



**The leading manufacturer of  
high-performance polyamides**

**EMS**  
EMS-GRIVORY



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**EMS-GRIVORY – The leading specialist for high-performance polymers**

Polyamides are among the most versatile and well-performing polymers. EMS-GRIVORY is the manufacturer with the broadest range of polyamides worldwide. These high-performance resins for use in injection-molding and extrusion processes are sold worldwide under the trade names Grivory®, Grilamid® and Grilon®. Polyamides from EMS-GRIVORY are used in applications in the following market segments: automotive, industrial and consumer goods, electro and electronics, healthcare, optics and packaging.

**We always provide a solution**

The strengths of EMS-GRIVORY lie not only in the development and manufacture of these high-performance polymers, but also in the creation of innovative system solutions together with customers anywhere in the world. Cost and weight savings through metal replacement are the focal point, but EMS-GRIVORY also offers unique solutions for high-quality surfaces, designs and colors.

In this way, EMS-GRIVORY provides intensive customer support throughout the whole development process and even during running serial production. The service performance is tailor made to suit individual customer requirements in each market segment. Starting with the first feasibility studies and economic analyses, experienced development engineers accompany customers through prototype manufacturing and specific component testing as well as in mold optimization and process technology.

Where necessary, products are adapted to meet special requirements. This means that customers are provided with a complete solution and can differentiate themselves in their markets with cost savings, weight reduction or new designs.



**The proven material for metal replacement**

Grivory® is the trade name for a group of technical thermoplastics manufactured and distributed by EMS-GRIVORY. Grivory GV is based on semi-crystalline polyamides with partially aromatic content. It is supplied in granulate form for further processing in injection-moulding or extrusion processes using conventional, commercially-available equipment and moulds.

Grivory GV is used in the manufacture of technical components which are characterised by:

- high levels of stiffness and strength
- little change in property values after absorption of moisture
- low dampness and water absorption
- good dimensional stability and low warpage
- good chemical resistance, typical of polyamides
- good surface quality
- efficient and economical production

The following Grivory G grades are available:

- Grivory GV: reinforced with glass fibers, very stiff
- Grivory GVX: highest stiffness and strength values with very low warpage
- Grivory GM: mineral reinforcement, low warpage
- Grivory GVN: reinforced with glass fibers, impact resistant
- Grivory GC: reinforced with carbon, very stiff
- Grivory G4V: reinforced with glass fibers, good surface quality
- Grivory GVS: reinforced with glass fibers, very good flow properties
- Grivory GV FWA: reinforced with glass fibers, for contact with foodstuff and drinking water
- Grivory G5V: creep resistant, High HDT
- Grivory G7V: brilliant surface, UV-Stability

These grades are also available in a range of different modifications, which vary in terms of the concentration of the reinforcing agents used, the stabilisers and the processing aids.

Grivory FWA products are physiologically harmless and are also used in sensitive application areas with direct contact to drinking water and foodstuffs.



You can find more information about Grivory GV online:



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Grivory GV  
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## ■ Grivory GVX



### Our metal is called Grivory

With the high-performance polymer Grivory GV, EMS-GRIVORY has been market leader in the field of metal replacement for many years. The new material Grivory GVX now takes us a step further. With clearly improved mechanical properties, the range of metal replacement applications has been significantly widened. The exceptional performance provided by Grivory GVX is convincing in every detail!

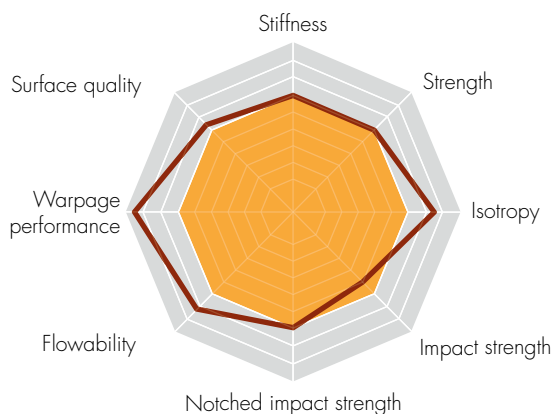
Grivory GVX is characterised in particular by:

- highest stiffness and strength values
- very low warpage
- simple processing

### Added performance

With its exceptional property specification profile, Grivory GVX opens up a completely new chapter in the field of metal replacement.

