

So.F.TER.

LITPEN0916



SO.F.TER. SPA
Headquarters
Via Mastro Giorgio 1
47122 Forlì, Italy
tel +39 0543 790411
fax +39 0543 473119
info.it@softergroup.com

SO.F.TER. DEUTSCHLAND GMBH
Weidacher Straße 26
70794 Filderstadt, Germany
tel +49 711 327000-0
fax +49 711 327000-10
info.de@softergroup.com



SO.F.TER. USA
400 Innovative Way
Lebanon, TN 37090, US
tel +1 844 657 6383 (THINKSOFTER)
info.us@softergroup.com

SO.F.TER. BRASIL
COMPOSTOS TERMOPLÁSTICOS LTDA
Av. Edgar Hoffmeister, 275
CEP 93700-000
Campo Bom, RS, Brazil
tel +55 51 2123 2610
fax +55 51 2123 2622
info.br@softergroup.com

SOCIEDAD FORLIVESA
TERMOPLÁSTICOS S.A. DE C.V.
Circuito Mexiamora Norte N° 345
Puerto Interior, Silao, G.to
Mexico 36275
tel +52 472 722 6923
fax +52 472 103 4724
info.mx@softergroup.com

www.softergroup.com

LITEPOL®

Lightweight Engineering Plastics












So.F.TER.



LITEPOL® is a new family of extra light engineering plastics based on Polypropylene or Polyamide and filled with Hollow Glass Microspheres¹.

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%
-  **REDUCTION OF COOLING TIMES**
-  **EXCELLENT DIMENSIONAL STABILITY**
-  **STIFFNESS FROM**
+13% TO +179%
-  **REDUCTION OF TEMPERATURE BY 1.1°C PER EACH 1% MICROSPHERES**
-  **EXCELLENT VERSATILITY AND CUSTOMIZATION POTENTIAL**
-  **MIXED HB/GF GRADES, IMPACT STRENGTH**
FROM +20% TO +218%
-  **REDUCTION OF CYCLE TIMES**
-  **TECHNICAL SUPPORT DURING INJECTION MOULDING INITIAL PHASE**

¹in short: HB Hollow Bubbles

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



European 2020 Target

95 g CO₂/km


Emissions limit for new vehicles Regulation (EC) 443/2009.

2000 plastic components, 225 kg



(on average, in a medium-sized 1500 kg vehicle)

- 100 kg



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

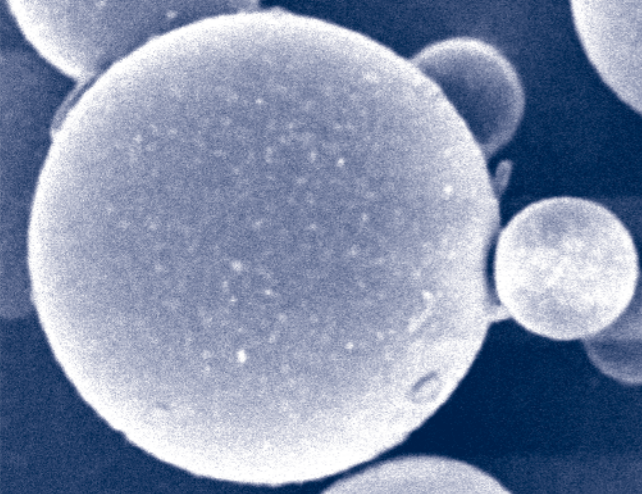
(*) estimated consumption: medium-sized car weight = 1,500 kg / lifespan = 150,000 km / fuel consumption = 12 km/l
Source: "Automotive. The world moves with plastics", PlasticsEurope Association of Plastics Manufacturers, 2013.



