Product Review
Engineering Plastics

Grilamid (PA 12, amorphous PA)
Grivory (partially aromatic PA, PPA)
Grilon (PA 6, PA 66, CoPA)

EMS-GRIVORY

Nomenclature

Layout of the nomenclature

The nomenclature is made up of three blocks. These three blocks describe the basic grades, viscosity, type and amount of reinforcement, additives and properties of the product.

Grilamid		Registered trade name for polyamide 12 injection-moulding and extrusion materials from EMS-GRIVORY
Block 1	L	Polyamide 12 injection-moulding, extrusion grades
	LC	Polyamide 12 grades reinforced with carbon fibres
	LV	Polyamide 12 grades reinforced with glass fibres
	LKN	Polyamide 12 grades reinforced with glass beads
	TR	Transparent
	TRV	Transparent, glass-fibre reinforced
	ELY	Polyamide elastomer
	MB	Masterbatch
Block 2	16	Low viscosity
	20	Medium viscosity
	25	High viscosity
	–3 to –5	30 % to 50 % reinforcement
	e.g. 3287	4-digit number (for MB and ELY products)
Block 3	A	Hydrolysis resistant
	G	Lubricant and mould-release agent
	EC	Electrically conductive
	ESD	Electrically anti-static
	L	Stabilised for resistance to UV weathering
	LF	Low coefficient of sliding friction
	H	Heat stabilised
	HL / LM	Specified for cable sheathing
	FR	Flame retardant
	NZ	Impact resistant modified
	W20	Semi-flexible
	W40	Flexible
	UV	Stabilised for resistance to weather (TR products)
	X	Impact resistant
	Y	High bursting pressure
	Z	High impact strength
Only for Grilamid TR products		
	LX / LY	Resistant to stress cracking
	LZ	Stress cracking and impact resistant
Only for masterbatches		
	LUV	Polyamide 12 grades, stabilised for resistance to UV weathering
	LH	Polyamide 12 grades, heat stabilised
	LC	Polyamide 12 grades, colour masterbatch
	LS	Polyamide 12 grades, anti-block
	BR	Optical brightener

Grivory Registered trade name of EMS-GRIVORY for injection-moulding and extrusion grades based on partially aromatic polyamides or polyphthalamide.

Block 1	G	Transparent extrusion grade
	GTR	Transparent injection-moulding grade
	GV	Injection-moulding grade, reinforced with glass fibres
	GVS	Injection-moulding grade, reinforced with glass fibres, good surface quality
	GVN	Injection-moulding grade, reinforced with glass fibres and impact modified
	GC	Injection-moulding grade, reinforced with carbon fibres
	GM	Injection-moulding grade, reinforced with mineral
	HTV	PPA (PA 6T / 6I) Injection-moulding grade, reinforced with glass fibres
	HTM	PPA (PA 6T / 6I) Injection-moulding grade, reinforced with mineral
	HT2V	PPA (PA 6T / 66) Injection-moulding grade, reinforced with glass fibres
Block 2	16	Low viscosity
	21	Normal viscosity
	–2 to –6	20 % reinforcement by weight (wgt. %) 60 % reinforcement by weight (wgt. %)
Block 3	H	Heat stabilised
	X	Heat stabilised, approved for use with foodstuffs
	L	Light stabilised (UV stabilised)
	V0	Flame retardant, UL-94
	1	Basic PPA, PA 6T / 6I

Grilon	Registered trade name for polyamide 6, polyamide 66 and polyamide 66+6, injection-moulding and extrusion materials from EMS-GRIVORY.	
Block 1	A	Polyamide 66
	B	Polyamide 6
	C	Copolyamide (PA6 / 12)
	TS	PA66 + PA6 alloy
Block 2	S	Standard injection moulding, non-reinforced
	Z	Impact modified
	R	Extrusion / raw
	F	Film quality
	EB	Extrusion, blow-moulding grade
	BM	Barrier polyamide
	MB	Masterbatch
Reinforcement	G	Glass fibre
	K	Glass beads
	M	Mineral
	C	Carbon fibres
	GM	Glass fibres / mineral
	GK	Glass fibres / glass beads
	EB	Extrusion blow-moulding grade
	..Z	Impact resistant modified formulation
Block 3	1..	Modification for slight impact resistance, non-reinforced
	2..	Modified for impact resistance
	3..	Modification for high impact resistance
	.23	Low viscosity
	.34,.40	Increased viscosity
	.47,.50	High viscosity
	… /	Variations
reinforced	–15 to –50	15–50 % reinforcement
	… /	Variations
Block 4	S	Improved surface quality
	H	special heat stabiliser
	UV	Stabilised for resistance to UV weathering
	V0	Self-extinguishing
	FR	Flame retardant
	HM	Adhesion modified
	W	Containing plasticisers
	EC	Electrically conductive
	LF	Low sliding friction
	FA	Approved for use with foodstuffs
	LW	Suitable for laser printing
	ELX	PA6 elastomer
	X	no further details