If all property values of Grivory GV-5H are compared with those of the new material Grivory GVX 5H, the consistent increase in performance is clearly apparent. The further development of Grivory GVX is particularly visible in its low warpage values, more isotropic material properties and flowability.



■ Grivory GVX-5H    ■ Grivory GV-5H

### Die-cast metals under pressure

The advantages of Grivory GVX compared to diecast metals are, above all, their lower density, simple processability and efficient production with up to 40% lower manufacturing costs.

With a modulus of elasticity of up to 300 MPa, Grivory GVX is leader among thermoplastic materials and does not need to avoid direct comparison with property profiles of metals. At high temperatures for example, it exhibits much better performance than die-cast zinc. When combined with a component design suitable for plastic materials, structural rigidity values comparable to those of metal components, can be achieved.

### The future for metal replacement

Due to its exceptional mechanical properties and simple processing, Grivory GVX expands the limits of metal replacement. The well-known advantages of weight reduction, freedom of design, functional integration and, above all cost savings, make polyamide materials much in demand as an alternative to more expensive metals.

**Grivory GVX - metal replacement at the highest level!**



You can find more information about Grivory GVX online:



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**Enhanced Performance at High Temperatures**

Grivory HT is a semi-crystalline thermoplastic construction material based on polyphthalamide (PPA).

EMS-GRIVORY, based in Domat/Ems (Switzerland), developed its own innovative process to manufacture, polymerise and compound Grivory HT. Production capacity has been adjusted to meet strong demand. In the meantime, EMS-GRIVORY has become one of the world's leading suppliers of polyphthalamides and is market leader in Europe.

Grivory HT is characterised by its high-performance properties. Technical injection-moulded parts made from Grivory HT retain their shape even at high operating temperatures. Thanks to its properties, Grivory HT is undoubtedly a high-performance plastic. In terms of characteristics such as stiffness and strength, most important for metal replacement, Grivory HT outperforms materials such as PPS or PEEK at operating temperatures up to 120°C.

Grivory HT is supplied in granulate form for injection moulding and now also for extrusion methods, and can be processed using conventional, commercially available machinery and tools. Grivory HT is used for the efficient manufacture of high-quality technical components that are characterised by:

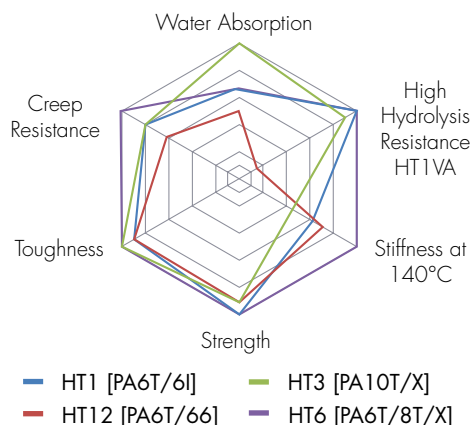
- stiffness and strength at high operating temperatures
- little change in property values after absorption of water
- good dimensional stability and low warpage
- good chemical resistance
- good surface quality
- economic production

**The Grivory HT grades**

The Grivory HT product range includes a number of groups with different base polymers.

- Grivory HT1: PA6T/6I
- Grivory HT2: PA6T/66
- Grivory HT3: PA10T/X
- Grivory HT6: PA6T/8T/X

**HT Property comparison**  
[Scale of 1 to 10, where 10 is the highest]



Grivory HT products are supplied ready for injection-moulding processing. The Grivory HT3 product range also includes extrusion grades.



You can find more information about Grivory HT online:



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**High-performance polymers for highest demands**

The Grilamid product family from EMS-GRIVORY is made up of four sub-groups of long-chain aliphatic polyamides.

- Grilamid L (Polyamid 12)
- Grilamid 1S (Polyamid 1010)
- Grilamid 2S (Polyamid 610)
- Grilamid 2D (Polyamid 612)

**Grilamid L**

Grilamid L polyamide 12 (PA12) is formed by the polymerisation of laurolactam, a ring-shaped, long-chain monomer with 12 carbon atoms. Laurolactam, often called lactam 12, is obtained in a complex, multiple-step process from the basic raw material butadiene. EMS is backward integrated for lactam 12 and produces it in a joint-venture where EMS holds a two-third majority.