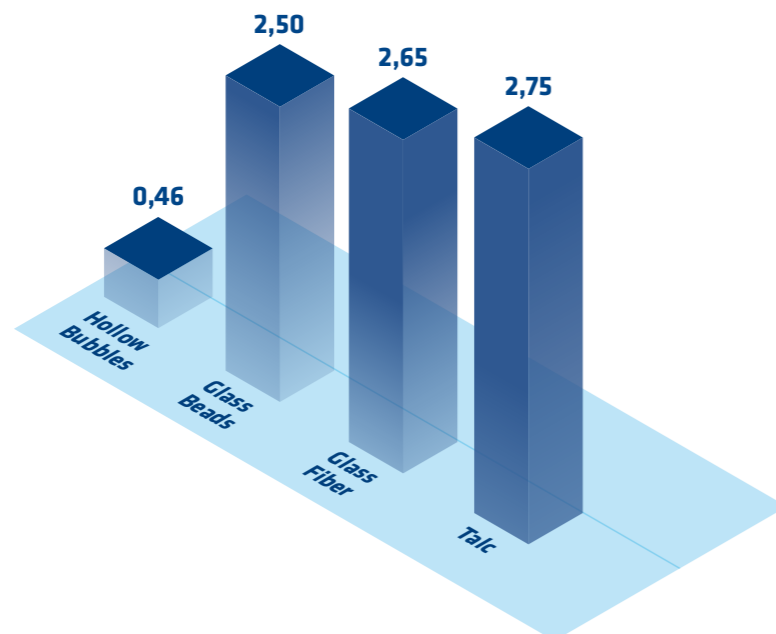
HOLLOW GLASS MICROSPHERES

CHARACTERISTICS

-  **LOW DENSITY**, EQUAL TO LESS THAN 1/5 OF OTHER MINERAL FILLERS
-  **LOW ACOUSTIC TRANSMITTANCE**, GIVES THE MATERIAL A SOUND DEADENING EFFECT
-  **LOW THERMAL CONDUCTIVITY**, ALLOWING FOR LOWER TEMPERATURES AND FASTER COOLING TIMES
-  **ISOTROPIC BEHAVIOUR**, ENABLES DIMENSIONAL STABILITY OF THE MOULDED PARTS

	Shape	Unicellular spheres made of borosilicate glass
	Average diameter	20 microns
	Density	0.46 g/cm ³
	Crush strength	115 MPa=16500 psi
	Hardness (Mohs scale)	5
	Softening temperature	600°C
	Color	White