Grilamid (polyamide 12) injection-moulding grade, non-reinforced

Grades	Characteristics	Application examples
Grilamid L20 G	Injection-moulding grade (PA 12), medium viscosity, non-reinforced. Good flow properties, easy processing. Dimensionally accurate, low water uptake, good sliding friction and abrasion properties. UL listed.	Clock housings, cog wheels. Parts for protective masks, components for spectacles. Railings, banisters, construction components, sanitary fittings, machine parts and measuring equipment components.
Grilamid L20 EC black	Injection-moulding grade (PA 12), medium-viscosity, non-reinforced, electrically conductive, black inherent colour. Easy to process, good mould-release properties.	Electrical and electronic applications, anti-static housings, covers and small components, panel heating, transport rollers, guides.
Grilamid L20 LF grey	Injection-moulding grade (PA 12), medium viscosity, contains 10 wgt.% graphite filler, low coefficient of friction, dimensionally accurate, low water uptake. Easy processing, good mould-release properties, also suitable for extrusion applications. Grey inherent colour.	Slide bearings, guides, sleeves, Bowden cables.
Grilamid L20 HFR	Medium viscosity injection-moulding grade (PA 12), non-reinforced, flame retardant. Also suitable for cable sheathing. Low water uptake, light inherent colour, contains no halogen or phosphorous. UL-94 V2 from 0.8 mm. Listed as per NF 16-101.	Electric plugs, profiles, cable ties, functional components in electromechanics, protective sheathing for cables.
Grilamid ELY 2694	Injection-moulding grade (polyamide elastomer based on PA 12), flexibilised, contains no plasticisers, good weathering stability.	Sport and leisure applications such as soles for sport shoes (sandwich moulding), ski boots, snowboard boots and hiking boots.
Grilamid ELY 60	Injection-moulding grade (polyamide elastomer based on PA 12), also suitable for extrusion processes, medium flexibility, contains no plasticisers, good flow properties, good weathering stability.	All application areas where flexible behaviour is required, even at low temperatures. Cable sheathing, seals, membranes, pipes.
Grilamid ELY 2475	Injection-moulding grade (polyamide elastomer based on PA 12), medium flexibility, contains no plasticisers, good flow properties, good weathering stability.	Sport and leisure applications such as soles for sport shoes (sandwich moulding), ski boots, snowboard boots and hiking boots.
Grilamid ELY 2702	Injection-moulding grade (polyamide elastomer based on PA 12), very flexible, contains no plasticisers, good weathering stability.	Sport and leisure applications such as soles for sport shoes (sandwich moulding), ski boots, snowboard boots and hiking boots.
Grilamid ELY 20 NZ	Injection-moulding grade (polyamide elastomer based on PA 12), very flexible, contains no plasticisers. High impact resistance, good weathering stability.	Industrial, sport and leisure and automotive applications. Fixing components for ski boots.

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Grilamid (polyamide 12) reinforced injection-moulding grades

Grades	Characteristics	Application examples
Grilamid LV-2H	Injection-moulding grade (PA 12), medium viscosity with 20 wgt.% glass-fibre reinforcement. Heat stabilised. Stiff with good impact strength. Low water uptake. Good resistance to chemicals and weathering.	Watch components, parts for mechanical engineering and sanitary fittings.
Grilamid LV-2A NZ	Injection-moulding grade (PA 12), medium viscosity with 20 wgt.% glass-fibre reinforcement, impact modified. Hydrolysis and heat stabilised.	Pipes in automotive cooling systems.
Grilamid LV-3H	Injection-moulding grade (PA 12), medium viscosity with 30 wgt.% glass-fibre reinforcement, heat stabilised. Stiff with good impact strength, dimensionally accurate, low water uptake. Good resistance to chemicals and weathering. Easy to process, good flow properties, good mould release. UL-listed.	Electrical plugs, watch components and cases, sports article components, parts for mechanical engineering.
Grilamid LV-3A H	Injection-moulding grade (PA 12), medium viscosity with 30 wgt.% glass-fibre reinforcement. Hydrolysis stabilised. Very stiff, high impact strength.	Pipes in automotive cooling systems, industrial sanitary fittings.
Grilamid LV-5H	Injection-moulding grade (PA 12), medium viscosity with 50 wgt.% glass-fibre reinforcement. Heat stabilised. Very stiff.	Safety shoes, roll-over non-return valves, fuel filters, functional components.
Grilamid LKN-3H	Injection-moulding grade (PA 12), medium viscosity with 30 wgt.% glass-bead reinforcement. High quality design material with low water uptake. Easy to process, slight, regular shrinkage. Isotropic behaviour. Good slip properties.	Sanitary fittings, valves, functional components for measuring instruments.
Grilamid LKN-5H	Injection-moulding grade (PA 12), medium viscosity with 50 wgt.% glass-bead reinforcement. High quality design material with very low water uptake. Extremely good dimensional accuracy and stability. Easy to process, very slight, regular shrinkage. Isotropic behaviour. Good slip properties, high abrasion resistance. UL-listed.	Sanitary fittings, valves, functional components for measuring instruments. Guides and bearing bushes, watch components, housings and functional parts.
Grilamid LC-3H	Injection-moulding grade (PA 12), medium viscosity with 30 wgt.% carbon-fibre reinforcement. Heat stabilised, high quality engineering polyamide, extremely stiff.	Technical components for the textile industry, sewing-machine parts, tennis rackets, mechanical components.
Grilamid LV-23 ESD	Injection-moulding grade (PA 12), medium viscosity with 23 wgt.% reinforcement. Heat stabilised.	Injection-moulding parts in the segments electro / electronic and automotive construction for anti-static housings, covers and small components.

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Grilamid (polyamide 12) extrusion grades

