ÷ 1.80	0.80 ÷ 1.00	1.10 ÷ 1.30	2.00 ÷ 2.30	0.40 ÷ 0.55	1.15 ÷ 1.45	1.20 ÷ 1.50	1.30 ÷ 1.65
	across flow			1.55 ÷ 1.85	0.85 ÷ 1.05	1.20 ÷ 1.40	2.05 ÷ 2.25	1.05 ÷ 1.35	1.25 ÷ 1.50	1.25 ÷ 1.55	1.30 ÷ 1.60
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	2	1	20	5	15	10	3	7.5
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	25	10	60	35	40	NB	20	NB
Tensile modulus	23°C	ISO 527-1	MPa	2700	5200	2100	3000	8100	2200	3700	2300
Tensile strength	23°C	ISO 527-1	MPa	35	30	25	55	115	40	75	50
Elongation at yield	23°C	ISO 527-1	%	2	1.5	5		3.5	3		
Elongation at break	23°C	ISO 527-1	%	3.5	3	7	5	6.5	80	2.7	15
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	115	110	95	150	205	170	245	190
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	115	140	95	135	215	135	230	185
	1.82 MPa			75	95	55	85	200	60	100	65
Electrical											
Surface resistivity		ASTM D 257	Ω	1E2	1E3	1E2	1E5	1E4	1E8	1E3	1E5
Electromagnetic reflection (Bekiscan-CP)	3 mm-10GHz		%								
Processing conditions											
Pre-drying temperature	(at least 3 hours at…)		°C	80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100
Melt temperature			°C	180 ÷ 220	200 ÷ 240	200 ÷ 240	175 ÷ 200	240 ÷ 280	230 ÷ 250	270 ÷ 300	260 ÷ 290
Mould temperature			°C	20 ÷ 40	40 ÷ 60	40 ÷ 60	70 ÷ 90	80 ÷ 100	60 ÷ 70	70 ÷ 90	60 ÷ 80
Self-extinguishing											
Colorability											
				☒	☒	☒	☒	☒	☒	☒	☒

LATI *Flame retardant material-LATI tested* UL *UL approved grade* *Intrinsically self-extinguishing base resin*

				AMORPHOUS	SEMICRYSTALLINE						
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATIOHM 87/28-07 CNT**	**LATIOHM 73/23-10 CNT**	**LATIOHM 75/4-10 CNT**	**LATIOHM 83-07 PD11 CNT**	**LATIOHM 66-10 H2 CNT CE/10**	**LATIOHM 66-10 H2 CNT G/35**	**LATIOHM 80-05 CNT GCE/500**	**LATIOHM 88/10-06 CNT**
				PC	**POM**	**PBT**	**PA 12**	**PA 66**	**PA 66**	**PPS**	**PEEK**
Physical											
Density	23°C	ISO 1183	g/cm³	1.20	1.42	1.33	1.10	1.24	1.41	1.81	1.32
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.55 ÷ 0.75	2.00 ÷ 2.35	1.70 ÷ 2.00	0.80 ÷ 1.20	1.30 ÷ 1.65	0.35 ÷ 0.55	0.30 ÷ 0.40	1.15 ÷ 1.55
	across flow			0.60 ÷ 0.75	2.05 ÷ 2.25	1.70 ÷ 2.00	0.80 ÷ 1.20	1.30 ÷ 1.65	1.00 ÷ 1.35	0.70 ÷ 1.00	1.20 ÷ 1.55
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	8	4	2.5	75	1.3	7	3	5
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	75	55	90	NB	20	50	20	40
Tensile modulus	23°C	ISO 527-1	MPa	2500	2900	2900	1100	5000	11500	15700	4000
Tensile strength	23°C	ISO 527-1	MPa	50	60	60	35	90	185	80	90
Elongation at yield	23°C	ISO 527-1	%	5			20				5
Elongation at break	23°C	ISO 527-1	%	25	10	10	85	2.7	2.5	0.5	35
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	140	150	180	120	245	255	255	>300
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	130	150	170	100	235	260	280	200
	1.82 MPa			125	90	70	40	115	250	270	160
Electrical											
Surface resistivity		ASTM D 257	Ω	1E8	1E7	1E8	1E7	1E8	1E7	1E3	1E3
Electromagnetic reflection (Bekiscan-CP)	3 mm-10GHz		%								90
Processing conditions											
Pre-drying temperature	(at least 3 hours at…)		°C	110 ÷ 130	80 ÷ 100	120 ÷ 130	90 ÷ 100	90 ÷ 100	90 ÷ 100	130 ÷ 140	120 ÷ 150
Melt temperature			°C	265 ÷ 300	180 ÷ 200	240 ÷ 260	210 ÷ 240	275 ÷ 300	275 ÷ 300	290 ÷ 310	360 ÷ 390
Mould temperature			°C	100 ÷ 120	70 ÷ 90	70 ÷ 110	45÷ 55	80 ÷ 100	80 ÷ 100	130 ÷ 140	170 ÷ 200
Self-extinguishing											
Colorability											
				☒	☒	☒	☒	☒	☒	☒	☒

	AMORPHOUS							SEMICRYSTALLINE							
LATISHIELD 36/SP-05A	LATISHIELD 36/AR-10A-V0E	LATISHIELD 36/AR-08A G/17-V0E	LATISHIELD 38/11-08A G/10	LATISHIELD 87/28-10A	LATISHIELD 87/28-10A G/20	LATISHIELD 85-08A G/20	LATISHIELD 52/5-07A	LATISHIELD 73/13-07A	LATISHIELD 75/4-10A	LATISHIELD 66-08A G/25-V0KB1	LATISHIELD 66-10A	LATISHIELD 66-10A G/15	LATISHIELD 66-10A H2 CETG/400	LATISHIELD 66-13A G/30
ABS	ABS	ABS	ABS/PC	PC	PC	PES	PP	POM	PBT	PA 66	PA 66	PA 66	PA 66	PA 66
1.12	1.29	1.45	1.26	1.31	1.44	1.59	0.97	1.47	1.42	1.44	1.24	1.37	1.57	1.56
0.65 ÷ 0.85	0.60 ÷ 0.85	0.50 ÷ 0.65	0.55 ÷ 0.70	0.55 ÷ 0.75	0.20 ÷ 0.40	0.35 ÷ 0.50	1.40 ÷ 1.70	2.00 ÷ 2.30	1.70 ÷ 1.90	0.35 ÷ 0.50	1.20 ÷ 1.50	0.45 ÷ 0.75	0.50 ÷ 0.65	0.45 ÷ 0.60
0.70 ÷ 0.90	0.70 ÷ 0.95	0.55 ÷ 0.75	0.70 ÷ 0.90	0.60 ÷ 0.75	0.40 ÷ 0.60	0.75 ÷ 0.90	1.40 ÷ 1.70	2.05 ÷ 2.25	1.70 ÷ 1.90	0.95 ÷ 1.20	1.25 ÷ 1.55	0.95 ÷ 1.25	0.70 ÷ 1.00	1.00 ÷ 1.25
4	2.5	4.5	7	5	8	5.5	3	4.5	3.5	7.5	3.3	2.8	4	6
15	10	8	25	NB	45	45	40	60	30	50	35	15	20	40
2400	2700	5300	5500	3100	5100	7000	2000	3000	2200	8300	3800	5900	11000	9400
35	40	50	70	50	50	110	70	45	NB	120	30	70	100	90
2							8	8.5	30		3			
3.5	2.2	1.5	2.2	12	3	2	20	20	>100	2.5	7.5	2	1.5	2
85	85	85	125	145	150	210	105	150	185	245	230	245	245	245
85	85	95	130	140	145	215	105	150	175	260	215	250	260	260
80	80	85	120	135	140	205	60	110	70	240	75	230	240	245
1E2	1E1	1E2	1E2	1E2	1E2	1E1	1E2	1E2	1E1	1E2	1E1	1E1	1E1	1E1
92	95	82	92	95	90	90	86	95	94	92	96	93	90	93
70 ÷ 80	70 ÷ 80	70 ÷ 80	80 ÷ 100	110 ÷ 130	110 ÷ 130	110 ÷ 130	80 ÷ 90	80 ÷ 90	100 ÷ 120	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100
210 ÷ 250	180 ÷ 220	190 ÷ 230	240 ÷ 260	265 ÷ 300	275 ÷ 320	300 ÷ 340	180 ÷ 220	175 ÷ 200	240 ÷ 250	270 ÷ 290	230 ÷ 250	270 ÷ 300	275 ÷ 300	275 ÷ 300
40 ÷ 60	40 ÷ 60	50 ÷ 70	50 ÷ 70	80 ÷ 100	80 ÷ 110	100 ÷ 130	20 ÷ 40	70 ÷ 90	70 ÷ 90	70 ÷ 100	70 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100
	LATI	LATI								LATI				
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☒	☑	☑	☑	☑

* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

Fig. 4 - LATIOHM PD02 are available in different colors for applications where electrical and aesthetic performances are both requested.

