LITEPOL® lightweight engineering plastics

LITEPOL® is a new family of extra light engineering plastics based on Polypropylene or Polyamide and filled with Hollow Glass Microspheres.

LITEPOL® compounds are suitable for all those applications in which weight reduction is the primary objective: for this reason they are particularly aimed at the automotive industry which is subject to strict regulations and targets in terms of reducing emissions.

WEIGHT REDUCTION
FROM -9% TO -30%

STIFFNESS FROM
+13% TO +179%

MIXED HB/GF GRADES,
IMPACT STRENGTH
FROM +20% TO +218%

REDUCTION OF TEMPERATURE
BY 1.1°C PER EACH 1% MICROSPHERES

REDUCTION OF COOLING TIMES

EXCELLENT DIMENSIONAL STABILITY

EXCELLENT VERSATILITY AND CUSTOMIZATION POTENTIAL

REDUCTION OF CYCLE TIMES

TECHNICAL SUPPORT
DURING INJECTION MOULDING INITIAL PHASE

CURRENT RANGE

POLYPROPYLENE:

LITEPOL C 8 HB/24
PP copolymer with 24% HB

LITEPOL L15 GFHB/1020
PP homopolymer with + 20% HB + 10% GF chemically bonded

POLYAMIDE 6:

LITEPOL B2 GFHB/1020 H2
PA6 with 10% GF + 20% HB

LITEPOL B2 GFHB/2010 H2
PA6 with 20% GF + 10% HB

APPROVED BY FIAT GROUP
Material Standard
55246 (PP)

2000 plastic components, 225 kg

European 2020 Target
95 g CO₂/km
Emissions limit for new vehicles

- 100 kg

Vehicle lifespan: (*) -1500 t CO₂ -750 l fuel
Per km: -10 g CO₂ -0,4 l fuel

(*) estimated consumption: medium-sized car weight = 1,500 kg/lifespan = 150,000 km/fuel consumption = 12 km/l


APPROVED BY FAST GROUP
Material Standard
SC125 (PP)

FCA

-30%
HOLLOW GLASS MICROSPHERES

CHARACTERISTICS

LOW DENSITY, EQUAL TO LESS THAN 1/5 OF OTHER MINERAL FILLERS

LOW THERMAL CONDUCTIVITY, ALLOWING FOR LOWER TEMPERATURES AND FASTER COOLING TIMES

LOW ACOUSTIC TRANSMITTANCE, GIVES THE MATERIAL A SOUND DEADENING EFFECT

ISOTROPIC BEHAVIOUR, ENABLES DIMENSIONAL STABILITY OF THE MOULDED PARTS

DENSITY

Shape
Unicellular spheres made of borosilicate glass

Average diameter
20 microns

Density
0.46 g/cm³

Crush strength
115 MPa=16500 psi

Hardness (Mohs scale)
5

Softening temperature
600°C

Color
White

DENSITY AND STIFFNESS

The following charts show the density/tensile modulus ratio of different mineral fillers at different filler content percentage (variations vs unfilled grades).

DIMENSIONAL STABILITY

Due to their geometry, glass microspheres have an isotropic behaviour, i.e. they do not follow any preferential direction during injection moulding. This guarantees dimensional stability of the moulded pieces, avoiding warpage problems which are typical of other mineral fillers including talc and glass fiber.

LITEPOL® HB filled with Hollow Glass Microspheres only, provides a weight reduction ranging from 9% to 30% and improvement of stiffness (tensile modulus) from 13% to 79% depending on the polymer base and on the percentage of microspheres used in the compound.

LITEPOL® mixed grades HB+10%GF provide an excellent density/stiffness ratio: weight reduction ranges from 3% to 19% with improvement of the tensile modulus values from 60% to 179%.
For applications requiring both lightweight and impact resistance, LITEPOL® mixed grades filled with Hollow Microspheres and chemically bonded Glass Fiber are the most suitable, as they provide a weight reduction ranging from 3% to 19% and improved impact values from +20% to +218%, depending on the base polymer and on the percentage of filler used in the compound.

### MIXED HB/GF GRADES VS TALC FILLED GRADES

Mixed HB/GF LITEPOL® grades show excellent low density and mechanical performance compared to talc filled grades.

### COOLING

The hollow microspheres low heat capacity allows for a temperature reduction by about 1.1°C for each 1% of microspheres used in the compound.