Grades	Characteristics	Application examples
Grilamid L16 LM	Low viscosity PA 12 extrusion grade heat and UV stabilised. Especially suitable for high haul-off speeds and low wall thicknesses.	Sheathing of optical fibres, external cable sheathing for optical fibres and copper-wire insulation.
Grilamid L20 HL	Medium-viscosity PA 12 extrusion grade for secondary cable sheathing, very good resistance to UV and heat. Available only in black.	Telephone cables, external sheathing.
Grilamid L20 LM	Medium-viscosity PA 12 for cable sheathing, heat and UV stabilised. Especially suitable for high haul-off speeds and low wall thicknesses.	Sheathing of optical cables (loose or tight jacket).
Grilamid L20 HFR	Medium-viscosity injection moulding grade (PA 12), non-reinforced, flame resistant. Also suitable for cable sheathing. Low water uptake, light natural colour, contains no halogen or phosphorous. UL-94 V2 from 0.8 mm. Listed according to NF 16-101.	Electrical plugs, profiles, cable ties, functional parts in electromechanics, protective sheathing for cables.
Grilamid L20A Z	Medium viscosity PA 12, impact modified, hydrolysis and heat stabilised.	Injection-moulding and extrusion blow-moulded parts for automotive applications.
Grilamid L20 W20	Medium viscosity PA 12, semi-flexible, heat stabilised.	Semi-flexible pipes and profiles for automotive and industrial applications.
Grilamid L25	High viscosity PA 12, standard extrusion grade, conforms to FDA (up to 41 micron) and EU directives for direct contact with foodstuffs not containing alcohol. UL listed.	Food packaging, sausage skins, boiling bags, deep-freeze packaging film, plates, rods, pipes.
Grilamid L25 natural 6086	High viscosity PA-12 extrusion grade. Heat stabilised, stiff.	Pneumatic, brake and vacuum lines, flexible coiled tubing, furniture construction components.
Grilamid L25 W20 X	High viscosity PA-12 extrusion grade, semi-flexible, excellent impact properties even at low temperatures. Heat and UV stabilised, very easy to process.	Semi-flexible pipes for air, fuel and oil feed lines, mechanical construction.
Grilamid L25 W40	PA-12 extrusion grade with high flexibility, contains plasticiser. Suitable for pipe extrusion. Easy to process, good mechanical load-bearing properties. Exhibits good resistance to grease, oil, petrol and salt solutions. UL listed.	Flexible pipes for pneumatic, petrol and oil lines in automotive and mechanical construction.
Grilamid L25 W40 X	High viscosity PA-12 extrusion grade, flexible, excellent impact properties even at low temperatures. Heat and UV stabilised. Very easy to process.	Flexible pipes for pneumatic, petrol and oil lines in automotive and mechanical construction.

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Grilamid (polyamide 12) extrusion grades

Grades	Characteristics	Application examples
Grilamid L20 LF grey	Extrusion grade (PA 12), medium viscosity with 10 wgt.% graphite filler, low coefficient of friction, dimensionally accurate, low water absorption. Easy to process, good mould release. Natural colour grey.	Pipes and profiles for automotive construction and industrial applications.
Grilamid L25A NZ	High viscosity extrusion grade, hydrolysis modified, heat stabilised.	Pipes and profiles for automotive construction and industrial applications.
Grilamid L25 NZ ESD	High viscosity, anti-static extrusion grade (PA 12). Impact modified and heat stabilised.	Pipes and profiles with anti-static properties for automotive construction and industrial applications.
Grilamid L25 W20 Y	Semi-flexible, medium-viscosity extrusion grade (PA 12) containing plasticiser, impact modified, heat and UV stabilised.	Semi-flexible, cold impact resistant pipes with high bursting strength for automotive construction and industrial applications.
Grilamid L25 W40 ESD	High viscosity, anti-static, highly flexible extrusion grade (PA 12). Contains plasticiser and is heat stabilised.	Highly flexible pipes and profiles with anti-static properties for automotive construction and industrial applications.
Grilamid L25 H	High viscosity extrusion grade, heat stabilised.	Air, diesel and oil pipes.
Grilamid ELY 60	Extrusion grade (polyamide elastomer based on PA 12), medium flexibility, contains no plasticiser, good flow properties, good weathering stability.	All fields of application where flexibility is required at low temperatures. Cable sheathing, seals, membranes, pipes.

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Grilamid (Polyamide 12) masterbatches

Grades	Characteristics	Application examples
Grilamid MB 3287 LH	A masterbatch containing inorganic stabilisers which increase the heat resistance values of Grilamid (PA 12).	The addition of 2–5 % Grilamid MB XE 3287 can increase the continuous working temperature of Grilamid (PA 12) by 10–20 °C.
Grilamid MB 3461 LUV	A masterbatch which increases the resistance to weathering of Grilamid (PA 12) through the use of special UV stabilisers.	The addition of 2–5 % Grilamid MB 3461 LUV can significantly increase the working life of Grilamid (PA 12) in extreme environments with high levels of UV exposure.
Grilamid MB 9485 LC black	Colour masterbatch, black. Contains carbon-black pigment.	For colouring Grilamid (PA 12) black. Quantity added: 2–5 %.

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Grilamid TR (transparent polyamide)

Grades	Characteristics	Application examples
Grilamid TR 55	Injection-moulding grade (amorphous PA) transparent, easy to process, good flow properties. Transparency not affected by wall thickness or processing. Dimensionally accurate, low water absorption, low density. Conforms to EU and FDA requirements. Also well suited for extrusion applications. UL listed.	Applications where transparency and good resistance to chemicals are required. Housing sight glasses, tooth brushes, infusion components, holders for hypodermic needles, connection components in mechanical engineering and automotive construction, filter bowls, household and sanitary fittings, tubing for liquid foodstuffs (beer, milk), sheathing for fibre-optic cables, cable sheathing providing particular protection against rodent damage.
Grilamid TR 70 LX	The most outstanding feature of Grilamid TR 70 LX is its very high glass transition temperature (Tg) while the other properties are very similar to those of Grilamid TR 55. Grilamid TR 70 LX can be steam sterilised (134 °C) up to 100 times. It is slightly less easy to process and less impact resistant than other Grilamid TR grades. UL listed.	Products which are exposed to high temperatures, e.g. protective masks for fire-fighters and sterilisation-resistant applications.
Grilamid TR 90	Grilamid TR 90 is a product developed from the well-known and proven Grilamid TR 55, but differs from this product in that it is a homopolyamide. This is characterised by extremely high alternative bending strength, remarkable toughness, exceptional resistance to chemicals, low density and a very light natural colour. UL listed.	Filter bowls, spectacles frames, tooth brushes, milk bottles.
Grilamid TR 90 LX	Injection-moulding (amorphous PA). Transparent, light natural colour, high alternate bending strength, ductile fracture behaviour.	High quality optical and technical components for optical, electro / electronic and automotive construction applications, domestic appliances and sanitary fittings.
Grilamid TR 90 UV	Grilamid TR 90 UV is a product developed from the well-known Grilamid TR 90 and is characterised by extremely high alternating bending strength, exceptional resistance to chemicals and UV radiation.	Filter bowls, spectacles frames and lenses.