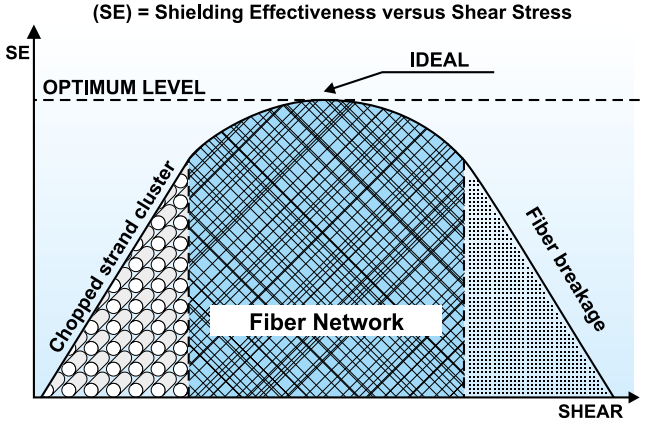


Fig. 5 - The highest shielding efficiency is achieved with an effective dispersion of undamaged steel fibres.

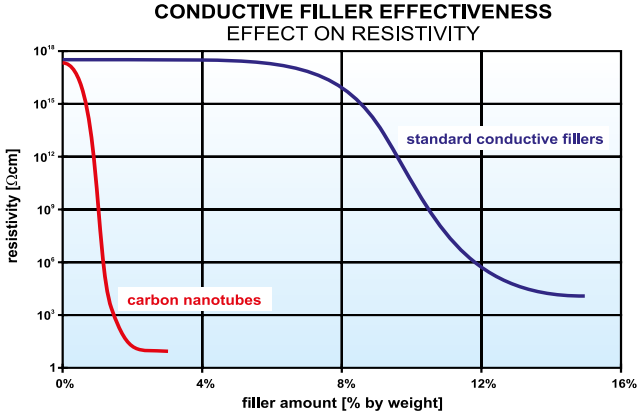


Fig. 6 - Electrical conductivity is very sensitive to the content of conductive filler.

LATICONTHER®

LATICONTHER® is LATI's range designed to meet an apparently impracticable requirement for polymeric materials: **efficient heat discharge**.

As known, in fact, plastics are **intrinsically insulating**, both from an electrical and thermal point of view.

This natural limit can be exceeded through the matrix reinforcement with very high amounts of **conductive ceramic powders or graphite** up to, respectively, 85% and 70%.

Conductivity and thermal diffusivity values shown by LATICONTHER® products designed in this way - both transversely and longitudinally to flow - are **higher** than those of common engineering thermoplastics.

This allows the use of technopolymers in **heat (or cold) transport applications** in which common, practically insulating thermoplastic and thermosetting polymers are used today, or metals, which are highly conductive, but often oversized for the actual heat exchange capacity of the radiating element as a whole.

The manufacture of a thermally conductive compound is a complex task, because **the addition of high amounts of filler should not affect other fundamental material properties**.

In fact, LATICONTHER® products also feature a relatively **low specific weight** compared to metals, excellent chemical inertness typical of synthetic resins, and a linear thermal expansion comparable to that of aluminium or BMC.

LATICONTHER® products allow to integrate **complex geometries** with inserts or consisting of several assembled parts in one injection molding process.

Moulding of thermoplastic compounds ensures **outstanding life expectancy to moulds and tools**, allowing a productivity ratio up to five times higher than similar processes performed with metals (zamak or die-cast)

The competitive advantage - also in terms of final cost – that makes thermally conductive polymer attractive can be obtained in the overall economy of the production process.

As usual, these LATI products are obtained starting from the best thermoplastic polymers: PUR and EVA, PP, PA, PBT PPS, PPA, and PEEK.

The base resins and so the thermoconductive fillers depending on whether an **electrically insulating**

				AMORPHOUS		SEMICRYSTALLINE					
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	LATICONTHER 92 GR/65	LATICONTHER 87/28 GR/50	LATICONTHER 47/1 CP/80	LATICONTHER 52/11 GR/70	LATICONTHER 52/35 CP1/45	LATICONTHER 52 CP1/60	LATICONTHER 52/11 CP1/600	LATICONTHER 52/11 CP3/600 F3
				PUR	PC	PPc	PPh	PPh	PPh	PPh	PPh
Physical											
Density	23°C	ISO 1183	g/cm³	1.72	1.47	2.77	1.58	1.23	1.40	1.58	1.43
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.30 ÷ 0.45	0.45 ÷ 0.70	0.75 ÷ 1.25	0.45 ÷ 0.80	1.00 ÷ 1.30	0.50 ÷ 1.00	0.90 ÷ 1.40	0.90 ÷ 1.40
	across flow			0.30 ÷ 0.45	0.50 ÷ 0.75	0.70 ÷ 1.20	0.45 ÷ 0.85	0.95 ÷ 1.25	0.50 ÷ 1.00	0.90 ÷ 1.40	0.90 ÷ 1.40
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	7.5	4	50	2	2	1	1	1
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	15	8	NB	4	5	3	1	4
Tensile modulus	23°C	ISO 527-1	MPa	1100	7000	1500	8200	3400	5200	5100	4700
Tensile stress at break	23°C	ISO 527-1	MPa	20	35	30	25	22	20	22	20
Tensile elongation at break	23°C	ISO 527-1	%	8	0.8	40	0.6	1.2	1	1	1
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	85	145	145	135	100	115	110	115
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	100	140	145	160	120	130	130	130
	1.82 MPa			65	135	140	150	90	105	105	100
Thermal conductivity	23°C	LATI	W/mK	10	10	2	15	3.5	6	5	4
Electrical											
Thermal conductivity		ASTM D 257	Ω	1E2	1E4	1E11	1E2	1E12	1E12	1E14	1E14
Processing conditions											
Pre-drying temperature	(at least 3 hours at…)		°C	70 ÷ 90	120 ÷ 130	80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90	80 ÷ 90
Melt temperature			°C	190 ÷ 230	280 ÷ 300	220 ÷ 250	230 ÷ 280	230 ÷ 250	230 ÷ 250	230 ÷ 280	230 ÷ 250
Mould temperature			°C	20 ÷ 40	100 ÷ 120	40 ÷ 60	50 ÷ 80	20 ÷ 40	20 ÷ 40	50 ÷ 80	30 ÷ 60
Self-extinguishing											
Colorability											
				☒	☒	☑	☒	☑	☑	☑	☑

Flame retardant material-LATI tested *UL approved grade* *Intrinsically self-extinguishing base resin*

(ceramics) or **conductive** (graphite) solution is required, allow to manufacture:

- encapsulations, overmolding of coils, winding supports, and other applications in the electrical and electronic sector;
- heat sinks for electric motors, circuits, processors, and other active devices;
- radiating elements and supports for lighting engineering, e.g. LED modules;
- simple heat exchangers suitable, for example, for chemically aggressive working environments.

Extremely high dimensional stability, easy and not demanding molding in terms of equipment, good fluidity, interesting mechanical properties, possibility of overmolded metal inserts - LATICONTHER® products **meet the requirements of innovative projects** in:

- **electronics;**
- **lighting engineering;**
- **aerospace;**
- **medical;**
- **automotive;**
- **and other sectors.**