DENSITY

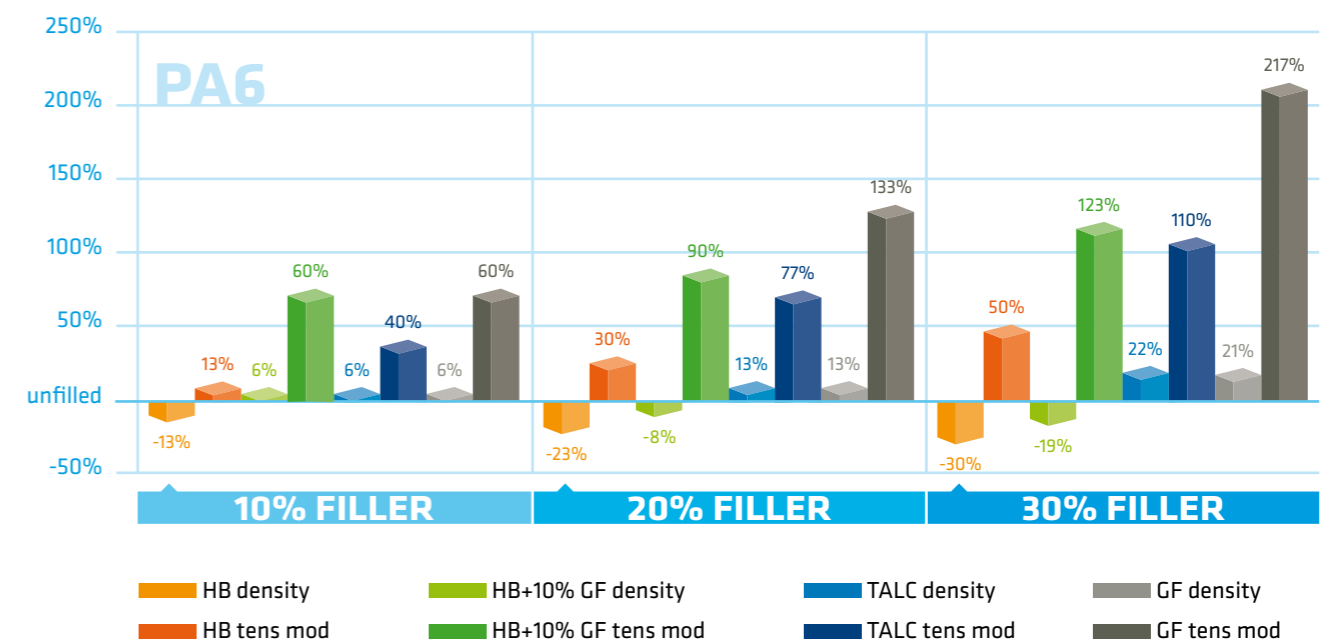
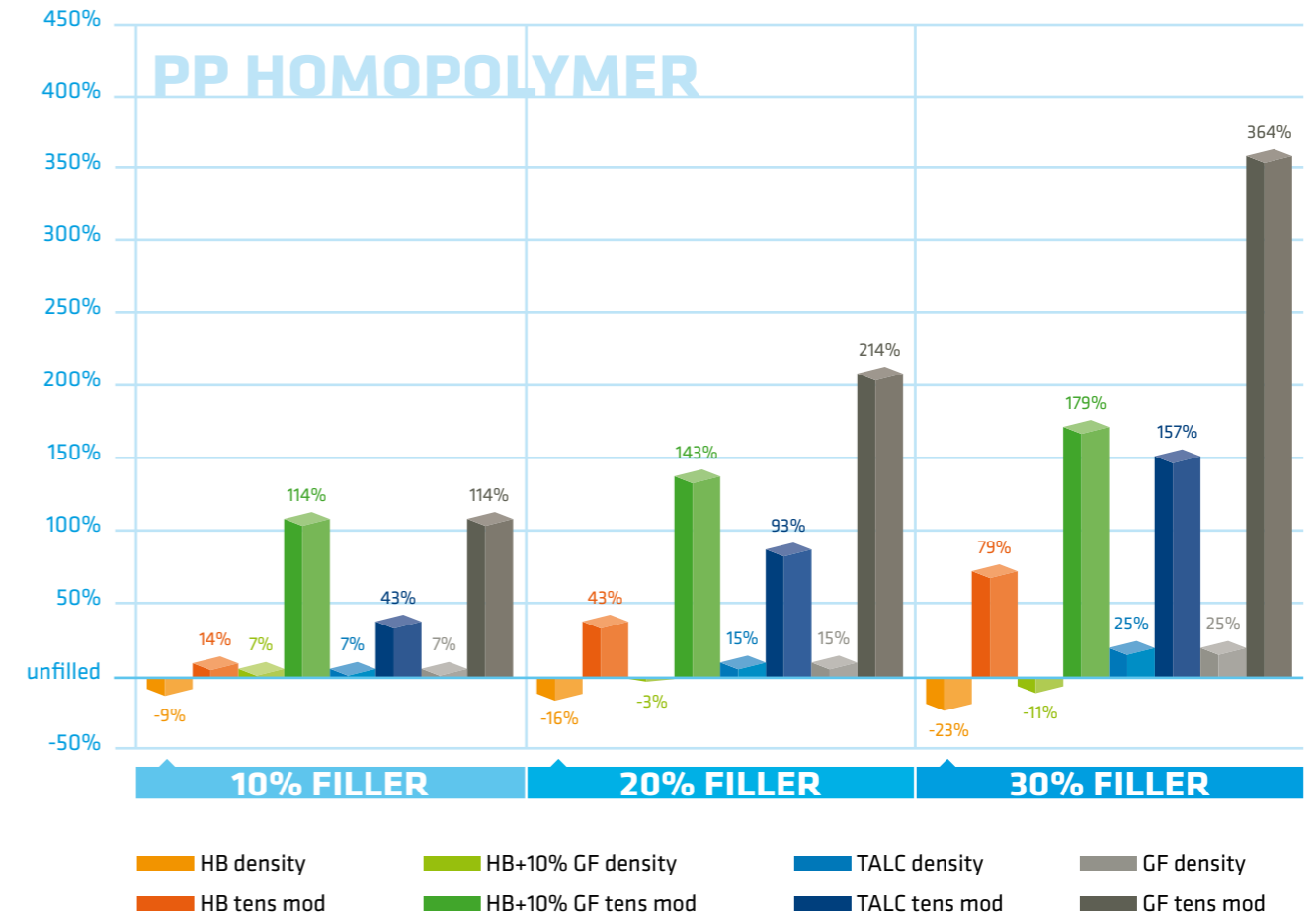