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Grilamid TR (transparent polyamide)

Grades	Characteristics	Application examples
Grilamid TR 55 LX	Injection moulding grade (amorphous PA Blend), transparent, easy to process, very good flow properties. Transparency not affected by wall thickness or processing. Dimensionally accurate, low water absorption, low density, considerably better resistance to chemicals and stress corrosion cracking than Grilamid TR 55. Also suitable for extrusion applications.	Spectacle frames (sunglasses, sports glasses, protective and safety glasses), filter bowls, petrol filters, covers. Hearing aid components. Sheathing for fibre-optic cables.
Grilamid TR 55 LY	Injection-moulding grade (amorphous PA blend), transparent, easy to process, very good flow properties. Similar property profile to that of Grilamid TR 55 LX, but with greater impact strength.	Spectacle frames (sunglasses, sports glasses, protective and safety glasses), filter bowls, petrol filters, covers. Hearing aid components.
Grilamid TR 55 LZ	Transparent injection-moulding grade with increased impact strength, based on Grilamid TR 55. Similar property profile to that of Grilamid TR 55, but with greater impact strength.	Safety glasses, sunglasses, sports articles which require transparency and good impact strength, tennis racket components.
Grilamid TRV-4X9	Injection-moulding grade with 40 wgt.% glass-fibre reinforcement. Heat and UV stabilised, stiff and strong, even at temperatures up to 140 °C.	Functional parts in hot water.
Grilamid TR MB 6960 LS	Processing masterbatch which may be used as demoulding agent for Grilamid TR 55, Grilamid TR 70 LX and Grilamid TR 90. Based on Grilamid TR 55.	Addition of 2–4 % of this masterbatch improves flow properties of Grilamid TR by up to 30 %.
Grilamid TR MB 5198 BR	Masterbatch with optical brightener, based on Grilamid TR 90. Suitable for all Grilamid TR grades. Has no influence on the mechanical properties. Transparent at wall thicknesses up to 2 mm. May be used in interior applications. Not suitable for use with foodstuffs.	Addition of 2–4 % Grilamid TR MB 5198 BR.

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Grivory G (partially aromatic polyamides)

Grades	Characteristics	Application examples
Grivory G 16	Low viscosity, partially aromatic polyamide for blown and cast films. Suitable for extrusion blow moulding and injection blow moulding. Excellent oxygen barrier, particularly in very damp conditions. Good flavour and odour barrier properties, good transparency. Stiffer than PA 6 even after absorption of water. Conforms to EU and FDA regulations for direct contact with foodstuffs.	Transparent hollow vessels, packaging films, deep-drawn plates.
Grivory G 21	Medium viscosity, partially aromatic polyamide for blown and cast films. Suitable for extrusion blow moulding and injection blow moulding. Excellent oxygen barrier, particularly in very damp conditions. Good flavour and odour barrier properties, good transparency. Stiffer than PA 6 even after absorption of water. Conforms to EU and FDA regulations for direct contact with foodstuffs. NSF listed.	Transparent hollow vessels, packaging films, deep-drawn plates.
Grivory GTR 45	Transparent, partially aromatic polyamide. Injection-moulding grade with good stiffness in a conditioned state. Conforms to EU and FDA regulations for direct contact with foodstuffs. UL listed.	Transparent injection-moulded parts which are not exposed to UV light.
Grivory GV-2H	Injection-moulding grade with 20 wgt.% glass-fibre reinforcement, heat stabilised, balanced stress-strain behaviour even in a conditioned state. Conforms to EU and FDA regulations for direct contact with foodstuffs. Approved for direct contact with cold drinking water as per KTW, WRAS, NSF. UL listed.	Replacement of aluminium and zinc die-cast parts, instrument components, mechanical functional parts.
Grivory GV-4H	Injection-moulding grade with 40 wgt.% glass-fibre reinforcement, heat stabilised, balanced stress-strain behaviour even in a conditioned state, shrinkage behaviour similar to that of die-cast alloys. Conforms to EU and FDA regulations for direct contact with foodstuffs. Approved for direct contact with cold drinking water as per KTW, WRAS, NSF. UL listed.	Replacement of aluminium and zinc die-cast parts, instrument components, mechanical functional parts.

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Grivory G (partially aromatic polyamides)

Grades	Characteristics	Application examples
Grivory GV-5H	Injection-moulding grade with 50 wgt.% glass-fibre reinforcement, heat stabilised, good stiffness and tensile strength even in a conditioned state. Good surface quality, balanced stress-strain behaviour. Shrinkage behaviour similar to that of die-cast alloys. Conforms to EU and FDA regulations for direct contact with foodstuffs. Approved for direct contact with cold drinking water as per KTW, WRAS, NSF. UL listed.	Replacement of aluminium and zinc die-cast parts, instrument components, equipment chassis, mechanical functional parts. Internally threaded casings or roller bearing seatings, connection parts in pipe construction.
Grivory GVS-5H	Injection-moulding grade with a high-quality surface finish and reinforced with 50 wgt.% glass fibres, good flow properties, heat stabilised, good stiffness and tensile strength even in a conditioned state. Excellent surface quality, balanced stress-strain behaviour. Shrinkage behaviour similar to that of die-cast alloys.	Replacement of aluminium and zinc die-cast parts, instrument components, equipment chassis, mechanical functional parts. Internally threaded casings or roller bearing seatings, connection parts in pipe construction. Visible parts.
Grivory GV-5HL	Injection-moulding grade stabilised for resistance to weathering and reinforced with 50 wgt.% glass fibres. Good flow properties, heat and UV stabilised, good stiffness and tensile strength even in a conditioned state. Good surface quality, balanced stress-strain behaviour. Shrinkage behaviour similar to that of die-cast alloys. Available only in black.	Replacement of aluminium and zinc die-cast parts, instrument components, equipment chassis, mechanical functional parts. Internally threaded casings or roller bearing seatings, connection parts in pipe construction. Visible parts and exterior applications.
Grivory GV-6H	Injection-moulding grade with 60 wgt.% glass-fibre reinforcement. Heat stabilised. Very good stiffness and tensile strength even in a conditioned state. Shrinkage behaviour similar to that of die-cast alloys. Conforms to EU and FDA regulations for direct contact with foodstuffs. Approved for direct contact with cold drinking water as per KTW, WRAS, NSF. UL listed.	Mechanical functional parts with very high requirements on stiffness, chassis components.