Fig. 7 - Electronics box in LATICONTHER 62 CEG/500- V0HF1

Fig. 8 - Heat sink in LATICONTHER 83 CP/80

SEMICRYSTALLINE														
LATICONTHER 75 CPG/650	LATICONTHER 75 GR/50	LATICONTHER 83 CP/85	LATICONTHER 83 CP/80	LATICONTHER 82 CP1/800	LATICONTHER 62 GR/50	LATICONTHER 62 GR/70	LATICONTHER 62 CPG/500	LATICONTHER 62 CPG/750	LATICONTHER 62 CEG/500-V0HF1	LATICONTHER 57 CPG/550	LATICONTHER 80 GR/50	LATICONTHER 80 GCE/650	LATICONTHER 80 CPG/700	LATICONTHER 88/10 GR/50
PBT	**PBT**	**PA12**	**PA12**	**PA12**	**PA6**	**PA6**	**PA6**	**PA6**	**PA6**	**PPA**	**PPS**	**PPS**	**PPS**	**PEEK**
2.33	1.58	3.00	2.96	2.14	1.50	1.76	1.91	2.56	1.75	1.99	1.71	1.91	2.55	1.65
0.45 ÷ 0.60	0.50 ÷ 0.80	0.70 ÷ 1.00	0.65 ÷ 0.85	0.25 ÷ 0.55	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 ÷ 0.50	0.10 ÷ 0.20	0.20 ÷ 0.35	0.35 ÷ 0.65
0.50 ÷ 0.65	0.60 ÷ 1.00	0.70 ÷ 1.00	0.65 ÷ 0.85	0.25 ÷ 0.55	0.40 ÷ 0.60	0.25 ÷ 0.45	0.45 ÷ 0.70	0.40 ÷ 0.60	0.50 ÷ 0.65	0.50 ÷ 0.65	0.40 ÷ 0.60	0.15 ÷ 0.30	0.25 ÷ 0.40	0.40 ÷ 0.60
4	4	10	3.5	1.5	3.5	2	4	5	3.5	2	2	5	4	3
20	7	65	25	5	8	3.5	40	25	15	10	5	15	10	3
7000	10200	900	3700	12800	11400	22000	8500	11400	10500	11000	14700	23000	14000	19600
45	45	15	40	45	60	60	120	80	85	70	60	145	60	70
0.9	0.8	5	1.4	0.6	1.2	0.3	2	1.5	1.5	0.6	0.6	0.8	0.5	0.5
210	190	60	150	180	195	200	205	195	210	100	245	260	250	>300
220	180	55	120	170	205	210	215	215	215	120	275	285	280	>300
200	80	40	70	150	195	205	195	190	200	90	230	275	245	>300
1.6	10	2	2.1	9.5	10	15	1.2	1.7	1.1	1.2	10	0.9	1.4	10
1E14	1E3	4E12	1E11	4E13	1E4	1E1	1E14	1E10	1E10	1E12	1E3	1E15	4E13	1E3
120 ÷ 130	120 ÷ 130	70 ÷ 90	70 ÷ 90	70 ÷ 90	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	120 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	150 ÷ 170
230 ÷ 260	230 ÷ 260	240 ÷ 260	240 ÷ 260	240 ÷ 260	250 ÷ 290	250 ÷ 290	250 ÷ 270	250 ÷ 290	250 ÷ 270	310 ÷ 330	290 ÷ 320	290 ÷ 320	290 ÷ 320	380 ÷ 400
80 ÷ 100	80 ÷ 100	60 ÷ 80	50 ÷ 70	60 ÷ 80	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100	140 ÷ 160	130 ÷ 140	130 ÷ 140	130 ÷ 140	180 ÷ 190
					UL				UL					
☑	☒	☑	☑	☑	☒	☒	☑	☑	☑	☑	☒	☑	☑	☒

* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

STRUCTURAL & LATIGLOSS®

Inserting glass fibres in a thermoplastic matrix: this is the idea that more than half a century ago led LATI to first propose reinforced compounds on the European market of injection molding.
Over the years, the range was expanded and changed, but always with the ambition of converting "plastics" in structural materials capable of providing **better mechanical performance** than starting resins.

Today, **glass fibre and carbon reinforced compounds** allow to adopt synthetic materials in the manufacture of structural parts subject to high mechanical, static, and dynamic stress.
With LATI products, **metal replacement** is a real opportunity for designers to combine the intrinsic advantages of polymers, such as **lightness and chemical resistance**, with easy processability and design flexibility offered by **injection molding**.

The choice of base resins starts from project requirements and specifications, and LATI's offer includes PP, PA6 and PA66, PBT, PPS, PPA, and PEEK.
Reinforcements selected, ranging from various glass fibres to high tenacity and high modulus carbon fibres, then lead to the formulation of compounds featuring an elastic modulus of even more than **40 GPa** or tensile strength of almost **300 MPa**, which are values **ten times higher than those of the starting materials**.

Dimensional stability, stiffness, impact resistance, and maximum strength even during extreme stresses and high temperature: for plastics, unimaginable performance until recently, which, however, **becomes possible by choosing the most suitable compound** among those included in the wide range, featuring between 10 and 65% glass fibre and up to 50% carbon fibre reinforcement.
LATI formulations also feature excellent **resistance to failure phenomena in the long term**, connected with creep or fatigue, which are very critical events, because often neglected in the design stage, even for

				AMORPHOUS		SEMICRYSTALLINE					
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATILON 28D G/30**	**LAPEX A G/30**	**LATENE AG7H G/30**	**LATENE AG7H2 G/50**	**LATIBLEND 6252 H2 G/30**	**LATER 4 G/30**	**LATER 4 G/50**	**LATER 4 K/30**
				PC	**PES**	**PPh**	**PPh**	**PA6/PP**	**PBT**	**PBT**	**PBT**
Physical											
Density	23°C	ISO 1183	g/cm³	1.44	1.60	1.12	1.32	1.24	1.52	1.74	1.40
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.15 ÷ 0.35	0.30 ÷ 0.45	0.30 ÷ 0.70	0.25 ÷ 0.50	0.35 ÷ 0.50	0.30 ÷ 0.55	0.25 ÷ 0.40	0.10 ÷ 0.25
	across flow			0.35 ÷ 0.55	0.60 ÷ 0.75	0.40 ÷ 0.80	0.75 ÷ 1.05	0.80 ÷ 1.10	1.00 ÷ 1.30	0.70 ÷ 0.90	0.80 ÷ 1.20
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	10	6	10	5	10	8	9	6
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	40	25	65	20	55	55	45	40
Tensile modulus	23°C	ISO 527-1	MPa	8000	9600	6300	10000	9400	9500	15500	21500
	60°C			7500	9400	4500	8200	6400	6900	10000	15500
	90°C			7000	9200	3300	5300	4700	5100	7700	9300
	120°C			6200	9000			3100	4100	5500	6200
	150°C				8600			2100	3200	4500	4700
Tensile strength	23°C	ISO 527-1	MPa	90	130	80	105	125	125	135	150
	60°C			80	125	55	65	78	85	90	110
	90°C			70	115	40	40	53	70	70	80
	120°C			50	100			40	50	55	60
	150°C				90			27	45	45	45
Elongation at break	23°C	ISO 527-1	%	1.7	2	3	2.5	2.7	2.5	1.8	1
	60°C			1.4	2.1	3.5	3.4	4.6	3.2	2.5	1.3
	90°C			1.5	2.3	6	5.8	6	5	2.5	1.5
	120°C			1.5	2.4			6.7	5.5	3	1.7
	150°C				2.5			7.5	5.5	3	2
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	145	220	135	140	170	215	215	225
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	140	220	155	160	195	220	225	215
	1.82 MPa			135	215	135	140	160	210	215	215
Coefficient of linear thermal expansion	30°C ÷ 100°C	ISO 11359-2	×10E-6 / °C	10	4	20	8	8	15	10	3
Processing conditions											
Pre-drying temperature	(at least 3 hours at…)		°C	120 ÷ 130	150 ÷ 180	80 ÷ 90	80 ÷ 90	80 ÷ 90	110 ÷ 130	110 ÷ 130	110 ÷ 130
Melt temperature			°C	280 ÷ 300	350 ÷ 370	200 ÷ 240	200 ÷ 240	230 ÷ 250	240 ÷ 250	240 ÷ 260	240 ÷ 260
Mould temperature			°C	100 ÷ 120	140 ÷ 165	40 ÷ 60	40 ÷ 60	70 ÷ 80	70 ÷ 90	70 ÷ 90	70 ÷ 90
Self-extinguishing				UL		UL		UL	UL		
Colorability				☑	☑	☑	☑	☑	☑	☑	☒

LATI Flame retardant material-LATI tested *UL UL approved grade* *Intrinsically self-extinguishing base resin*

products meant to resist to repeated and prolonged stresses.
Of course, LATI changes its structural products to meet the most diverse customers' requirements, from **self-extinguishing to self-lubricating versions, from coloring on request to UV or chemical stabilizers**.

Even the surface finish is no longer the typical problem of highly reinforced products due to the emergence of fibres on the product surface.

LATI's solution to surface defects is offered by the LATIGLOSS® family, which includes up to 60% glass fibre reinforced PA66 and PPA-based compounds combining **outstanding mechanical performance and surface finish.**

Finally, other reinforced formulations suitable for **contact with drinking water** as well as high temperature are worth mentioning, complying with the strictest standards of institutes of hygiene worldwide **(NSF, WRAS, ACS, KTW, W270)**.