Depending on formulation and viscosity, Grilamid L PA12 can be processed using a range of different methods such as injection-moulding, pipe extrusion, film extrusion or blow-moulding.

Through use of additives, fillers, pigments, plasticisers, modifiers or processing aids, Grilamid products are adjusted precisely to suit customer requirements and specific applications. EMS-GRIVORY offers a very wide range of speciality grades from very flexible to highly rigid in order to always supply customers with an optimal product solution.

Grilamid L PA12 has a series of exceptional properties such as:

- very low water absorption and excellent dimensional stability
- very good resistance to chemicals and weathering
- very good hydrolysis resistance
- lowest density of all polyamides

- high impact strength down to  $-40^{\circ}\text{C}$
- wide processing window, problem-free processing

The Grilamid L ...“FWA” (food and water contact approved) series was created especially for applications in direct contact with foodstuffs or drinking water. The tailor-made, reinforced and non-reinforced products correspond to international requirements and legislation in this field of application.

Important applications for Grilamid L PA12 are feed lines and connectors for media and compressed air systems in the fields of automotive, industrial goods, sports and leisure, sanitary components (replacement of brass), pneumatic pipes, cables and cable protection, housings for high-quality electronic devices, components for household appliances.

**Grilamid 1S**

Grilamid 1S polyamide 1010 (PA1010) is created through poly-condensation of decanediamine and sebacic acid.

Both monomers are obtained through a multiple-step chemical process from the renewable bio raw material castor oil. Polyamide 1010 is based to nearly 100 per cent on renewable raw materials. Bio-based products in the Grilamid 1S series are sold by EMS-GRIVORY under the general term GreenLine.

Special features of Grilamid 1S PA1010 are:

- nearly 100% use of renewable basic raw materials (in relation to the polymer)
- very low water absorption and excellent dimensional stability
- good resistance to chemicals and weathering
- low density
- wide processing window, problem-free processing
- a direct bio-alternative to PA12



Important application areas for Grilamid 1S PA1010 are feed lines in automotive and industrial applications, especially lactam-free fuel lines, cable sheathing, sports & leisure articles and housings for portable electronic devices.

**Grilamid 2S**

Grilamid 2S polyamide 610 (PA610) is created through poly-condensation of hexamethylene diamine and sebacic acid.

Hexamethylene diamine is obtained from crude oil, while sebacic acid is obtained following a multiple-step chemical process from the renewable bio-raw material castor oil. This means the polyamide 610 polymer is made to 62% of renewable raw materials. Bio-based Grilamid 2S products are sold by EMS-GRIVORY under the general term GreenLine.

Special features of Grilamid 2S PA610 are:

- use of 62% renewable basic raw materials (in relation to the polymer)
- low water absorption and good dimensional stability compared to PA6 or PA66
- good resistance to chemicals and weathering
- high melting point of 220°C
- problem-free processing

Due to its high melting point, Grilamid 2S PA610 is especially well suited for pipes, connectors and other under-the-hood automotive applications which are exposed to high temperatures. Further preferred applications are industrial pipes for pneumatic and hydraulic systems as well as sports and leisure articles.

**Grilamid 2D**

Grilamid 2D polyamide 612 (PA612) is created through poly-condensation of hexamethylene diamine and dodecanedioic acid.

Special features of Grilamid 2D are:

- low water absorption and good dimensional stability compared to PA6 or PA66
- good resistance to chemicals and weathering
- very good resistance to hydrolysis
- high melting point of 215°C
- problem-free processing

Due to its high melting point, Grilamid 2D PA612 is especially well suited for pipes and connectors in automotive applications which are exposed to high temperatures. Preferred applications are feed lines for cooling, heating and climate control systems in cars, compressed air lines of heavy-duty trucks exposed to high temperatures, feed lines for hot diesel fuel and individual layers with high barrier properties in multiple-layer petrol lines.