DIMENSIONAL STABILITY

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 **warp** problems which are typical of other mineral fillers including talc and glass fiber.

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).



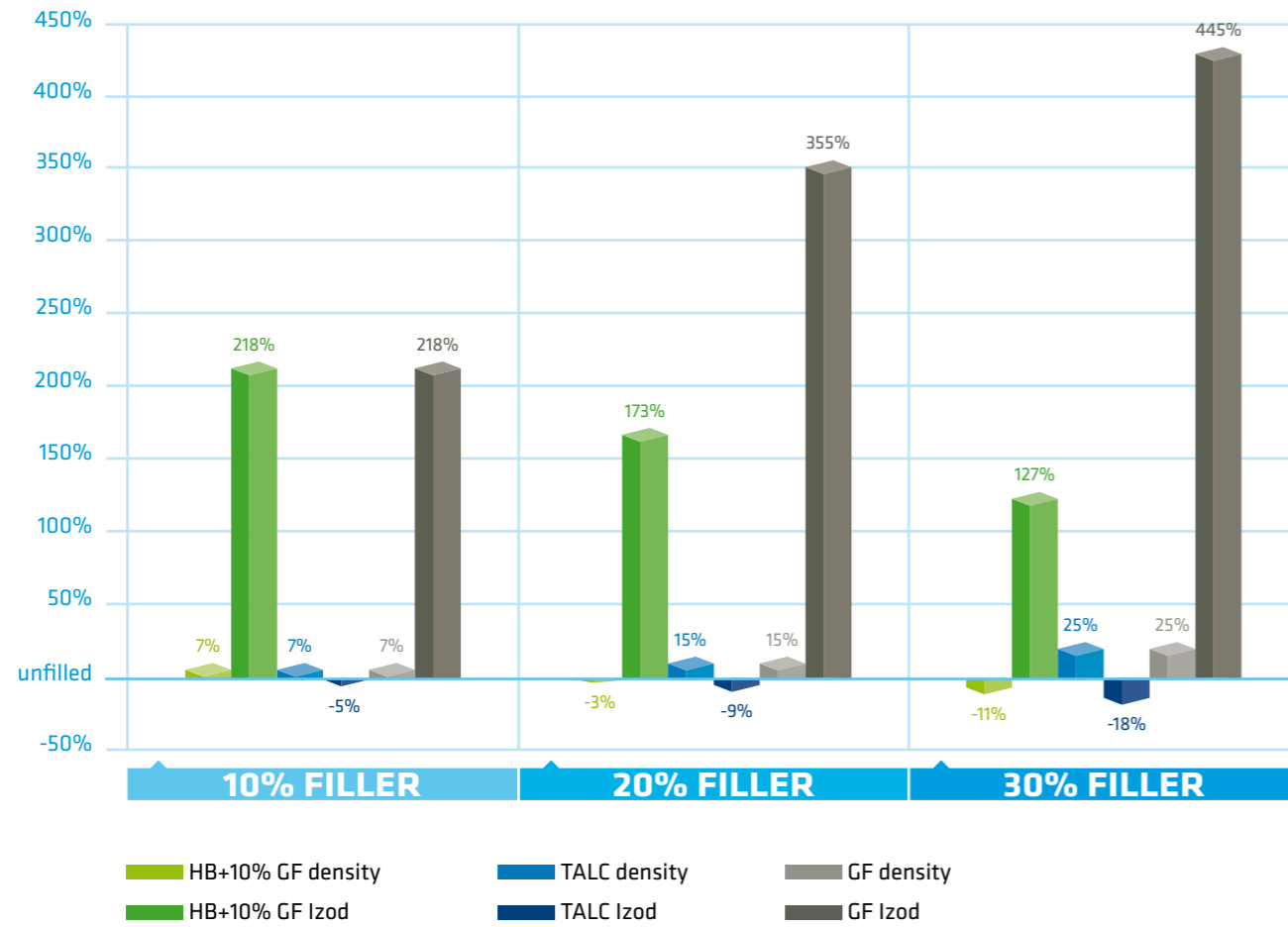
LITEPOL® HB filled with Hollow Glass Microspheres only, provides a **weight reduction** ranging from 9% to 30% and improvement of **stiffness** (tensile modulus) from 13% to 79% depending on the polymer base and on the percentage of microspheres used in the compound.