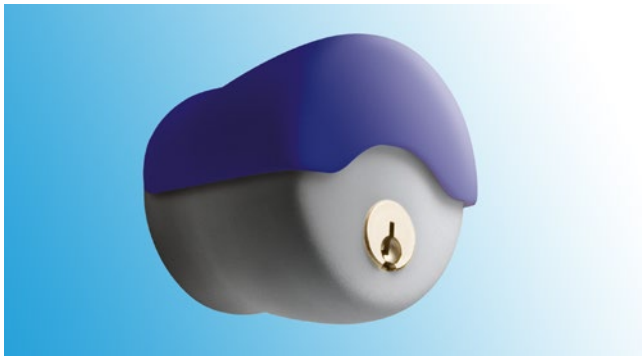


Fig. 9 - Door closing system, LATIGLOSS 66 H2 G/50

Fig. 10 - Hinge system for high-end kitchen furniture, LATIGLOSS 66 H2 G/50

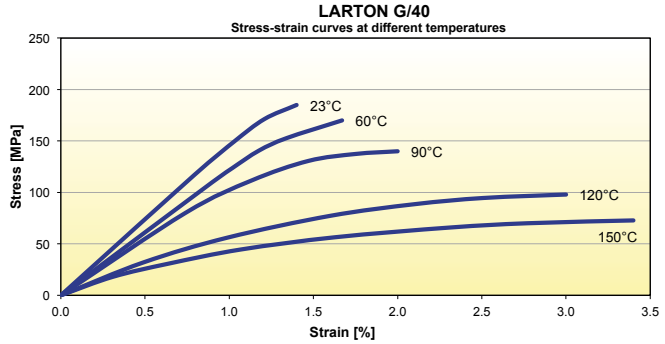
SEMICRYSTALLINE														
LATAMID 12 G/50	KELON B H CET/30	LATAMID 6 H2 G/35	LATAMID 6 S/30	LATAMID 6 H2 G/50	LATAMID 6 H2 G/65	LATIGLOSS 62 H2 G/50	LATAMID 66 H2 G/30	LATAMID 66 H2 G/50	LATAMID 66 H2 G/50-V0KB1	LATAMID 66 H2 G/50-V0HF1	LATAMID 66 H2 G/50-GWHF1	LATAMID 66 H2 G/60	LATAMID 66 H2 K/30	LATAMID 66 H2 K/40
PA12	**PA6**	**PA6**	**PA6**	**PA6**	**PA6**	**PA6**	**PA66**	**PA66**	**PA66**	**PA66**	**PA66**	**PA66**	**PA66**	**PA66**
1.45	1.38	1.41	1.34	1.56	1.74	1.55	1.36	1.56	1.56	1.68	1.58	1.69	1.28	1.30
0.35 ÷ 0.55	0.35 ÷ 0.60	0.30 ÷ 0.50	0.90 ÷ 1.20	0.25 ÷ 0.45	0.10 ÷ 0.25	0.20 ÷ 0.45	0.35 ÷ 0.65	0.30 ÷ 0.60	0.25 ÷ 0.55	0.25 ÷ 0.60	0.30 ÷ 0.60	0.25 ÷ 0.55	0.15 ÷ 0.35	0.15 ÷ 0.35
0.75 ÷ 1.00	0.40 ÷ 0.65	0.60 ÷ 0.80	1.00 ÷ 1.25	0.50 ÷ 0.70	0.30 ÷ 0.45	0.50 ÷ 0.70	0.75 ÷ 1.05	0.65 ÷ 0.95	0.65 ÷ 0.95	0.75 ÷ 1.10	0.80 ÷ 1.20	0.60 ÷ 0.90	0.55 ÷ 0.85	0.45 ÷ 0.70
18	3	10	3	15	12	10	10	15	10	8	12	10	5	8
100	35	75	25	85	60	80	85	60	65	45	65	70	50	50
10500	6500	10500	4200	15500	20000	14500	9400	17000	13500	16000	16500	21000	22500	25500
6300	4200	8500	2000	12500	15500	10500	8500	10000	8500	11500	11000	16000	21500	23000
5100	2200	5800	1100	8500	9500	6000	7400	8000	7200	7100	6500	10500	15000	16000
4300	1700	4600	700	6900	8500	4500	5500	7100	6000	6000	6000	8200	10500	11000
3300	1500	3700	580	6000	8000	3800	4400	6000	4500	5300	5000	6300	7700	8200
150	70	175	70	215	220	200	175	215	180	175	205	215	220	220
110	55	130	45	145	150	140	135	170	125	125	150	170	160	170
90	30	100	35	110	115	85	110	140	100	95	110	130	135	145
80	25	75	25	85	90	65	100	120	80	90	90	110	120	125
55	20	70	20	70	75	55	85	100	65	80	80	95	100	105
4.5	2.5	3	4	2.5	2.2	2.8	3.2	3	2.2	2	2.2	2	1.7	1.2
6.2	3.8	3.8	10	3	2.7	4	4	4.2	3.2	2.8	3	3	2.3	1.8
6.7	8.5	5	15	3.8	3.5	6.3	5.5	5	3.5	3.6	3.8	3.5	3	2.7
7.7	18	5.5	20	4.2	3.8	7.6	6	6	3.7	4	4.1	4.5	3.2	3
8.6	30	6	35	4.5	4	9	6.5	6.5	3.8	4.2	4.4	5	3.4	3.2
180	200	215	205	220	215	210	255	255	255	255	255	255	255	255
190	210	220	195	225	215	210	260	260	260	260	260	260	260	260
185	155	205	85	215	205	185	245	250	250	250	250	245	255	255
8	30	12	35	10	6	10	8	7	4	4	4	6	2	2
70 ÷ 90	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100
220 ÷ 240	240 ÷ 290	240 ÷ 260	240 ÷ 260	240 ÷ 280	240 ÷ 280	250 ÷ 290	275 ÷ 300	280 ÷ 310	270 ÷ 290	270 ÷ 290	270 ÷ 290	280 ÷ 310	280 ÷ 300	280 ÷ 300
70 ÷ 90	80 ÷ 100	80 ÷ 100	70 ÷ 100	80 ÷ 100	80 ÷ 100	90 ÷ 120	80 ÷ 100	80 ÷ 110	70 ÷ 100	70 ÷ 100	70 ÷ 100	80 ÷ 100	80 ÷ 100	80 ÷ 100
	UL	UL		UL			UL	UL	UL	UL	LATI	UL		
☑	☑	☑	☑	☑	☑	☑	☑	☑	☒	☑	☑	☑	☒	☒

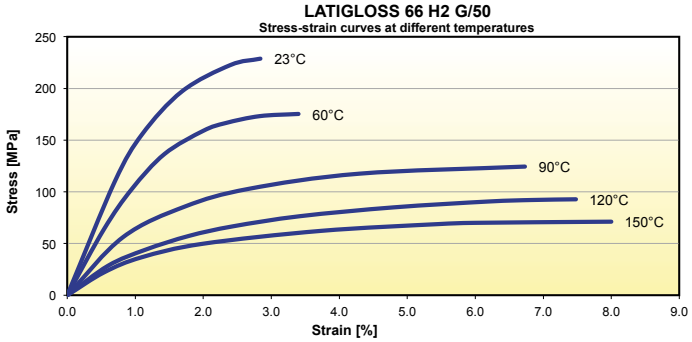
* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

				SEMICRYSTALLINE							
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATAMID 66 H2 K/50**	**LATAMID 66 E21 K/30**	**LATIGLOSS 66 H2 G/50**	**LATIGLOSS 66 H2 G/50-V0**	**LATIGLOSS 66 H2 G/60**	**LATIGLOSS 66 H2 K/30**	**LARAMID G/35**	**LARAMID G/50**
				PA66	**PA66**	**PA66**	**PA66**	**PA66**	**PA66**	**PPA**	**PPA**
Physical											
Density	23°C	ISO 1183	g/cm³	1.37	1.20	1.57	1.83	1.68	1.27	1.46	1.64
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.10 ÷ 0.30	0.25 ÷ 0.45	0.30 ÷ 0.60	0.25 ÷ 0.45	0.30 ÷ 0.50	0.15 ÷ 0.35	0.30 ÷ 0.55	0.20 ÷ 0.40
	across flow			0.35 ÷ 0.55	0.65 ÷ 0.95	0.65 ÷ 0.90	0.55 ÷ 0.80	0.60 ÷ 0.85	0.55 ÷ 0.85	0.75 ÷ 1.05	0.45 ÷ 0.70
Mechanical											
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	7	15	15	8.5	10	5	8	12
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	35	50	85	55	55	35	55	75
Tensile modulus	23°C	ISO 527-1	MPa	29000	20000	16000	22000	22500	21000	13500	17500
	60°C			27000	19500	12000	15500	18000	16000	12000	14500
	90°C			17500	11700	7000	10000	11000	10000	10000	12500
	120°C			12000	8200	5000	7800	6600	6100	8500	11000
	150°C			9500	6000	4000	6000	5800	4900	5500	6000
Tensile strength	23°C	ISO 527-1	MPa	210	180	230	210	235	230	225	260
	60°C			170	140	175	170	180	155	180	205
	90°C			140	110	125	135	130	110	155	185
	120°C			125	95	95	115	100	80	130	155
	150°C			100	75	70	100	75	65	85	95
Elongation at break	23°C	ISO 527-1	%	1	1.8	2.8	1.8	2.2	1.7	2.5	2.1
	60°C			1.5	3	3.2	3	2.6	2.6	2.8	2.3
	90°C			2.4	3.2	6.7	3.5	5.7	4.2	3	2.4
	120°C			2.8	4.2	7.5	3.8	7	4.6	4.4	3.8
	150°C			2.9	4.3	8	4	7.5	5	8.6	6.5
Thermal											
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	250	255	250	250	240	245	270	275
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	260	260	255	255	255	255	285	290
	1.82 MPa			250	250	235	235	235	240	280	280
Coefficient of linear thermal expansion	30°C ÷ 100°C	ISO 11359-2	×10E-6 / °C	2	5	7	4	6	2	8	4
Processing conditions											
Pre-drying temperature	(at least 3 hours at...)		°C	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	90 ÷ 100	120 ÷ 130	120 ÷ 130
Melt temperature			°C	280 ÷ 310	260 ÷ 290	280 ÷ 320	280 ÷ 300	280 ÷ 320	280 ÷ 320	310 ÷ 330	310 ÷ 340
Mould temperature			°C	80 ÷ 100	60 ÷ 80	90 ÷ 120	90 ÷ 110	90 ÷ 120	90 ÷ 120	150 ÷ 170	150 ÷ 170
Self-extinguishing											
				☒	☒	☑	☑	☑	☒	☑	☑
Colorability											