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Grivory G (partially aromatic polyamides)

Grades	Characteristics	Application examples
Grivory GVN-35H	Injection-moulding grade with 35 wgt.% glass-fibre reinforcement, increased impact strength and elongation at break, heat stabilised. Conforms with EU regulations for direct contact with foodstuffs. Approved for direct contact with cold drinking water as per NSF. UL listed.	Components for ski and snowboard bindings, housing parts for electrical hand-held tools.
Grivory GM-4H	Injection-moulding grade with 40 wgt.% mineral reinforcement, heat stabilised, isotropic mould shrinkage, isotropic properties, low warpage. Excellent surface quality, good stiffness even in a conditioned state, shrinkage behaviour similar to that of die-cast alloys.	Visible parts with high requirements on surface quality. Geometrically demanding functioning parts.
Grivory GC-4H	Injection-moulding grade with 40 wgt.% carbon-fibre reinforcement, heat stabilised, extremely good stiffness and tensile strength even in a conditioned state. Electrically conductive, low static and sliding friction. Low density. Available only in black.	Mechanical functioning parts with the highest requirements for stiffness, slip properties or electrical / thermal conductivity. Components for textile machinery.

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Grivory HT (partially aromatic polyamides)

Grades	Characteristics	Application examples
Grivory HTV-3H1	Injection-moulding grade with 30 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T / 6I. Stiff and strong at high application temperatures. Heat stabilised, dimensionally stable, low water absorption, good resistance to chemicals, good resistance to automotive media (petrol, oils, brake fluid) even at high temperatures. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional elements in contact with chemicals and requiring high performance at high application temperatures.
Grivory HTV-4H1	Injection-moulding grade with 40 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T / 6I. Stiff and strong at high application temperatures. Heat stabilised, dimensionally stable, low water absorption, good resistance to chemicals, good resistance to automotive media (petrol, oils, brake fluid) even at high temperatures. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional elements in contact with chemicals and requiring high performance at high application temperatures.
Grivory HTV-45H1	Injection-moulding grade with 45 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T / 6I. Stiff and strong at high application temperatures. Heat stabilised, dimensionally stable, low water absorption, good resistance to chemicals, good resistance to automotive media (petrol, oils, brake fluid) even at high temperatures.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional elements in contact with chemicals and requiring high performance at high application temperatures.

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Grivory HT (partially aromatic polyamides)

Grades	Characteristics	Application examples
Grivory HTV-5H1	Injection-moulding grade with 50 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T / 6I. Stiff and strong at high application temperatures. Heat stabilised, dimensionally stable, low water absorption, good resistance to chemicals, good resistance to automotive media (petrol, oils, brake fluid) even at high temperatures. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional elements in contact with chemicals and requiring high performance at high application temperatures. Thermal impulse loading, as found in industrial soldering processes, is possible up to 300°C on parts made of Grivory HTV-5H1.
Grivory HTV-6H1	Injection-moulding grade with 60 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T / 6I. Stiff and strong at high application temperatures. Heat stabilised, dimensionally stable, low water absorption, good resistance to chemicals, good resistance to automotive media (petrol, oils, brake fluid) even at high temperatures.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional elements in contact with chemicals and requiring high performance at high application temperatures. Thermal impulse loading, as found in industrial soldering processes, is possible up to 300°C on parts made of Grivory HTV-6H1.
Grivory HTV-4X1	Injection-moulding grade with 40 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T / 6I. Heat stabilised for direct contact with foodstuffs. Stiff and strong at high application temperatures, good resistance to chemicals. Approved for direct contact with hot drinking water as per KTW, WRAS, NSF regulations. Conforms with EU regulations for direct contact with foodstuffs. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional elements in domestic appliances in direct contact with drinking water at high application temperatures. Fittings, seals, controls for cold and warm water.
Grivory HTV-5X1	Injection-moulding grade with 50 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T / 6I. Heat stabilised for direct contact with foodstuffs. Stiff and strong at high application temperatures, good resistance to chemicals. Approved for direct contact with hot drinking water as per KTW, WRAS, NSF regulations. Conforms with EU regulations for direct contact with foodstuffs. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional elements in domestic appliances in direct contact with drinking water at high application temperatures. Fittings, seals, controls for cold and warm water.
Grivory HTV-6X1	Injection-moulding grade with 60 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T / 6I. Heat stabilised for direct contact with foodstuffs. Very stiff and strong at high application temperatures, good resistance to chemicals. Approved for direct contact with hot drinking water as per KTW, WRAS, NSF regulations. Conforms with EU regulations for direct contact with foodstuffs. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional elements in domestic appliances in direct contact with drinking water at high application temperatures. Fittings, seals, controls for cold and warm water.