You can find more information about Grilamid L PA12 online:



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**Approved for contact with food and water**

Grilamid PA12 FWA products open up new opportunities for applications in direct contact with drinking water or food.

Grilamid PA12 products have unique properties such as:

- Very low water absorption
- High dimensional stability
- Excellent chemical and UV resistance
- Strong hydrolysis resistance
- High impact strength in combination with high elongation compared to other technical polymers with identical stiffness values
- Very favourable processing parameters due to low mould and material temperatures compared to most other engineering plastics

Grilamid FWA products are available in two different series with 30% to 65% glass fibers depending on the maximum application temperatures in contact with drinking water and according to existing approvals.

In water up to 60°C	In water up to 85°C
Grilamid LV-30H FWA	Grilamid LBV-30H FWA
Grilamid LV-50H FWA	Grilamid LBV-50H FWA
Grilamid LV-65H FWA	Grilamid LBV-65H FWA

Besides the standard Grilamid FWA grades in natural and black, specific custom colours are possible on request, even for small order quantities.

In addition, non-reinforced and glass-bead reinforced products are also available to customers.

Grilamid FWA products satisfy the requirements of the most important standards and regulations in Europe and North America, such as WRAS, ACS, KTW, NSF and FDA. Detailed information is available in each product-specific datasheet.

For further details such as long term behaviour in water according to ISO 9080, please contact your nearest EMS-GRIVORY sales office.

Grilamid FWA products have been especially developed for the replacement of more costly metal and other high performance polymers. Their favourable moulding conditions make them particularly suitable for thick-walled or very thin-walled components which are difficult or impossible to mould with other polymers.

Grilamid FWA products excellently complement the Grivory GV...FWA and Grivory HT...FWA product lines which are also approved for applications involving direct contact with drinking water and food.



You can find more information about Grilamid FWA online:



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**Transparent polyamide for the most exacting requirements**

Grilamid TR is the trade name for EMS-GRIVORY's family of amorphous polyamides based on cycloaliphatic and aromatic blocks. Careful selection of the monomers results in stellar transparency threaded in the family's DNA.

Grilamid TR product line combines optical clarity with high-performance attributes:

- Brilliant transparency
- Excellent fatigue resistance
- Superior dynamic strength
- High chemical resistance
- Extraordinary environmental stress crack resistance (ESCR)
- Low specific gravity
- Minimal water absorption
- Long-term thermal stability
- Barrier resistance to O<sub>2</sub>, N<sub>2</sub>, and CO<sub>2</sub>
- High impact strength at low temperatures
- Exceptional dimensional stability
- Outstanding resistance to weathering

Grilamid TR fits in between other amorphous thermoplastics balancing stiffness and heat distortion without compromising transparency. One of the outstanding properties is the excellent flexural bending strength, which enables applications under high dynamic loads. The good impact resistance covers the range from minus temperatures to high operating temperatures. Grilamid TR exhibits excellent resistance to UV, stress cracking, and chemicals compared to other transparent thermoplastic polymers.

Grilamid TR' robust properties succeed where other transparent polymers fail in achieving stringent requirements in optics, electronics, healthcare, safety, sanitary, household, sports, and automotive markets.

Grilamid TR is a suitable fit in glass replacement applications. Reinforced Grilamid TR offers lightweight metal replacement options exhibiting high stiffness, high strength, low warpage, very low creep, high heat distortion temperatures, very low moisture absorption, and excellent surface appearance. Grilamid TR family's outstanding processability, versatility in production methods, vibrant colorization, and bold printability fosters creative design freedom.

Meet the Family:

- Grilamid TR 30 – The Scratch Resistant
- Grilamid TR 55 – The All Rounder
- Grilamid TR 90 – The Tough Guy
- Grilamid TR ICR – The ESCR Challenger
- Grilamid TR HT – The Hot Performer
- Grilamid BTR – The Sustainable



