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PRESS INFORMATION

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Grilamid TR HT 200,
up to 500 cycles of steam sterilisation to avoid disposable products

Reusable instead of disposable

EMS-GRIVORY is market leader in the field of transparent high-performance polyamides under the collective trade name Grilamid TR. In medical technology Grialmid TR products are used as they combine crystal-clear transparency with good resistance to chemicals and breakage. The latest supplement to this comprehensive assortment is Grilamid TR FE 11292 (TR HT 200), the first transparent polymer in the world which can be sterilised repeatedly at 134°C using steam sterilisation processes.

The success story of polymer materials in medical technology
Polymers are among the most commonly used materials in medical technology. The can be found in applications in all areas of this field. The advantages are clear to see. Polymers make economic and ergonomic component design possible. Medical instruments made of polymer materials are lighter in weight and can be handled with greater precision by doctors. The polymers used are practically unbreakable, compatible to contact with skin and in some cases, reduce the risk of allergies compared to certain metal alloys. Polymer materials used in medical technology should not, however, contain any bisphenol A or phthalates.
Many medical products made of polymer materials are delivered to their place of use in sterile packaging and are disposed after being used only once. This is not always necessary, however. A variety of chemical, thermal and radiation processes are used to sterilise medical products before re-use. Sterilisation with super-heated steam (at 134°C under 3 bar pressure for 18 minutes) is widely used today and ensures the inactivation of prions.

Very few transparent polymer materials suitable for repeated sterilisation
Transparent polymers such as PC, ABS, PMMA, PS and SAN, as well as conventional transparent polyamides, are not suitable for repeated steam sterilisation processes. PSU, PEI and PESU can be sterilised using steam sterilisation but, as a result of their high processing temperatures, have a strong inherent colour. In tests, Grilamid TR HT 200 was subjected to 500 steam cycles at 134°C without suffering any visual impairment to the surface quality or mechanical brittleness.
Grilamid TR HT 200 has a glass transition temperature of 200°C and is particularly suitable for use in applications requiring high heat deflection temperatures. It exhibits very good resistance to chemicals in applications involving different sterilisation processes and is very resistant to disinfectants. The balanced property profile with an E-Modulus of 2,000 MPa and very good ductility, provide Grilamid TR HT 200 with many possible applications in the field of medical technology.

Approvals for use in contact with food and medical applications
Grilamid TR HT 200 satisfies the EU regulation 10/2011 on plastic materials intended to come into contact with food and is currently undergoing testing by the US FDA. Results of this testing are expected in the next months.

Bio-compatibility according to ISO 10993 1 - 20 defines biological compatibility with the human organism. Grilamid TR HT 200 satisfies the requirements according to ISO 10993-5 (cytotoxicity) and ISO 10993-10 (irritation and sensitisation). A positive test report regarding USP Class VI is also available.

Many application possibilities

Possible applications for use of Grilamid TR HT 200 in medical technology are, for example, sterilisable instrument boxes in medical clinics. In dentistry, Grilamid TR HT 200 can be used for cheek retractors and sterilisable cotton pellet dispensers. Applications in laboratories are pipettes and bioreactors. In addition, Grilamid TR HT 200 is suitable for use in breathing masks, fluid connectors, pump housings and inspection glass in various kinds of devices.

Energy-cost reductions in processing

Compared to typical polyarylethersulfones (PSU, PESU and PPSU), significant energy-cost savings can be achieved during processing of Grivory TR HT 200. Recommended melt temperatures for Grilamid TR HT 200 in injection moulding processes are between 300 – 320°C which is 40 to 70°C lower than for polyarylethersulfones. The mold temperatures of 100-140°C are also around 40°C lower than with polyarylethersulfones. Both Grilamid TR HT 200 as well as polyarylethersulfone should be dried before processing. For Grilamid TR HT 200 this is carried out at 80°C while drying temperatures for polyarylethersulfones are given as 140 – 180°C.

Thanks to its good sterilisability, Grilamid TR HT 200 contributes to a longer service life in medical technology applications. An additional benefit is the energy savings during processing.

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Grilamid TR is excellently suited for use in applications in medical technology. The new Grilamid TR HT 200 withstands more than 500 cycles of steam sterilisation at 134°C.

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