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Grivory HT (partially aromatic polyamides)

Grades	Characteristics	Application examples
Grivory HTM-4H1	Injection-moulding grade with 40 wgt.% mineral reinforcement based on copolyamide (polyphthalamide) PA 6T/6I. Stiff and strong at high application temperatures. Heat stabilised. Isotropic properties, low warpage, dimensionally stable, low thermal expansion. UL listed.	Stiff technical parts with low warpage, good dimensional stability and low thermal expansion. Functional and visible parts with electroplated surface finishes.
Grivory HT2V-3H	Injection-moulding grade with 30 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T/66. Easy to process, stiff and strong at high application temperatures. Heat stabilised, dimensionally stable, good resistance to chemicals. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional parts in contact with chemicals and requiring high performance at high application temperatures.
Grivory HT2V-45H	Injection-moulding grade with 45 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T/66. Easy to process, stiff and strong at high application temperatures. Heat stabilised, dimensionally stable, good resistance to chemicals. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional parts in contact with chemicals and requiring high performance at high application temperatures.
Grivory HT2V-5H	Injection-moulding grade with 50 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T/66. Easy to process, stiff and strong at high application temperatures. Heat stabilised, dimensionally stable, good resistance to chemicals. UL listed.	Stiff, dimensionally accurate technical parts in mechanical engineering, automotive and electro applications. Functional parts in contact with chemicals and requiring high performance at high application temperatures.
Grivory XE 3818	Flame retardant, injection-moulding grade with 30 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T/66. Self-extinguishing (UL-94 V0 at 0.8 mm). Good flow properties. Stiff and strong at high application temperatures. UL listed.	Stiff, dimensionally accurate technical parts in electro applications. Suitable for thermal impulse loading as found in industrial soldering processes.
Grivory XE 3819	Flame retardant, injection-moulding grade with 40 wgt.% glass-fibre reinforcement based on copolyamide (polyphthalamide) PA 6T/66. Self-extinguishing (UL-94 V0 at 0.8 mm). Stiff and strong at high application temperatures. UL listed.	Stiff, dimensionally accurate technical parts in electro applications. Suitable for thermal impulse loading as found in industrial soldering processes.

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Grilon (polyamide 6) non-reinforced injection-moulding grades

Grades	Characteristics	Application examples
Grilon BS 23	Low viscosity PA6 injection-moulding grade, easily flowing, fine crystalline structure, allows short cycle times.	Thin-walled injection-moulding applications requiring good flow properties and high crystallinity.
Grilon BS	Injection-moulding grade (PA 6) with normal melt viscosity and short injection moulding cycle, non-reinforced, fine crystalline structure, balanced property profile. Excellent surface gloss. UL listed.	Components for all kinds of applications. Gears, electrical plugs, buttons, levers, fittings and fastenings, fashion jewellery, knife handles, zip-fastener components, curtain rings, household appliances and automotive interior fittings.
Grilon BZ 1/2	Injection-moulding grade (PA 6) with normal melt viscosity and short injection moulding cycle, non-reinforced, impact modified (dry and cold impact strength), heat stabilised. UL listed.	Fastening parts in construction, nail and screw components, anchors, automotive components, clips, levers, cranks etc.
Grilon BZ 3/2	Injection-moulding grade (PA 6) with normal melt viscosity and short injection moulding cycle, non-reinforced, highly impact modified, easy to process when freshly injected and also at very low temperatures. Also suitable for extrusion processes. UL listed.	High stressed components with extreme safety requirements such as ski boots, impact prone components in automotive applications. Components for leisure and sports applications, parts for ski bindings, shoulder supports, bicycle saddles, household components, protective covers, valve housings and internal components. Pipe lines for hydraulic, pneumatic and air-conditioning systems.
Grilon BT40 Z	Stiff, impact resistant polyamide blend, non-reinforced, low density, low processing shrinkage and better dimensional stability than PA 6 due to reduced water absorption.	Housings, covers for automotive construction, mechanical engineering and electrical and electronic applications. Sport and leisure applications, protective glasses, operating elements, telephone housings.
Grilon BS V0	Flame retardant, normal viscosity, non-reinforced injection-moulding grade (PA 6). Self-extinguishing as per UL-94 V0 from 0.25 mm wall thickness. Contains no halogen or phosphorous. Good flow properties and good mould removal. Light inherent colour and low density. Very good electrical properties. UL listed.	Utilisation in electrical applications, switches, plugs, plug strips, cable sheathes and corrugated pipes. Battery housings. Components for aircraft construction, covers, connectors.

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Grilon (polyamide 6) reinforced injection-moulding grades

Grades	Characteristics	Application examples
Grilon BK-50	Injection-moulding grade (PA 6) with 50 wgt.% glass-bead reinforcement. Stiff, uniform shrinkage, easy to process, dimensionally accurate, very low warpage. UL listed.	Applications in automotive construction, control components, housings, guides, dimensionally accurate base plates and guides for electric hand-held tools.
Grilon BG-30 S	Injection-moulding grade (PA 6) with 30 wgt.% glass-fibre reinforcement. Heat stabilised, easy to process, stiff, good surface quality. UL listed.	Stressed functional parts in automotive construction, mechanical engineering, tool components.
Grilon BG-50 S	Injection-moulding grade (PA 6) with 50 wgt.% glass-fibre reinforcement. Heat stabilised, easy to process, stiff, good surface quality. UL listed.	Highly stressed functional parts in automotive construction such as e.g. fuel injection rails. Steering column gear shifts.
Grilon BGZ-30/2	Injection-moulding grade (PA 6) with 30 wgt.% glass-fibre reinforcement. Impact modified, easy to process, heat stabilised. UL listed.	Components of hand-held tools subject to impact, handles, housings, gas-mask holders, automotive functional parts, fuel injection rails.
Grilon BGZ-50/2	Injection-moulding grade (PA 6) with 50 wgt.% glass-fibre reinforcement. Impact modified, heat stabilised.	Parts requiring high levels of stiffness and impact strength. Ski bindings, bicycle components.
Grilon BGM-65 X V0	Injection-moulding grade (PA 6) normal viscosity, hybrid reinforcement. Self-extinguishing (UL-94 V0 1.6 mm), heat stabilised, very little warpage, good dimensional stability. UL listed.	Relays and fuse-box housings, coil formers, plugs, insulators and connectors for railway trucks.
Grilon BG-50 H	Injection-moulding grade (PA 6) normal viscosity with 50 wgt.% glass-fibre reinforcement. Very stiff. Highly heat stabilised.	Parts in under-the-bonnet applications, valve covers, mechanical functional parts, connector systems (Quick-Connectors), oil filter housings.