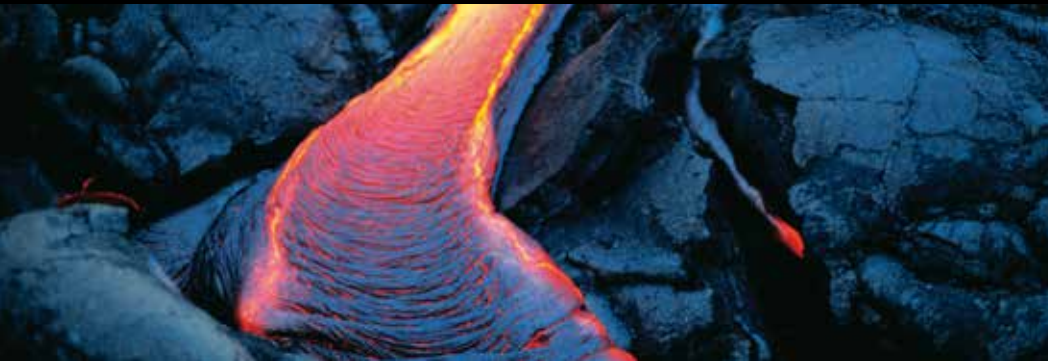
You can find more information about Grilamid TR online:



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**Premium polyamide**

Grilon® is the brand name for engineering plastics based on polyamide 6 and polyamide 66 manufactured by EMS-GRIVORY.

With the manufacture of special polyamide 6 and polyamide 66 alloys, EMS-GRIVORY has succeeded in further improving the already outstanding properties of Grilon.

The products in this group are semi-crystalline polyamide materials characterised by the following properties:

- high strength and stiffness
- high impact strength
- high heat deflection temperature
- good abrasion and surface slip (friction) properties
- resistance to many chemicals
- good electrical properties
- economic processing

Grilon is perfectly suited for processing using injection moulding, extrusion and extrusion blow-moulding methods.

Due to their excellent properties, these materials can be used in a wide variety of application segments such as the automotive industry, electrical / electronic technology, sport and leisure as well as in mechanical engineering.

The various Grilon grades differ from each other according to the type and composition of the basic polymers as well as their modification with stabilisers, processing aids and reinforcing materials (minerals, glass, carbon and steel fibers).

**Grade families**

Grilon A	PA 66
Grilon B	PA 6
Grilon TS	PA 66 + 6



You can find more information about Grilon online:



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## Polyamides with Spine

LFT polyamides from EMS-GRIVORY are long-fiber reinforced structural materials based on the established polyamides Grivory GV and HT1, Grilamid PA12 and Grilon TS.

All products are reinforced with glass or carbon fibers, the length of which corresponds to a typical granulate length of 10 mm. The objective of this is to create a unique web-like fiber structure within the injection-moulded component, which significantly improves the thermal-mechanical properties compared to products reinforced with short fibers.

The products differ by the type of used polyamide as well as the type and quantity of reinforcement. The products are supplied dried and ready to use in bags or octabins. They can be processed using commercially available injection-moulding equipment.

EMS LFT products are used to manufacture structural components with very high requirements. These are characterised in particular by the following properties:

- A combination of high stiffness and exceptional notched impact strength
- Little change in the properties under the influence of temperature or moisture
- Very low tendency to creep
- Excellent permanent strength
- Low warpage

Preferred applications for these LFT polyamides are challenging metal replacement applications. The excellent properties of the proven products supplied by EMS-GRIVORY are increased once again by the reinforcement with long fibers.

## The product portfolio of LFT products

Grivory HT1VL	long glass-fiber reinforced, high-temperature polyamides (PPA)
Grivory GVL	long glass-fiber reinforced semi-crystalline polyamides with partially aromatic content
Grivory GVL HP	long glass-fiber reinforced semi-crystalline polyamides with partially aromatic content with special High Performance Fiber
Grivory GVL VO	long glass-fiber reinforced, semi-crystalline, flame-resistant polyamides with partially aromatic content
Grivory GVCL	hybrid-fiber reinforced, semi-crystalline polyamides with partially aromatic content
Grivory GCL	long carbon-fiber reinforced, semi-crystalline polyamides with partially aromatic content
Grilamid LVL	long glass-fiber reinforced PA12 products
Grilamid LCL	long carbon-fiber reinforced PA12 products
Grilon TSGL	long glass-fiber reinforced, semi-crystalline polyamides PA66+PA6
Grilon TSGL VO	long glass-fiber reinforced, semi-crystalline, flame-resistant polyamides PA66+PA6
Grilon TSGCL	hybrid-fiber reinforced, semi-crystalline polyamides PA66+PA6