LATI Flame retardant material-LATI tested *UL UL approved grade* *Intrinsically self-extinguishing base resin*

MATERIALS	Moisture absorp. (24h RH50%)	Moisture absorp. (eq. RH50%)	Moisture absorp. (24h immersed)	Moisture absorp. (eq. immersed)
LATAMID 66 H2 G/30	0.27	1.7	0.65	5.2
LATAMID 66 H2 K/30	0.27	1.75	0.67	5.5
LATAMID 66 H2 G/50	0.25	1.3	0.5	4.5
LATAMID 66 H2 G/60	0.24	1.2	0.45	4.3
LATIGLOSS 66 H2 G/50	0.3	1.35	0.55	4.5
LATIGLOSS 66 H2 G/60	0.29	1.25	0.5	4.4
LARAMID G/60	0.17	0.6	0.3	2.9
LATIGLOSS 57 G/40	0.2	1	0.33	3.3
LATIGLOSS 57 G/50	0.18	0.9	0.31	3.1
LATIGLOSS 57 G/60	0.17	0.65	0.3	3





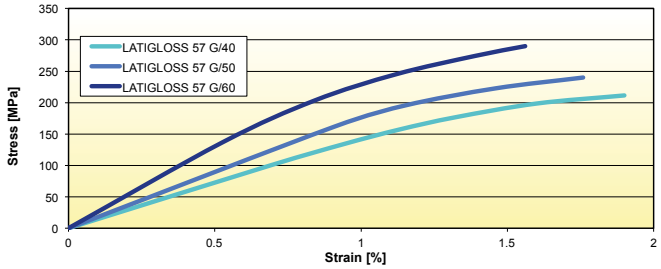
SEMICRYSTALLINE

LARAMID G/60	LARAMID K/40 HM	LATIGLOSS 57 G/40 F2	LATIGLOSS 57 G/50 F2	LATIGLOSS 57 G/60 F2	LARTON G/40	LARTON G/30	LARTON G/40 I6	LARTON GK/400	LARTON GCE/650	LARTON K/30	LARTON K/40 HM	LARPEEK 10 G/40	LARPEEK 50 K/30	LARPEEK 10 K/40 HM
PPA	PPA	PPA	PPA	PPA	PPS	PPS	PPS	PPS	PPS	PPS	PPS	PEEK	PEEK	PEEK
1.78	1.37	1.53	1.63	1.77	1.67	1.56	1.65	1.59	1.97	1.44	1.50	1.62	1.40	1.47
0.15 ÷ 0.35	0.05 ÷ 0.20	0.25 ÷ 0.45	0.15 ÷ 0.30	0.15 ÷ 0.25	0.20 ÷ 0.35	0.25 ÷ 0.40	0.15 ÷ 0.45	0.10 ÷ 0.20	0.10 ÷ 0.20	0.10 ÷ 0.20	0.10 ÷ 0.20	0.20 ÷ 0.45	0.05 ÷ 0.25	0.05 ÷ 0.20
0.40 ÷ 0.65	0.30 ÷ 0.55	0.45 ÷ 0.70	0.30 ÷ 0.50	0.25 ÷ 0.45	0.45 ÷ 0.65	0.50 ÷ 0.70	0.70 ÷ 1.10	0.20 ÷ 0.40	0.15 ÷ 0.30	0.15 ÷ 0.25	0.15 ÷ 0.25	0.50 ÷ 0.75	0.30 ÷ 0.50	0.25 ÷ 0.45
15	8	8.5	9	10	9	6	10	5.5	5.5	4.5	3.5	10	6.5	5
90	60	60	70	75	30	25	40	30	15	25	10	70	45	25
24000	36000	14500	18000	25000	16000	12500	15000	22000	23000	25000	45000	14200	21600	39700
22000	32000	13000	15500	23500	15500	11800	14500	19300	22000	23500	42000	13900	20600	37000
20000	27000	11500	14000	21500	15000	11000	14000	17700	20800	21000	39000	13700	20500	35000
15000	20000	9000	11000	15500	9800	7800	9200	11400	14200	15000	22000	13000	19000	31000
6500	12000	4000	5500	6000	6800	5300	6000	9000	9400	11000	15000	12800	15400	22000
280	290	210	240	290	185	160	195	190	165	185	175	205	225	210
240	265	195	225	250	170	145	180	170	145	165	160	190	200	185
215	245	175	190	210	140	130	150	155	125	130	145	175	180	170
165	190	125	130	130	100	95	110	105	105	85	120	150	155	155
100	140	65	70	70	75	70	85	85	90	70	100	130	100	110
1.8	0.8	1.9	1.8	1.6	1.4	1.6	1.7	1.1	0.8	0.8	0.4	1.9	1.5	0.7
1.9	1	2.1	2	1.7	1.7	1.9	1.7	1.1	0.9	0.9	0.5	1.9	1.7	0.7
2.2	1.3	2.3	2.1	1.9	2	2.2	2.6	1.3	1	1.3	0.8	2	1.7	0.8
3.3	2	4	3.5	3	3	3.2	3	1.7	1.6	1.6	1	2	2	1
5	3.5	8	6	4.5	3.4	3.6	3.3	1.8	2.3	1.8	1.2	2	2.5	1.4
280	275	260	260	260	255	255	260	260	260	255	255	>300	>300	>300
290	290	290	285	285	280	280	280	280	285	280	280	>300	>300	>300
280	280	265	260	260	270	265	260	265	275	270	270	295	>300	>300
3	2	4	3	3	6	8	6	4	4	2	1	12	2	2
120 ÷ 130	120 ÷ 130	120 ÷ 130	120 ÷ 130	120 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	110 ÷ 130	120 ÷ 150	120 ÷ 150	120 ÷ 150
310 ÷ 340	310 ÷ 340	310 ÷ 340	310 ÷ 340	310 ÷ 340	290 ÷ 310	290 ÷ 310	290 ÷ 310	290 ÷ 320	290 ÷ 330	290 ÷ 310	290 ÷ 310	370 ÷ 400	370 ÷ 400	370 ÷ 400
150 ÷ 170	150 ÷ 170	150 ÷ 170	150 ÷ 170	150 ÷ 170	130 ÷ 140	130 ÷ 140	130 ÷ 140	130 ÷ 140	130 ÷ 140	130 ÷ 140	130 ÷ 140	170 ÷ 200	170 ÷ 200	170 ÷ 200
					UL		UL		UL					
☑	☒	☑	☑	☑	☑	☑	☑	☒	☑	☒	☒	☑	☒	☒

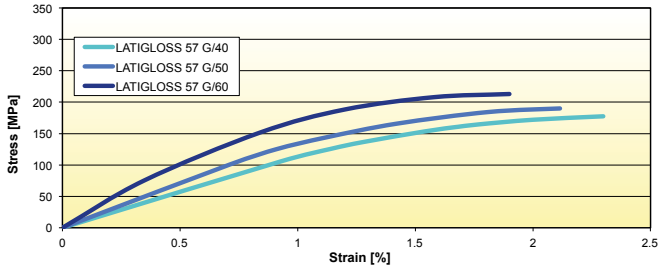
* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