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Grilon (polyamide 6) adhesion modified injection-moulding grades

Grades	Characteristics	Application examples
Grilon BG-15 HM	Injection-moulding grade (PA 6) with 15 wgt.% glass-fibre reinforcement, especially developed for sandwich moulding processes with thermoplastic elastomers in the shore-A range of SEBS copolymers and PP / EPDM.	Automotive components such as connectors, covers for rear-window wipers, IR automobile keys, steering column gear shifts. Electrical components such as switch knobs, handles or applications with moulded-on seals.
Grilon BG-30 HM	Injection-moulding grade (PA 6) with 30 wgt.% glass-fibre reinforcement, especially developed for sandwich moulding processes with thermoplastic elastomers in the shore-A range of SEBS copolymers and PP / EPDM. UL listed.	Automotive components such as connectors, covers for rear-window wipers, IR automobile keys, steering column gear shifts. Electrical components such as switch knobs, handles or applications with moulded-on seals.
Grilon BG-40 HM	Injection-moulding grade (PA 6) with 40 wgt.% glass-fibre reinforcement, especially developed for sandwich moulding processes with thermoplastic elastomers in the shore-A range of SEBS copolymers and PP / EPDM.	Automotive components such as connectors, covers for rear-window wipers, IR automobile keys, steering column gear shifts. Electrical components such as switch knobs, handles or applications with moulded-on seals.
Grilon BG-50 HM	Injection-moulding grade (PA 6) with 50 wgt.% glass-fibre reinforcement, especially developed for sandwich moulding processes with thermoplastic elastomers in the shore-A range of SEBS copolymers and PP / EPDM.	Automotive components such as connectors, covers for rear-window wipers, IR automobile keys, steering column gear shifts. Electrical components such as switch knobs, handles or applications with moulded-on seals.

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Grilon TS (polyamide 66/polyamide 6 alloys) non-reinforced and reinforced injection-moulding grades

Grades	Characteristics	Application examples
Grilon TSS	Injection-moulding grade (PA66 / 6), non-reinforced, normal viscosity, good flow properties, short cycle times, good surface quality, heat stabilised.	Applications in which long flow distances and good surface quality are required. Fasteners.
Grilon TSZ 1	Injection-moulding grade (PA66 / 6), non-reinforced, impact-modified, normal viscosity, excellent flow properties, heat stabilised.	Fasteners, clips, cable channels, under-the-bonnet applications.
Grilon TSG-30	Injection-moulding grade (PA66 / 6), with 30 wgt.% glass-fibre reinforcement, very stiff, good flow properties, good surface quality, heat stabilised.	Technical parts with high stiffness and long flow distances, blasting pipes, household articles, cable channels.
Grilon TSM-30	Injection-moulding grade (PA66 / 6), with 30 wgt.% special mineral reinforcement, stiff with little warpage, excellent surface quality, heat stabilised.	Covers, particularly in under-the-bonnet applications, tank caps, technical parts with no warpage.
Grilon TS V0	Normal viscosity PA66+PA6 polymer alloy, self-extinguishing, heat stabilised. Non-reinforced injection-moulding grade, contains no halogen or phosphorous, UL 94 V0 from 0.4 mm, any colour, various flammability ratings (suitable for film hinges) wide processing latitude.	Electro-technical components where UL 94 V0 and glow wire temperature of 960°C are required. Clamp series, fuse switches, housing components, cable ties.

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Grilon (polyamide 6) extrusion grades

Grades	Characteristics	Application examples
Grilon BRZ 340 H	Extrusion grade (PA 6) with high melt viscosity, non-reinforced, highly impact modified, heat stabilised. Also suitable for injection-moulding processes.	For the extrusion of pipes, profiles, plates and strips.
Grilon BRZ 247 W	Medium-viscosity, flexible PA 6 extrusion grade, heat stabilised, contains plasticiser. Can be processed with all conventional polyamide pipe and semi-finished equipment. Good impact resistance even at low temperatures.	Co-extruded petrol lines, coolant pipes in refrigerator units, vulcanisation mandrels, vacuum pipes.
Grilon BRZ 347 W	Medium to high viscosity, flexible PA 6 extrusion grade, heat stabilised, contains plasticiser, high impact resistance even at low temperatures.	Extruded and co-extruded lines for petrol, Freon and coolants. Also suitable for corrugated pipes.
Grilon R 50 H NZ	Very high viscosity grade suitable for extrusion blow-moulding processes. Heat stabilised and highly impact modified. Excellent processing and high weld-line strength.	Extrusion blow-moulded technical articles such as air ducts or resonators.
Grilon RVZ-15 H.1	High viscosity, with 15 % glass-fibre reinforcement, also suitable for extrusion blow-moulding processes. Heat stabilised and impact modified. Excellent processing, low tendency to creep, high weld line strength.	Air ducts in automotive construction.
Grilon BZ 3	Extrusion grade (PA 6) with normal melt viscosity, non-reinforced with very high impact strength in a dry state and at very low temperatures. Very good barrier values. Easy to process. UL listed.	Highly stressed parts with extreme safety requirements. Hydraulic, pneumatic and air-conditioning pipelines. Due to its very good barrier properties, this material can be used in multi-layer containers for agrochemicals, fuel tanks and pipelines in the fuel industry.
Grilon ELX 40 H NZ	High viscosity, impact resistant, heat stabilised, flexible PA6 elastomer extrusion blow-moulding grade. Flexible material with high melt strength. Suitable for sequential extrusion blow moulding in combination with stiff grades such as Grilon R 50 H NZ or RVZ-15 H.1.	Flexible technical hollow parts, flexible pipelines in automotive construction, air ducts for turbo chargers, air duct components.
Grilon ELX 50 H NZ	High viscosity, impact resistant, heat stabilised, flexible PA6 elastomer extrusion blow-moulding grade. Flexible material with high melt strength. Suitable for sequential extrusion blow moulding in combination with stiff grades such as Grilon R 50 H NZ or RVZ-15 H.1.	Flexible technical hollow parts, flexible pipelines in automotive construction, air ducts for turbo chargers, air duct components.