**GRIVORY®**  
EMS

**Grilamid®**  
EMS

**GRILON®**  
EMS

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Under the general term GreenLine, EMS-GRIVORY markets a wide range of bio-based polyamides which are manufactured partially or wholly from renewable raw materials. The „GreenLine“ series is made up of products from the families:

- Grivory HT3 (PA10T/X)
- Grilamid TR (amorphous transparent PA)
- Grilamid 1S (PA1010)
- Grilamid 2S (PA610)

which provide a wide spectrum of special properties from very flexible to extremely rigid, from high heat or hydrolysis resistant to perfectly transparent.

The primary objective of EMS-GRIVORY with GreenLine is to offer customers products based on renewable raw materials, having excellent properties and allowing a proven contribution towards reduction of environmental impact. From a technical point of view, GreenLine products are in no way inferior to crude-oil based polyamides.

By using monomers obtained through chemical processes from the renewable raw material castor oil, the environmental impact of GreenLine products is significantly improved from a “cradle to gate” point of view compared to crude-oil based polyamides. The total emission of climate-damaging gases during the whole manufacturing process of the polymer and its precursors can be reduced by up to  $\frac{3}{4}$  depending on the product.

Despite the use of renewable raw materials, GreenLine products are not biologically degradable polymers. Their durability is comparable to that of crude-oil based polyamides.

**Key features**

**Grilamid 1S PA1010 and Grilamid 2S PA610**

- high to very high bio-content
- properties similar to those of PA12
- low moisture absorption
- from flexible to high stiffness (reinforced), cold impact resistant
- good UV and chemical resistance
- low density
- for injection and extrusion processing
- good adhesion of Grilamid 1S PA1010 to bio-based Grilamid BTR grades in overmoulding or sandwich moulding processes.

**Grilamid TR, transparent polyamide**

- high bio-content
- excellent transparency and natural colour
- very good chemical resistance compared to most other amorphous thermoplastics
- high gloss and good scratch resistance
- low density
- good adhesion to Grilamid 1S PA1010

**Grivory HT3 PPA (Polyphthalamide)**

- high bio-content
- very low moisture absorption compared to other PPAs
- high dimensional stability
- excellent resistance to chemicals and hydrolysis
- high peak temperature and heat resistance
- suitable for lead-free soldering
- available as halogen-free flame-retardant compound for E&E applications

The bio content of Greenline products varies from about 50 up to 99% depending on the type of polymer, when determined according to ASTM D 6866-12 and expressed in percentage of total carbon.

You can find more information about GreenLine online:



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## Automotive

### Weight and cost-savings through metal replacement in automotive construction

In the automotive industry, EMS-GRIVORY has contributed significantly for more than 40 years to the development of modern vehicle components of the highest quality. Our products always fulfill the increasingly demanding requirements. They enable customers to achieve reductions in component weight and economic fuel consumption while satisfying high standards of comfort and safety. Further factors are their economic processing and recyclability.

Our materials are in particularly high demand for the replacement of metal components in under-the-hood applications. For this purpose, we have developed high-performance polyamides with especially high heat resistance for use in applications such as air ducts and coolers for turbo-charged engines, heat exchangers and throttle bodies. Polymers from EMS-GRIVORY are also found in electrical and electronic automotive systems, which must ensure trouble-free operation under extreme climatic conditions. In addition, our polyamides are used in chassis and power train components where resistance to motor oils and hydraulic fluids is required. Examples of these applications are clutch, brake or steering systems. In automotive interiors, polyamides from EMS-GRIVORY replace conventional die-cast alloys as materials for functional parts such as arm rests, covers or dashboard brackets. External metal-replacement applications include door handles, wing mirrors or windshield wiper units. In addition, our polyamide materials, which are resistant to chemicals, corrosion and weathering, allow efficient manufacturing of media supply systems such as fuel or cooling water lines.

EMS-GRIVORY already has a broad product portfolio for the next generation of electric vehicles with flame retardant properties and coolant resistance, e.g. for power electronics, thermal management or intelligent lightweight designs.

