

COMPTEK High Temperature Polymer Compounds

COMPTEK develops and supplies High-Performance and Fluoropolymer based compounds compliant to end user specific requirements. Thermoplastic processable PVDF, THV, ETFE, FEP, MFA and PFA fluoropolymers are used as vehicle. Second core product range HT-Polymers also featured: PSU, PES, PEI, PPS, PPSU, PEEK and LCP.

Above polymers are compounded using fibres, additives and fillers to modify and adapt them to customer applications and processing. Typical improved, optimized physical and mechanical properties are requested for sliding blocks, bearings, sealings, pumps and impellers, medical and dental devices, sensoric and electronic applications. Semiconductive and EMI-shielding compound systems are also available. To meet needs in many industrial markets, in-house High Quality Repro Products are also supplied. COMPTEK product range covers:

- **Fibre reinforced Compounds** with improved tensile properties, better surface hardness and higher heat distortion temperature
- **Tribological Compounds** self-lubricating for bearings, sliding blocks and products with good wear resistant and dry gliding properties
- **Semi-Conductive Compounds** for electrical discharging and heating transfer applications
- **Speciality Compounds** e.g. for laser coding, with foaming agents and X-Ray opaque fillers
- **Precolour Compounds** combining reinforcing fillers, minerals and special customized pigmentation also adding other special fillers to request.

FIBRE REINFORCED COMPOUNDS. Optimized mechanical properties

Glass Fibres improve the tensile strength, heat deflection temperature, stiffness and compressive strengths. Typical application is polymer snap-fit latches. Glass fibres might cause higher tooling abrasion and increased wear in sliding applications with soft counter parts.

Metal Fibres have high tensile strength, improve heat distortion temperature and achieve excellent electromagnetic shielding properties. Metal fibres are more ductile than glass and carbon fibres and have good electrical and thermal conductivity.

Carbon Fibres increase tensile strength, modulus of elasticity and flexural modulus even more than metal and glass fibres, and they have low density. Special E-Carbon fibres filled polymers give certain electrostatic discharge protection.

Aramid and Soft Mineral Fibres, silicates and wollastonite whiskers improve gliding in moved plastic screw joints and caps. In plastic gears and pump wheels, these mineral fillers reduce polymer contact adhesive wear.

TRIBOLOGICAL COMPOUNDS

End products such as wear resistance maintenance-free bearings and sleeves in the long-term tribological applications have special requirements. Internally dry lubricated compounds eliminate expensive, time-consuming and external surface lubrication.

PTFE Powder lubricants and additives reduce friction in dry running applications. PTFE combined with carbon fibres or MoS₂ for compounds used at high speed and high temperatures. Higher PTFE contents in HT-Compounds may reduce the mechanical properties at high service temperature.

Special Mica grades are used in moulded parts subjected to compressive load at high temperature and as electrical insulating additive in extruded film and tubing. Mica in combination with metal oxides prevents electrical breakdown and improves (CTI) comparative tracking index significant. Permeation of hot aqueous solvents is reduced and outdoor weathering properties are improved.

Graphite is a lubricant filler reducing wear, best usage in liquids applications (runs good in water), where PTFE lubricants might fail. Graphite is electrical and thermal conductive and is also often used in combination with glass fibres, minerals, carbon fibres and with PTFE-Powder.

Polyphenylensulfon-(PPSO₂) and Ceramic Fine Powders improve the abrasion (wear-off) and dry gliding properties in many polymers. Ceramics recommended at very high service temperatures.

CONDUCTIVE COMPOUNDS

High Conductive carbon black is used for injection moulding and extruded parts. In special applications combination are made with metals, carbon fibres, graphites and nano-tubes to achieve unique performance. Conductive Compounds are used for electronic devices, electrical cables, and also for components in explosion proof requiring applications.

Aluminium, High-Grade steel, Inconel, Silicium carbide, Precious Metals, used as fibre, flake or in powder improve thermal conductivity and give EMI shielding effects.

SPECIALITY COMPOUNDS

- **Bariumsulfat, Bismuth and Zirconium** is X-Ray opaque additives used for medical and dental devices. Typical usage in catheters, thin walled tubing and surgical instruments.
- **Silica, calcinated Minerals** are applied as matting agent and to brighten dark polymers. They are also used as low cost fillers for many industrial applications. In extrusion silica is a good release agent. Minerals increase the compressive E-modulus notable at high temperatures.

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