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Grilon C (copolyamide) extrusion grades

Grades	Characteristics	Application examples
Grilon CR9 HV	High viscosity copolyamide. Conforms to EU and EEC regulations, FDA tested, suitable for direct contact with foodstuffs < 49 °C. Product for co-extrusion of blown and cast films. Low tendency to curl and good shrinkage behaviour in stretched films, good transparency also for blown films.	Flexible foodstuff packaging for consumer packaging and «maturing packs» for meat, cheese, sausage and fish.
Grilon CR9	Normal viscosity copolyamide. Conforms to EU and EEC regulations, FDA tested, suitable for direct contact with foodstuffs < 49 °C. Product for co-extrusion of blown and cast films. Low tendency to curl and good shrinkage behaviour in stretched films, good transparency also for blown films.	Flexible foodstuff packaging for consumer packaging and «maturing packs» for meat, cheese, sausage and fish.
Grilon CR8	Normal viscosity copolyamide. Conforms to EU and EEC regulations. Product for co-extrusion of blown and cast films. Improved shrinkage behaviour, higher flexibility and better transparency in comparison to Grilon CR9.	Flexible foodstuff packaging for consumer packaging and «maturing packs» for meat, cheese, sausage and fish.
Grilon CF6 S	Normal viscosity copolyamide. Conforms to EU and EEC regulations. Suitable for direct contact with foodstuffs. Product for co-extrusion of blown and cast films. Low processing temperatures, very flexible, excellent shrinkage behaviour of stretched films, good transparency.	Shrinkable film for packaging in indirect contact with foodstuffs.
Grilon CA6 E	As Grilon CF6 S but with improved flexibility and less oxygen barrier. For indirect contact with foodstuffs (except FDA).	Shrinkable film for packaging in indirect contact with foodstuffs.
Grilon BM13 SBG	Normal viscosity copolyamide. Conforms to EU and EEC regulations. FDA tested. Only suitable for indirect contact with foodstuffs. Product for extrusion applications such as blown and cast films, low processing temperatures, very flexible, good transparency, good oxygen barrier.	Flexible foodstuff packaging (shrinkable film) for consumer packaging and «maturing packs» for meat, cheese, sausage and fish. Co-extrusion with temperature-sensitive materials such as PVDC and EVOH.

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Grilon (polyamide 6) masterbatches

Grades	Characteristics	Application examples
Grilon C MB 3388 AH	Natural masterbatch which contains inorganic stabilising agents and increases the heat resistance of Grilon B (PA 6) and Grilon A (PA 66).	Addition of 2–5 % Grilon C MB 3388 AH can increase the long-term working temperature of Grilon B (PA 6) and Grilon A (PA 66) by 10–20 °C.
Grilon MB 4660 AHX black	Black masterbatch which contains inorganic stabilising agents and increases the heat resistance of Grilon B (PA 6) and Grilon A (PA 66). UV stability is also increased due to the black colouring.	Addition of 2–5 % Grilon MB 4660 AHX black can increase the long-term working temperature of Grilon B (PA 6) and Grilon A (PA 66) by 10–20 °C.
Grilon MB 3427 AUV	Masterbatch which through the action of specific UV stabilisers, increases the weathering resistance of Grilon B (PA 6) and Grilon A (PA 66).	Addition of 2–5 % Grilon MB 3427 AUV can significantly increase the working life under extreme climatic conditions and high exposure to UV radiation.
Grilon MB 9295 AC black	Colouring masterbatch black.	For black coloration of Grilon B (PA 6) and Grilon A (PA 66). Addition 2–5 %.
Grilon MB 3361 FS	Anti-block / slip MB based on PA 6. Eliminates the danger of adhesion to the casting rolls (cast films) and metal surfaces (packaging machinery) in film applications. Fully compatible with Grilon B (PA 6) and Grivory G21.	Anti-block / slip masterbatch for films based on Grilon B (PA 6), Grilon C (copolyamide) and copolyamide 6 / 66. Recommended addition 2–4 %.
Grilon C MB 8361 FS	Anti-block / slip MB based on PA 6. Eliminates the danger of adhesion to the casting rolls (cast films) and metal surfaces (packaging machinery) in film applications. Fully compatible with Grilon B (PA 6) and Grilon C (copolyamide).	Anti-block / slip masterbatch for films based on Grilon B (PA 6), Grilon C (copolyamide) and copolyamide 6 / 66. Recommended addition 2–4 %.

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Grilon T (polyamide 66) injection-moulding grades

Grades	Characteristics	Application examples
Grilon AS/2	Injection-moulding grade (PA 66) non-reinforced, normal viscosity, rapid solidification, fine crystalline structure, short cycle times and good flow properties. UL listed.	Applications in all technical fields: plugs, fastenings, clips, cable ties, spectacles frames, furniture fittings.
Grilon AZ 3	Injection-moulding grade (PA 66) non-reinforced, high impact modification, easily processed when freshly injected even at very low temperatures. Normal viscosity, easy and rapid processing.	Applications in all technical fields where good impact strength and high strength values are necessary even at low temperatures. Components for ice skating boots, shoe buckles, covers, housings, under-the-bonnet components.
Grilon AS V0	Injection-moulding grade (PA 66) normal viscosity, non-reinforced, self-extinguishing (UL-94 V0 from 0.8 mm wall thickness). Contains no halogen or phosphorous, light inherent colour, low density. Good electrical properties. UL listed.	Electro-applications: Plugs, plug strips, switch components, control elements, fuse holders, cable ties, functional parts in electro-mechanical equipment, contactors, housings.

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