

Hybrid Plastics®

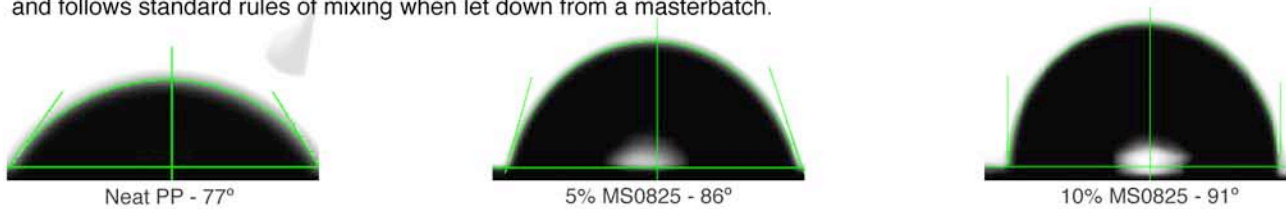
Superior Technology for Superior Products

MS0825 Nanoreinforced® Polypropylene

Nanoreinforced® polypropylene utilizes POSS® technology to achieve, increased hydrophobicity, lower coefficient of friction and improved processability through structural control at the nanometer level. These enhancements can be realized in any grade of PP and are controlled by the nanoscopic size and reliable dispersion of POSS® cages throughout the resin.

ENHANCED HYDROPHOBICITY

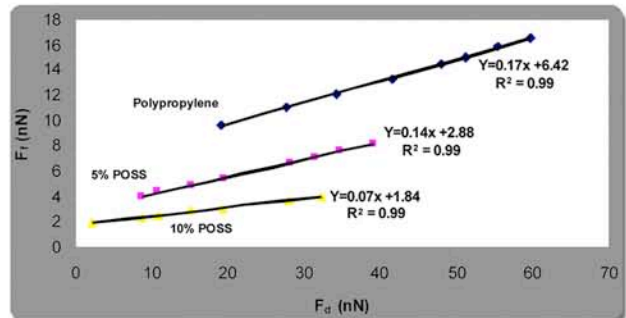
The hydrophobic properties of POSS® synergistically combines with PP morphology to create a nano-rough surface that is both hydrophobic and low friction. The technique is ideally suited to masterbatching. These water contact angle images demonstrate the differences for PP and Nanoreinforced® PP. Water contact angle increases with POSS® content, and follows standard rules of mixing when let down from a masterbatch.



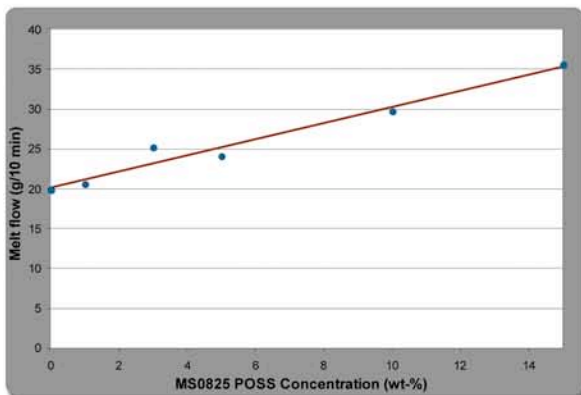
Water contact angle measurements of MS0825 polypropylene

LOWER FRICTION

A low friction surface results at the nanometer scale. A four times increase in surface roughness is caused by the POSS® cages. This effectively reduces the contacted surface area, leading to a significant decrease in coefficient of friction. Coefficient of friction (μ) decreases of 60% can be realized by incorporation of POSS® and can be controlled by the let down of a masterbatch. For example: PP $\mu = 0.17$, 5% POSS® PP $\mu = 0.14$, 10% POSS® PP $\mu = 0.07$ where Teflon $\mu = 0.03$



Coefficient of friction measurements



Melt flow index increases with POSS content

FASTER PROCESSING

A lubricity effect that is imparted by the POSS® and increases melt flow and decreases the screw torque required during compounding and during masterbatch let down.

POSS® is highly compatible with all polyolefin plastics, resulting in materials with an aesthetically pleasing appearance. Dynamic mechanical properties, crystallinity, and crystallization characteristics of the Nanoreinforced® MS0825 PP are maintained to that of the base PP resin grade.

WARRANTY

The information contained herein is believed to be accurate and reliable. However, the user is responsible for determining the suitability and use of the final formulations/products. Hybrid Plastics warrants that its products will meet specifications, but not merchantability or fitness for use.