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%.

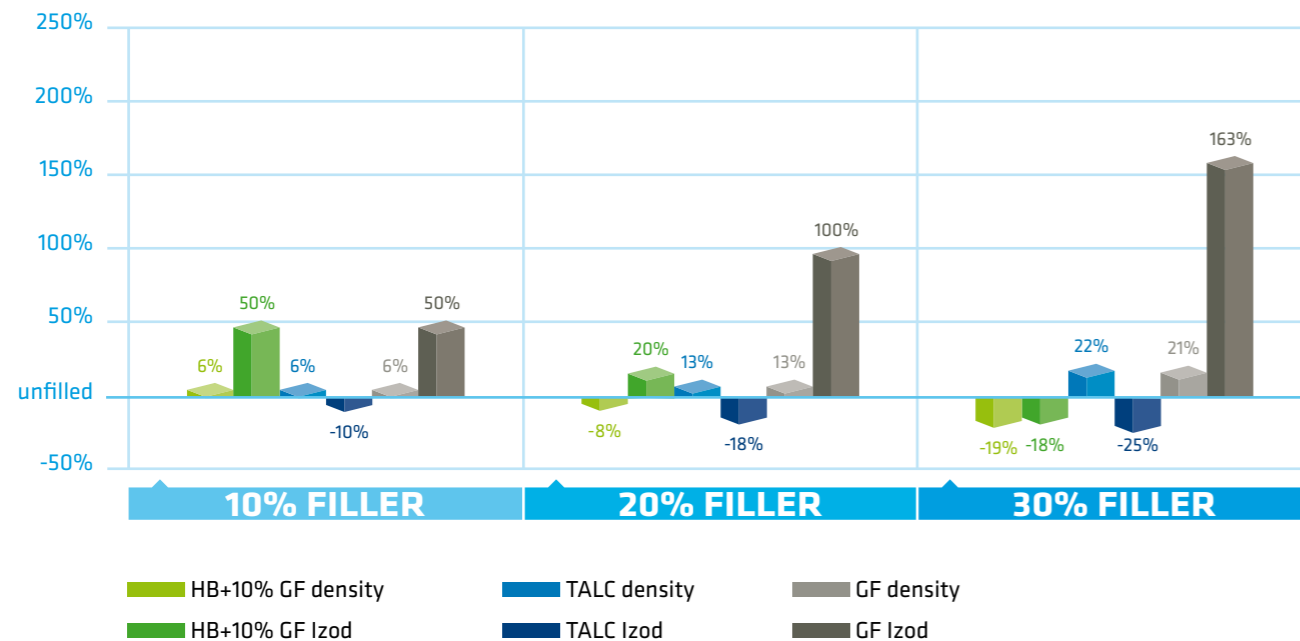
IMPACT PROPERTIES

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.