## Industry & Consumer goods

### Metal and glass replacement in high-quality applications for industrial and consumer goods

In the construction and machine industry, our products meet the high demands for longevity and safety in a wide range of applications. As a result of the progressing digitalization towards industry 4.0, there are additional application possibilities, especially in the areas of production automation and intralogistics.

In the sanitary market, polyamides from EMS-GRIVORY with excellent long-term resistance and international approvals for use in contact with drinking water are used for water meters, water filter housings, filter bowls and pressure reduction valves. In this way, significant cost advantages can be achieved compared to the use of brass.

In coffee machine applications, special products are used, which have all necessary approvals for use in direct contact with hot water and food.



### Electro & Electronics

#### Highest levels of precision and reliability in electrical and electronic applications

As stiff, and yet impact-resistant, housings for thin-walled components in mobile telephones, smartwatches, readers and tablets, polyamides from EMS-GRIVORY protect the internal electronic components while satisfying the highest requirements of strength and design. Typical applications are structural frames, housings and display windows.

In miniaturized electronic components such as LEDs or connectors, our materials ensure highest precision in combination with heat resistance at temperatures required for soldering processes.

Increasing complexity and more stringent safety requirements also place high demands on mechanical and thermal requirements. Our high-temperature resistant materials, with outstanding strength values and flame retardant modification, help provide new and innovative solutions.

### Healthcare

#### Tailor-made high-performance polyamides for medical technology

Polyamides from EMS-GRIVORY are used in a wide range of applications for sophisticated therapeutic equipment and laboratory fittings, disposable and reusable instruments, containers, medical infrastructure, protective equipment and mobility aids in the field of medical technology. Our specialty polymers pass the specific bio-compatibility tests according to USP Class VI and ISO 10993 per with flying colours and are resistant to sterilisation processes as well as aggressive disinfectants and cleaning agents. Our product portfolio satisfies the high performance requirements in the field of medical applications with both transparent and high-rigidity reinforced materials.

Among the applications realised are fluid-carrying components in infusion systems and respirators, breathing masks, surgical instruments, analysis containers, OP lights, structural parts for hospital beds, monitor brackets, patient lifting devices, walking aids, hearing aids and fitness trackers.

Reusable medical products or instruments present a possible risk as source of cross-contamination. EMS GRIVORY has developed Grilamid TR HT 200, with its crystal-clear transparency, high mechanical strength and toughness as well as excellent resistance to chemicals, especially for innovative reusable applications. This material can be steam-sterilised up to several hundred times at temperatures around 134 °C.

Our PA Sanitized materials have an anti-microbial effect making them suitable above all for surfaces and components which are handled daily by many different daily. In accordance with the standard JIS Z 2801:201, growth of bacteria is inhibited by 99%.

Our experienced application development specialists provide design and laboratory support for the realisation of your ideas from the concept phase right through to serial production.



## Optics

### Global market leader in eyewear

Polyamides from EMS-GRIVORY enable the perfect combination of functionality and unlimited individual possibilities in design, color and UV protection for sun and sports glasses. Our polyamides are also used to make ultra-lightweight and practically unbreakable frames for corrective glasses. For safety glasses, our products provide highest levels of safety through impact strength and break resistance.

Thanks to outstanding resistance to chemicals and stress-cracking, as well as excellent optical and mechanical properties, EMS-GRIVORY is world market leader for transparent polyamides with Grilamid TR.

## Packaging

### Optimally packaged with polyamides from EMS-GRIVORY

Packagings and containers made of our polyamides have excellent barrier properties against oxygen, carbon dioxide and flavors so that food and beverages as well as cosmetics and medicines remain fresh for longer. Our products fulfill the strict safety regulations demanded by governmental health authorities and have all corresponding approvals.



## EMS-GRIVORY worldwide

[www.emsgrivory.com](http://www.emsgrivory.com)

### EMS-GRIVORY – The leading manufacturer of high-performance polyamides

EMS-GRIVORY is the leading manufacturer of high-performance polyamides and the supplier with the widest range of polyamide materials. Our products are well-known throughout the world under the trademarks Grilamid, Grivory and Grilon.