MATERIALS	NSF Std. 51		NSF Std. 61	ACS	WRAS	W270	KTW
LASULF NAT.:0030F1	Water/Ice	80°C	-	-	-	-	-
LAPEX A NAT.:0134F1	Any	100°C	-	-	-	-	-
LAPEX R NAT.:0176F1	Any	100°C	-	-	-	-	-
LATAMID 66 H2 G/30 NAT. F:0003		100°C	-	-	-	-	-
LATAMID 66 H2 G/30 BLACK F:3352	Any except alcoholic	100°C	-	-	-	-	-
LATAMID 66 H2 G/50 NAT. F:0003	beverages	100°C	-	-	-	-	-
LATAMID 66 H2 G/50 BLACK:3302F1		100°C	-	-	-	-	-
LATIGLOSS 66 H2 G/50 NAT.:0003F2	Any except alcoholic	100°C	Cold/hot water	þ	85°C	þ	23°C
LATIGLOSS 66 H2 G/50 BLACK:3352F2	beverages	100°C	Cold/hot water	þ	85°C	þ	23°C
LATIGLOSS 57 G/40 NAT.:0138F2	-	-	Cold/hot water	þ	85°C	þ	23°C-85°C
LATIGLOSS 57 G/40 BLACK:3302F2	-	-	Cold/hot water	þ	85°C	þ	23°C-85°C
LATIGLOSS 57 G/50 NAT.:0138F2	-	-	Cold/hot water	þ	85°C	þ	23°C-85°C
LATIGLOSS 57 G/50 BLACK:3302F2	-	-	Cold/hot water	þ	85°C	þ	23°C-85°C
LATIGLOSS 57 G/60 NAT.:0138F2	-	-	Cold/hot water	þ	85°C	þ	23°C-85°C
LATIGLOSS 57 G/60 BLACK:3302F2	-	-	Cold/hot water	þ	85°C	þ	23°C-85°C
LATENE AG30H G/30 NAT. F:0023	-	-	-	-	-	þ	-
LATENE AG7H G/30 BLACK F:3352	-	-	-	-	-	þ	-
LARTON G/40 NAT.:0169F1	Any	100°C	-	-	85°C	-	-
LATILUB 95-25GR CE/10 BLACK W:3339	-	-	-	-	-	þ	-
LATILUB 80-17 ST G/30 NAT.:0032F1	Any	100°C	-	-	-	-	-

LATIGLOSS 57 - Stress-strain curves at 23°C



LATIGLOSS 57 - Stress-strain curves at 90°C



LATIGRAY

The higher the density of the crossed medium, the higher the **X-ray shielding capacity**.

For this reason, lead is still widely used in the shielding of radiographic equipment, both in industry and medical, therapeutic and diagnostic sector. Some metals and special ceramics are also used in the manufacture of parts detectable by means of analytical techniques based on X-rays.

However, difficulties related to handling, conversion, and **disposal of lead** and its derivatives is an important limit for all parts involved in the process.

Problems associated with lead become ever more complex as the rules on the protection of health and environment become stricter.

To **anticipate the market** in the search for lead-free solutions that are also free from other toxic substances, LATI developed LATIGRAY, a full range of **thermoplastic radiopaque compounds**, which are a viable alternative for products currently made of lead or litharge.

It is a group of thermoplastic products for injection molding with an X-ray opacity that can be optimized from the **simple opacity to the total shielding**, depending on whether a specific contrast is required, e.g. in the medical field, or total shielding, e.g. in industrial radiography.

The shielding level is adjusted during the extrusion by selecting the type of filler and its appropriate concentration: from metal powders (up to tungsten for maximum opacity) to different ceramic fillers.
Most performant products show half value layer **data comparable to those of lead plates**.
LATIGRAY products are available in PP, PA, PPS, PBT, PPA, and PEEK based versions depending on the working temperature, chemical and mechanical requirements, and required shielding or contrast level.

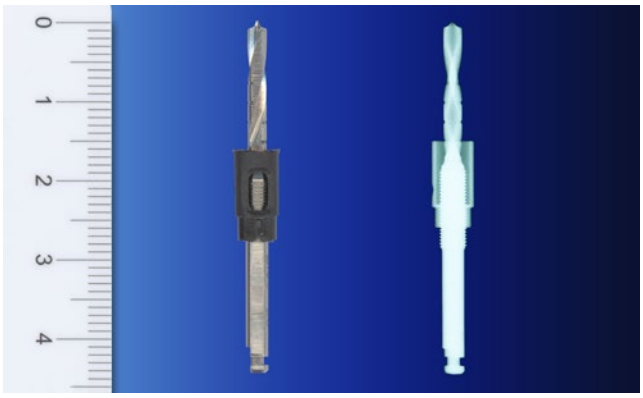


Fig. 11 - DSS bell-shaped stop device for odontoiatric sector in LATIGRAY 75-01 CX/45

				SEMICRYSTALLINE						
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATIGRAY 47/1-01 CX/45**	**LATIGRAY 52/11-01 CX/70**	**LATIGRAY 82-04 CX/90**	**LATIGRAY 82-03 CW/96**	**LATIGRAY 75/4-01 CX/45**	**LATIGRAY 66-01 CX/50**	**LATIGRAY 80-03 CWG/850**
				PPc	**PPh**	**PA12**	**PA12**	**PBT**	**PA66**	**PPS**
Physical										
Density	23°C	ISO 1183	g/cm³	1.37	1.97	4.26	10.85	1.92	1.78	5.38
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	1.40÷ 1.80	1.00 ÷ 1.50	0.70 ÷ 1.10	0.50 ÷ 0.90	1.60 ÷ 1.90	0.90 ÷ 1.30	0.40 ÷ 0.60
	across flow			1.40÷ 1.80	1.00 ÷ 1.50	0.70 ÷ 1.10	0.50 ÷ 0.90	1.60 ÷ 1.90	1.00 ÷ 1.40	0.60 ÷ 0.90
Mechanical										
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	NB	1.3	5	7	3	2	5
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	NB	7	15	10	45	25	15
Tensile modulus	23°C	ISO 527-1	MPa	100	2900	9700	2900	3200	4800	13900
Tensile stress at break	23°C	ISO 527-1	MPa	5	20	35	40	45	65	85
Tensile elongation at break	23°C	ISO 527-1	%	>100	1.2	0.8	0.8	2.5	1.6	1.1
Thermal										
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	60	140	165	165	170		255
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	50	115	170	160	175	240	275
	1.82 MPa			40	70	110	105	85	110	250
Electrical										
Surface resistivity	23°C	ASTM D 257	Ω	1E13	1E13	1E14	1E3	1E14	1E13	1E9
X-Ray opacity										
HVT - Half Value Thikness	80kV	LATI	mm			0.34				0.52
	120kV	LATI	mm			0.66				0.68
Processing conditions										
Pre-drying temperature	(at least 3 hours at…)		°C	80 ÷ 90	80 ÷ 90	80 ÷ 100	80 ÷ 100	120 ÷ 130	80 ÷ 100	130 ÷ 140
Melt temperature			°C	200 ÷ 240	220 ÷ 240	250 ÷ 270	240 ÷ 260	240 ÷ 260	280 ÷ 300	290 ÷ 310
Mould temperature			°C	40 ÷ 60	40 ÷ 60	60 ÷ 80	60 ÷ 80	70 ÷ 100	80 ÷ 100	130 ÷ 140
Colorability										
				☑	☑	☑	limited	☑	☑	limited

* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

LATI MDT & FE

Compounds of the **MDT family (Magnetically Detectable Thermoplastics)** can be detected by any metal detector, even in very small parts.
Due to this property, they are best suited to replace metals and ceramics in all industries, especially the food sector, where the absence of pollution and contamination is a critical factor.

Unlike conventional compounds reinforced with ferromagnetic powders, **MDT grades are detectable by all the detectors** available on the market, both those with fixed magnet and the more modern ones with balanced coils.
The MDT **formulation does not use steel fibres or metal powders**, and does not contain carbon, graphite or carbon black fibres.

For this reason, MDT products do **not** give rise to the formation of **dusts and particles** that are a threat hard to identify, as they disperse in the working atmosphere, contaminating the process or finished products.
MDT compounds, which are available on each thermoplastic resin of LATI'S catalogue, are **suitable for contact with food**.

Finally, LATI focused not only on the main peculiarity of the formula, but also on obtaining products with **good appearance and outstanding mechanical performance**.
The natural color is gray, but colored MDT versions can also be formulated to better meet specific applications.