PP HOMOPOLYMER



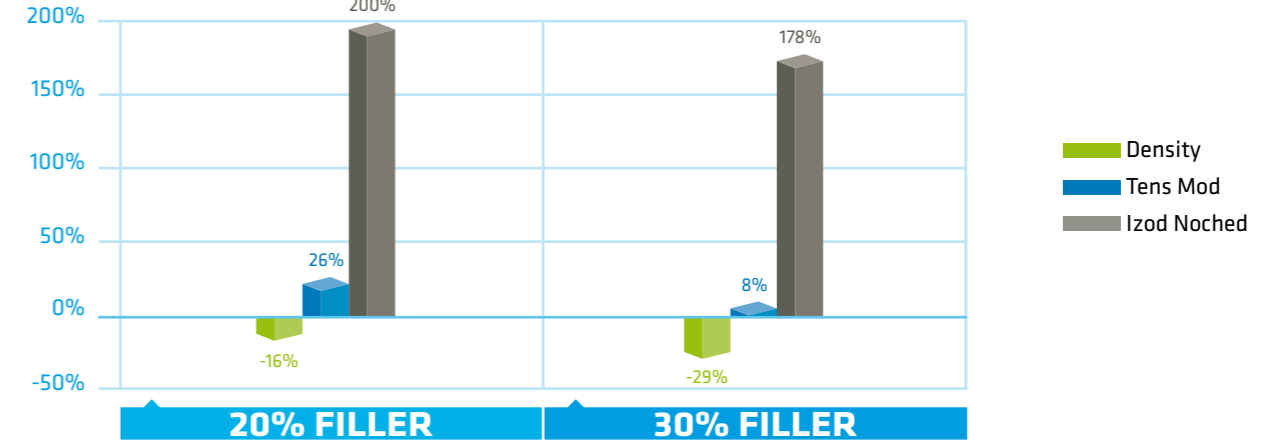
PA6



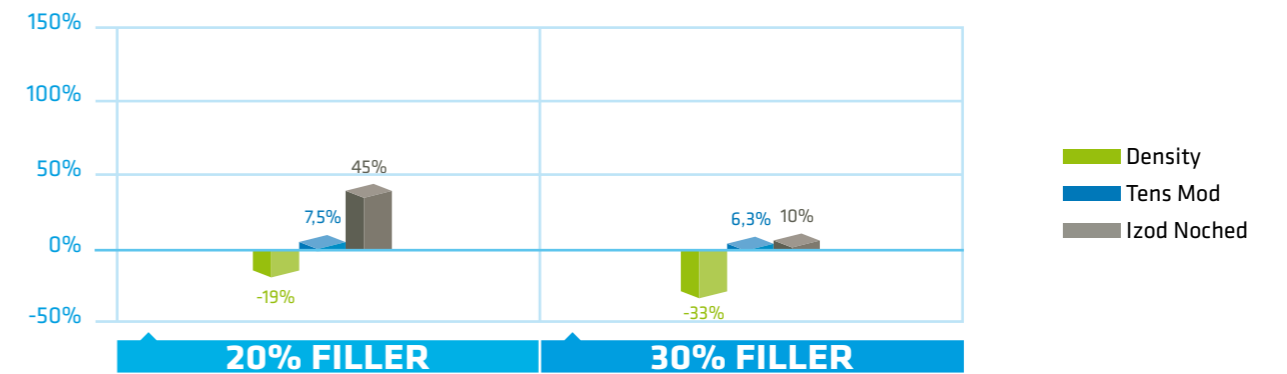
MIXED HB/GF GRADES VS TALC FILLED GRADES

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

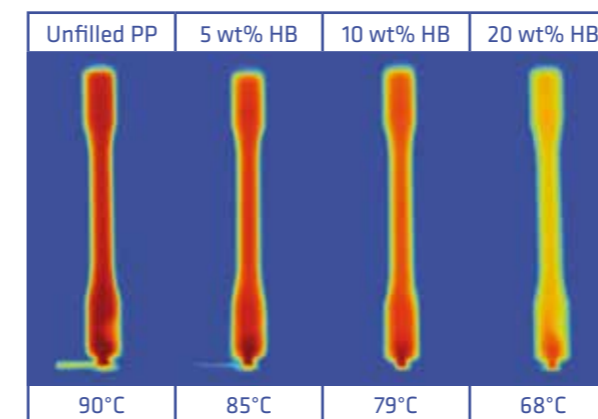
PP HB+10%GF VS PP TALC



PA6 HB+10%GF VS PA6 TALC



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.

Foto 3M.