We offer our customers a comprehensive package of high-capacity and high-quality products along with segment-specific advisory competence in distribution and application development. We maintain our market leadership through continual product and application development in all segments.

#### EMS-GRIVORY Europa

##### Switzerland

EMS-CHEMIE AG  
Business Unit EMS-GRIVORY Europe  
Via Innovativa 1  
7013 Domat/Ems  
Switzerland  
Phone +41 81 632 78 88  
[welcome@emsgrivory.com](mailto:welcome@emsgrivory.com)

##### Germany

EMS-CHEMIE (Deutschland) Vertriebs GmbH  
Warthweg 14  
64823 Gross-Umstadt  
Germany  
Phone +49 6078 783 0  
Fax +49 6078 783 416  
[welcome@de.emsgrivory.com](mailto:welcome@de.emsgrivory.com)

##### France

EMS-CHEMIE (France) S.A.  
Vélizy Espace, Immeuble Le Blériot  
13 avenue Morane Saulnier  
78140 Vélizy-Villacoublay  
France  
Phone +33 1 41 10 06 10  
Fax +33 1 48 25 56 07  
[welcome@fr.emsgrivory.com](mailto:welcome@fr.emsgrivory.com)

##### Great Britain

EMS-CHEMIE (UK) Ltd.  
Barn 4C  
Dunston Business Village  
Dunston  
Stafford ST18 9AB  
Great Britain  
Phone +44 1785 283 739  
Fax +44 1785 283 722  
[welcome@uk.emsgrivory.com](mailto:welcome@uk.emsgrivory.com)

##### Italy

EMS-CHEMIE (Italia) S.r.l.  
Via Carloni 56  
22100 Como (CO)  
Italy  
Phone +39 011 0604522  
Fax +39 011 0604522  
[welcome@it.emsgrivory.com](mailto:welcome@it.emsgrivory.com)

#### EMS-GRIVORY Asia

##### China

EMS-CHEMIE (China) Ltd.  
227 Songbei Road  
Suzhou Industrial Park  
Suzhou City 215126  
Jiangsu Province  
P. R. China  
Phone +86 512 8666 8180  
Fax +86 512 8666 8210  
[welcome@cn.emsgrivory.com](mailto:welcome@cn.emsgrivory.com)

EMS-CHEMIE (Suzhou) Ltd.

227 Songbei Road  
Suzhou Industrial Park  
Suzhou City 215126  
Jiangsu Province  
P. R. China  
Phone +86 512 8666 8181  
Fax +86 512 8666 8183  
[welcome@cn.emsgrivory.com](mailto:welcome@cn.emsgrivory.com)

##### Taiwan

EMS-CHEMIE (Taiwan) Ltd.  
36, Kwang Fu South Road  
Hsin Chu Industrial Park  
Fu Kou Hsiang  
Hsin Chu Hsien 30351  
Taiwan, R. O. C.  
Phone +886 3 598 5335  
Fax +886 3 598 5345  
[welcome@tw.emsgrivory.com](mailto:welcome@tw.emsgrivory.com)

##### Korea

EMS-CHEMIE (Korea) Ltd.  
#817 Doosan Venturedigim,  
415 Heungan Daero,  
Dongan-gu, Anyang-si,  
Gyeonggi-do, 14059  
Republic of Korea  
Phone +82 31 478 3159  
Fax +82 31 478 3157  
[welcome@kr.emsgrivory.com](mailto:welcome@kr.emsgrivory.com)

##### Japan

EMS-CHEMIE (Japan) Ltd.  
EMS Building  
2-11-20 Higashi-koujiya  
Ota-ku, Tokyo 144-0033  
Japan  
Phone +81 3 5735 0611  
Fax +81 3 5735 0614  
[welcome@jp.emsgrivory.com](mailto:welcome@jp.emsgrivory.com)

#### EMS-GRIVORY America

##### United States of America

EMS-CHEMIE (North America) Inc.  
2060 Corporate Way  
P.O. Box 1717  
Sumter, SC 29151  
USA  
Phone +1 803 481 91 73  
Fax +1 803 481 61 21  
[welcome@us.emsgrivory.com](mailto:welcome@us.emsgrivory.com)

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a business unit of the EMS Group

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EMS-GRIVORY