Traditional magnetizable FE compounds are available aside of innovative magnetically detectable MDT grades.
FE materials feature various types of ferrite, depending on the required values of stable magnetization.
Both FE and MDT compounds can be easily moulded and **fit overmoulding processes as well as filling of thin walls.**

Fig. 12 - Lati MDT, magnetically detectable compounds

				AMORPHOUS	SEMICRYSTALLINE					
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LASTILAC MR MDT05-01**	**LATENE 11 MDT05-01**	**LATAMID 12 H FE90**	**LATAMID 12 H 90FE03**	**LATAMID 66 MDT03-01**	**LATAMID 66 MDT05-01**	**LARTON MDT16-02**
				ABS	**PPh**	**PA12**	**PA12**	**PA12**	**PA12**	**PPS**
Physical										
Density	23°C	ISO 1183	g/cm³	1.29	1.13	3.27	4.5	1.28	1.36	2.77
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.30 ÷ 0.50	1.60 ÷ 1.80	0.70 ÷ 0.90	0.60 ÷ 0.80	0.60 ÷ 1.00	0.60 ÷ 1.00	0.35 ÷ 0.50
	across flow			0.30÷ 0.50	1.60 ÷ 1.80	0.70 ÷ 0.90	0.60 ÷ 0.80	0.60 ÷ 1.00	0.60 ÷ 1.00	0.35 ÷ 0.50
Mechanical										
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	8.5	2.5	2	1	5	6	1.5
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	34	20	10	8	100	NB	6
Tensile modulus	23°C	ISO 527-1	MPa	100	1900	9000	13300	2850	2800	14500
Tensile stress at break	23°C	ISO 527-1	MPa	22	15	35	40	60	55	60
Tensile elongation at break	23°C	ISO 527-1	%	8.5	9	1	0.6	18	12	0.5
Thermal										
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	80	95	160	160	250	250	
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	74	90	150	150	250	250	210
	1.82 MPa			87	55	95	95	230	230	180
Processing conditions										
Pre-drying temperature	(at least 3 hours at…)		°C	70 ÷ 80	80 ÷ 90	70 ÷ 90	70 ÷ 90	90 ÷ 100	90 ÷ 100	110 ÷ 130
Melt temperature			°C	235	180 ÷ 220	240 ÷ 260	240 ÷ 260	270 ÷ 290	270 ÷ 290	290 ÷ 310
Mould temperature			°C	40	30 ÷ 50	60 ÷ 80	60 ÷ 80	80 ÷ 100	80 ÷ 100	130 ÷ 140
Colorability										
				limited	☑	☒	☒	☑	☑	limited

* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

LATIMASS

The specific weight of thermoplastic compounds generally ranges between 1 and 1.5 g/cm^3 depending on the resin and filler used.
Some applications, such as sport and leisure time, cosmetics, design, transport, and medical sectors may **require materials with different densities**.
To meet these requirements, LATI developed LATIMASS, a **product range** for injection molding with **controlled and continuously variable density** between 0.76 and 11 g/cm^3.

- **High density products**

Thermoplastic resins of these products are added with heavy metal or mineral fillers.

In this way, variable densities are obtained with a certain continuity up to a maximum of 11 g/cm^3.
The choice of appropriate base resins **allows the filling of cavities with complex geometries**, even with thin walls, using extremely heavy compounds.
Products show excellent surface finish, good dimensional stability, and interesting mechanical properties.
Depending on the chosen base resin, they can be painted or metallized, allowing the manufacture of heavy finished products with excellent appearance, without the need of complex and expensive processes, such as the overmolding of metal inserts.

- **Low-density products**

The use of blowing agents in the field of injection molding often reveals difficult to manage, so leading to poor and barely reproducible results, especially in terms of weight, size and appearance.
Low-density LATIMASS compounds are filled with special hollow glass spheres allowing to obtain materials with densities far below 1 g/cm^3, up to a minimum of 0.76 g/cm^3 on polyolefin resins.
Featuring excellent surface appearance and dimensional stability, the lighter LATIMASS products can also float on different hydrocarbons.

Fig. 13 - LATIMASS, controlled density thermoplastics

				SEMICRYSTALLINE						
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATIMASS 52/11-04 D008**	**LATIMASS 53/11-02 D030**	**LATIMASS 82-06 D030**	**LATIMASS 82-03 D110**	**LATIMASS 62-01 D025**	**LATIMASS 62-05 D040**	**LATIMASS 66-04 D009**
				PPh	**PPh**	**PA12**	**PA12**	**PA6**	**PA6**	**PA66**
Physical										
Density	23°C	ISO 1183	g/cm^3	0.81	2.8	3.45	11	2.45	4.50	0.90
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	1.10 ÷ 1.40	1.45 ÷ 1.75	0.70 ÷ 1.00	0.55 ÷ 0.85	0.35 ÷ 0.55	0.35 ÷ 0.65	1.10 ÷ 1.40
	across flow			1.05 ÷ 1.35	1.50 ÷ 1.80	0.70 ÷ 1.00	0.55 ÷ 0.85	0.30 ÷ 0.5	0.30 ÷ 0.60	1.05 ÷ 1.35
Mechanical										
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m^2	1.3	7	4	7	2	2.5	1.2
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m^2	20	NB	30	10	15	8	10
Tensile modulus	23°C	ISO 527-1	MPa	2200	1600	9700	2700	9100	13000	3400
Tensile stress at break	23°C	ISO 527-1	MPa	15	8	40	40	60	40	50
Tensile elongation at break	23°C	ISO 527-1	%	>100	3	2.5	0.7	0.7	0.4	2
Thermal										
Vicat - Softening point (heating rate 50°C/h)	49 N	ISO 306	°C	100	50	165	165	170	200	250
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	100	55	155	160	190	185	240
	1.82 MPa			60	40	90	105	145	170	90
Processing conditions										
Pre-drying temperature	(at least 3 hours at…)		°C	80 ÷ 90	80 ÷ 90	80 ÷ 100	80 ÷ 100	90 ÷ 100	90 ÷ 100	80 ÷ 100
Melt temperature			°C	190 ÷ 220	220 ÷ 240	250 ÷ 270	240 ÷ 260	240 ÷ 280	240 ÷ 280	270 ÷ 290
Mould temperature			°C	50 ÷ 70	40 ÷ 60	60 ÷ 80	60 ÷ 80	80 ÷ 100	80 ÷ 100	70 ÷ 90
Colorability										
				☑	☑	☒	☒	☑	☒	☑

* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

LATIGEA

Always attentive to market demands, LATI was among the first companies in the sector to offer a family of compounds made of thermoplastic matrices obtained from renewable sources.
LATIGEA range includes formulations **based on raw materials derived from sustainable and renewable sources**, such as PLA synthesized from corn starch - biodegradable according to ISO 14851 and 14852 under the conditions set by these international standards.
Among the available compounds, LATIGEA B01 L/07, made of **PLA and wood fibres**, obtained the **"OK Biobased"** conformity mark by the Vinçotte international laboratory, an independent Belgian agency specializing in environmental certifications.

Thanks to careful selection of raw materials, LATIGEA B01 obtained full marks, i.e. the coveted OK Biobased four stars usually reserved to pure biopolymers.
In fact, analyses carried out found a 100% biobased content, i.e. a composition entirely originated from renewable sources, thanks to the use of fillers of natural origin, such as wood fibres from sustainable forests (FSC certified wood).
So the development of CO_2 originating from fossil sources of LATIGEA B01 is considerably lower than other plastics, **releasing 60% less greenhouse gas** than conventional polymers.

Low thickness parts in highly ecological LATIGEA B01 also feature the **compostability of base resin, which composes 90% of the formulation according to EN 13432**.

The excellent ecological profile is just one of the key features that make this material a winning product. Initially developed for the manufacture of consumer items such as pens, brushes, combs, etc., LATIGEA was then proposed in transparent and colored versions based on natural pigments as well as versions for **special applications**, e.g. glass fibre reinforced and self-lubricating.

Fig. 14 - LATIGEA, bioplastic based compounds

				SEMICRYSTALLINE						
PROPERTIES (typical values)	**Testing conditions**	**Standards**	**Units (SI)**	**LATIGEA B01 F1**	**LATIGEA B01 L/07**	**LATIGEA B01 I8**	**LATIGEA B20**	**LATIMASS 37 B01-01 D025**	**LATILUB 37 B01-02S**	**LATIGRAY 37 B01-01 CX/35**
				BIOBASED (PLA, etc.)						
Physical										
Density	23°C	ISO 1183	g/cm³	1.26	1.24	1.20	1.33	2.47	1.28	1.8
Linear shrinkage at moulding* (60 x 60 x 2mm - 60MPa)	along flow	ISO 294-4	%	0.20 ÷ 0.60	0.15 ÷ 0.55	0.25 ÷ 0.65	0.20 ÷ 0.60	0.20 ÷ 0.60	0.20 ÷ 0.60	0.15 ÷ 0.40
	across flow			0.20 ÷ 0.60	0.20 ÷ 0.60	0.20 ÷ 0.60	0.20 ÷ 0.60	0.20 ÷ 0.60	0.20 ÷ 0.60	0.15 ÷ 0.40
Mechanical										
Charpy - Impact strength notched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eA	kJ/m²	1.4	1.5	30	3.6	1	3.5	1
Charpy - Impact strength unnotched (specimen 80 x 10 x 4 mm)	23°C	ISO 179-1eU	kJ/m²	20	15	NB	35	5	20	4
Tensile modulus	23°C	ISO 527-1	MPa	3000	3500	2400	5600	8100	2900	8800
Tensile stress at break	23°C	ISO 527-1	MPa	55	60	NB	57	40	40	35
Tensile elongation at break	23°C	ISO 527-1	%	4.5	3.5	>100	1.3	0.5	4.5	0.4
Thermal										
Vicat - Softening point (heating rate 50°C/h)	49 N - 50°C/h	ISO 306	°C	60	60	55	115	60	60	60
HDT – Heat Distortion Temperature	0.45 MPa	ISO 75	°C	55	55	50	110	55	50	54
	1.82 MPa			50	55	50	70	50	50	52
Processing conditions										
Pre-drying temperature	(at least 3 hours at…)		°C	40 ÷ 50	40 ÷ 50	40 ÷ 50	40 ÷ 60	40 ÷ 50	40 ÷ 50	40 ÷ 50
Melt temperature			°C	170 ÷ 190	170 ÷ 190	170 ÷ 190	170 ÷ 190	180 ÷ 200	170 ÷ 190	170 ÷ 190
Mould temperature			°C	15 ÷ 30	15 ÷ 30	15 ÷ 30	95-110	15 ÷ 30	15 ÷ 30	15 ÷ 30
Colorability										
				☑	☑	☑	☑	☑	☑	☑

