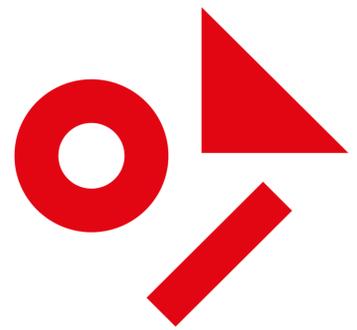


GLOXIL iM16k A in Polypropylene copolymer Glass bubbles combined with talc



Results

Objective:

Density / weight reduction and still good mechanical properties

PP Compound Copolymer Bormod™ BF970MO

Borealis

MFR 20 g/10 min (230 °C, 2.16 kg)

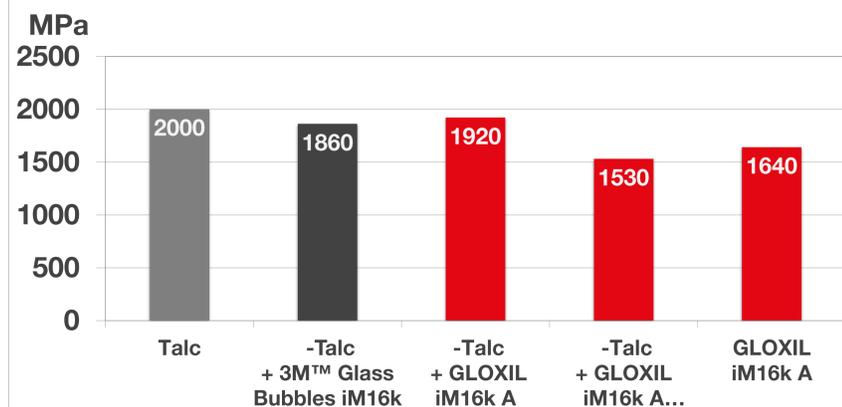
Talc	20 % (m/m) 7 % (v/v)	10 % (m/m) 3 % (v/v)	10 % (m/m) 3 % (v/v)	10 % (m/m) 3 % (v/v)	---
Fusabond P 613 PP-g-MAH, 0.5 to 1 % MAH, Dow	---	6 % (m/m) 6 % (v/v)	6 % (m/m) 6 % (v/v)	6 % (m/m) 6 % (v/v)	5 % (m/m) 4 % (v/v)
3M™ Glass Bubbles iM16k	---	5 % (m/m) 10 % (v/v)	---	---	---
GLOXIL iM16k A	---	---	5 % (m/m) 10 % (v/v)	5 % (m/m) 10 % (v/v)	10 % (m/m) 18 % (v/v)
Infuse™ 9000 Olefin Block Copolymer	---	---	---	10 % (m/m) 10 % (v/v)	---
Total	100			100	100

Data determined by 3M Advanced Materials Division, Special Additives Laboratory

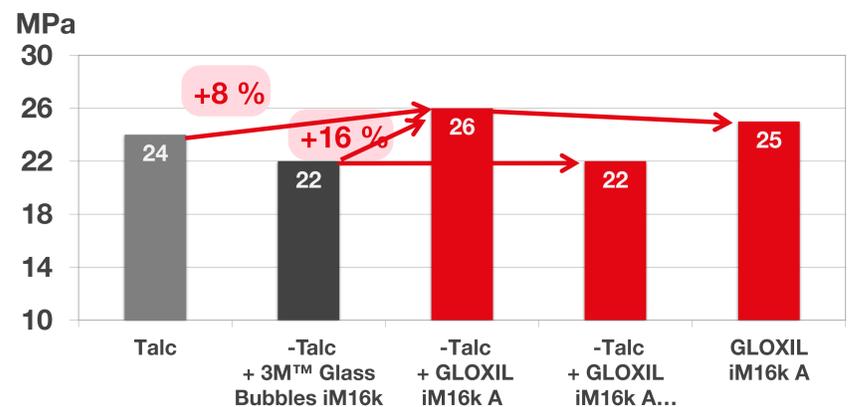
Density and Weight Reduction (measured)



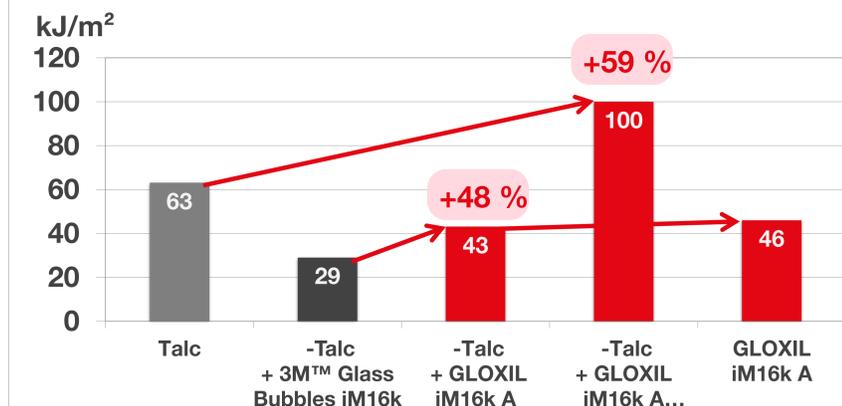
Tensile Modulus



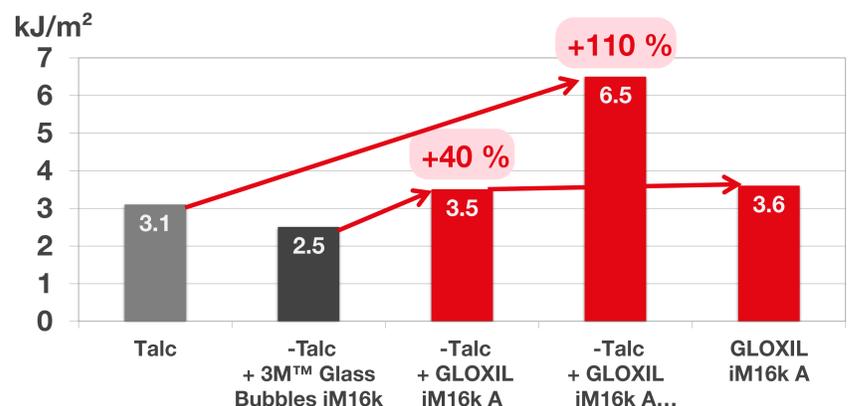
Yield Stress



Impact Strength Charpy



Notched Impact Strength Charpy



Summary

GLOXIL iM16k A shows as partial and full replacement of talc compared to PP Copo T 20 without hollow glass spheres:

- Full replacement: slightly lower stiffness
- Partial replacement: comparable stiffness
- + Reduced density / weight saving potential up to 21 %
- + Increase in yield stress (and thus potential for introduction of impact modifier)
- + Hardly any loss of yield stress despite impact modifier
- + Comparable yield stress at full replacement
- + Increase in impact strength, especially with addition of impact modifier
- + Increase in notched impact strength, especially with addition of impact modifier
- + Comparable notched impact strength at full replacement

➔ **Objective achieved: density / weight reduction and good mechanical properties**

- + Expectation: improved scratch resistance