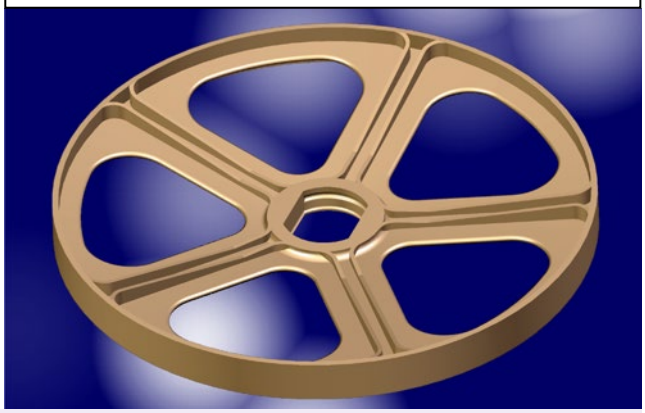
* Values obtained according to ISO norm at the specified pressure. Actual shrinkage values may differ because of the design.

NEEDS AND ANSWERS

LATAMID 6 H2 G/65

PA6 high fluidity, improved thermal resistance, maximum glass fibre content

Drive pulley for home appliances



Project requirements:

- The pulley must withstand continuous belt tension, during both working and not working time. Effects of creep and relaxation have to be considered;
- Working temperature can reach 60°C for several hours;
- The clamping area of the hub may undergo high constant stresses;
- Working conditions impose severe and cyclic stresses;
- The geometry of the pulley may be modified but robustness, lightness and silent operation are mandatory requirements;
- Dimensional stability and compliance with tolerances are fundamental;
- Competitive cost with die-cast aluminium.

LARAMID K/40 HM

PPA, 40% high modulus carbon fibres

Front Support Group Carriers

Project requirements:

- Part movement is eased by intrinsic lightness of the component;
- Extremely precise operation imposes negligible deformations under load therefore the compound must offer higher stiffness than traditional structural compounds;
- Resistant to working temperatures;
- Effects of moisture to be minimized in order to guarantee mechanical performance of the part;
- Antistatic and chemically resistant.

LATIGLOSS 66 H2 G/50 F2

PA66, improved surface finish, 50% glass fibre

Venturi water pump

Project requirements:

- Strength and stiffness: this device pumps pressurized water;
- Nice look, custom coloured compound;
- High mechanical performance even at higher temperature and in contact with water;
- Water contact approved;
- Easily mouldable even on thick walls;
- More efficient than traditional metallic solutions;
- Reduced environmental impact compared to metal;
- Weight reduction for cheaper transport and easier handling;
- To be used in harsh environments;
- Better chemical resistance than steel in contact with acidic waters.

LATIGLOSS 66 H2 G/50 F2

PA66, improved surface finish, 50% glass fibre

Thermostatic mixer

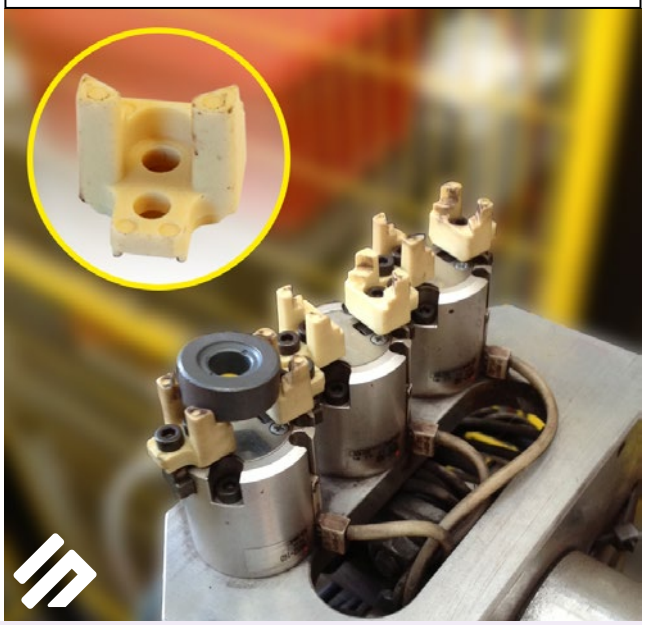
Project requirements:

- Cost reduction;
- Reduce weight and size of finished parts compared to brass original ones;
- Reduce the number of parts assembled in one single mixer (function integration);
- Product resistant to water pressure;
- Dimensional stability;
- Overall mechanical strength;
- Water resistant;
- Water contact approved;
- No machining or finishing steps on moulded parts.

NEEDS AND ANSWERS

LATILUB 66-10T Y/15

PA66, PTFE and aramid fibres lubricated
Manipulator



Project requirements:

- The pincer must not wear out because of continuous manipulation cycles;
- Very low friction factor against metallic counterparts;
- Dimensional stability and tight tolerances are critical in robotics and automation.

LARTON G/40

PPS, 40% glass fibre
Coffee machine parts

Project requirements:

- Resistant to continuous contact with hot water;
- Approved for food and drinkable water contact;
- Good dimensional stability with temperatures close to 100°C and continuous water contact;
- Very good fluidity of the compound allowing correct filling of small geometric features;
- Resistant to chemical aggression and hydrolysis.

LATICONTHER 62 GR/50

PA6 high flowability, 50% thermally conductive graphite
LED lamp heat sinks

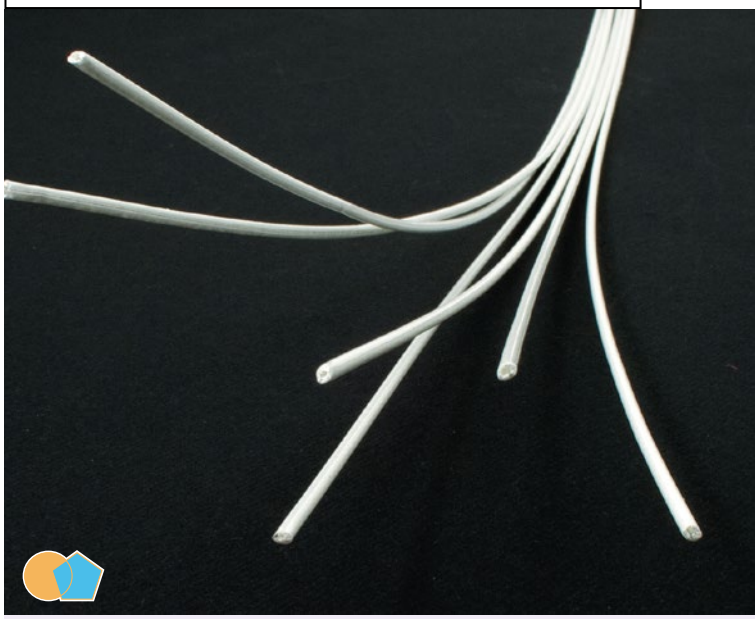
Project requirements:

- The heat sink must ensure the evacuation of heat produced by LED lamp systems, the highest thermal conductivity (>10W/mK) is required;
- The compound has to fit the geometries of different heat sinks, engineered according to the criteria of function integration;
- Light and environmental friendly: the polymer replaces die-cast aluminium;
- Assembly of heat sinks, electronics and lenses requires good dimensional stability.

LATIGRAY 47/1-01 CX/45

PP, 45% radiopaque ceramics

Extruded pipes



Project requirements:

- The compound must be extrudible on very low thickness (<0.1 mm);
- Flexibility and mechanical resistance for safe and reliable operation in medical field applications;
- Radio opacity required to detect position of the canula during use.

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