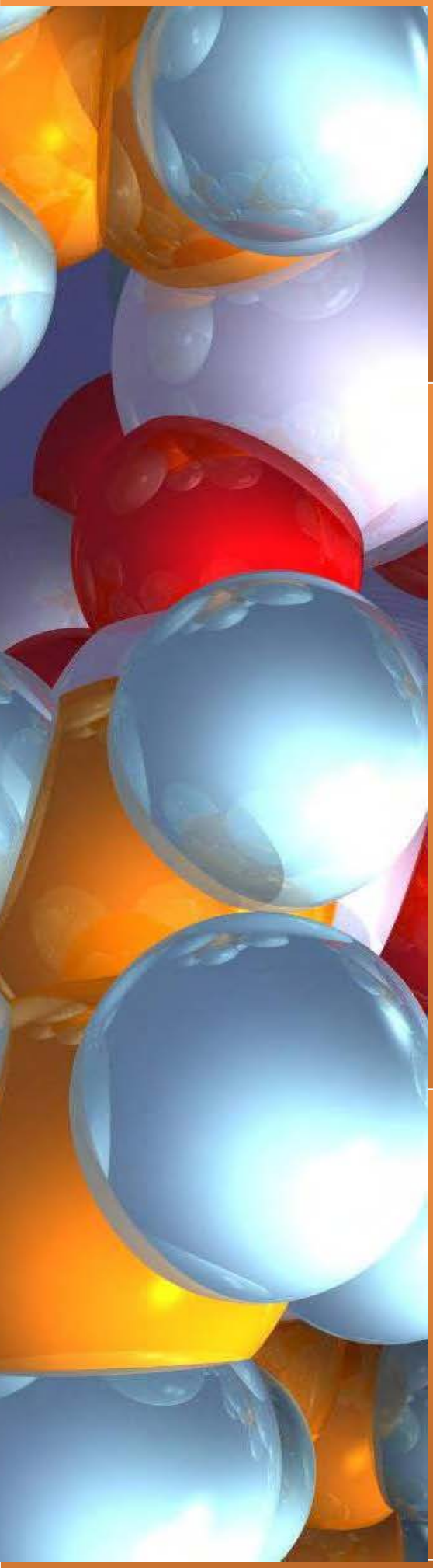
[Rev 1.01]



POSS® Flow Additives

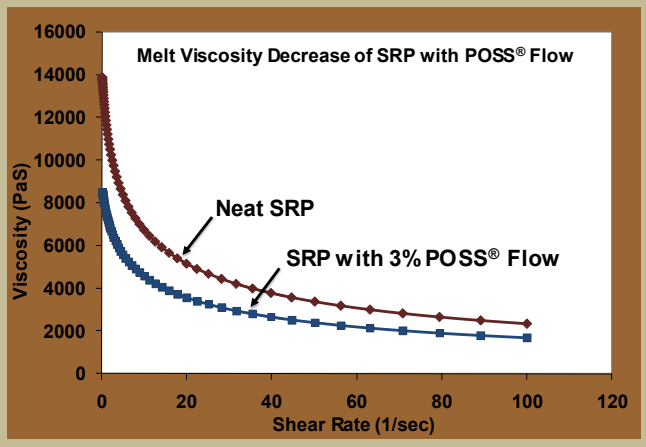
For Thermoplastics

POSS® Flow Processing Aids and Friction Reducers

- **Suitable for nearly all thermoplastic resins**
- **Thermally stable up to 400°C**
- **Improve molding of hard-to-process materials**
- **Reduce surface friction of molded parts**

POSS® Flow Processing Aids

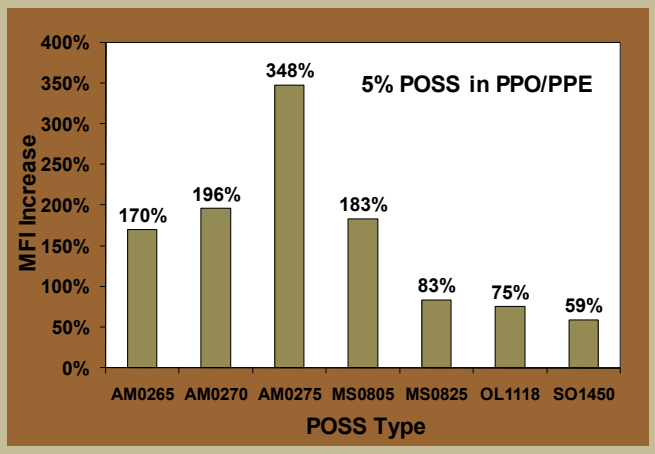
POSS® Nanostructured® Chemicals effectively increase the melt flow of virtually any thermoplastic resin and are thermally stable for use in even the highest temperature plastics. POSS® additives are non-abrasive, non-blooming and non-migrating. Unlike other nano-fillers, POSS molecularly dissolves into the resin and typically does not affect optical clarity or mechanical properties.

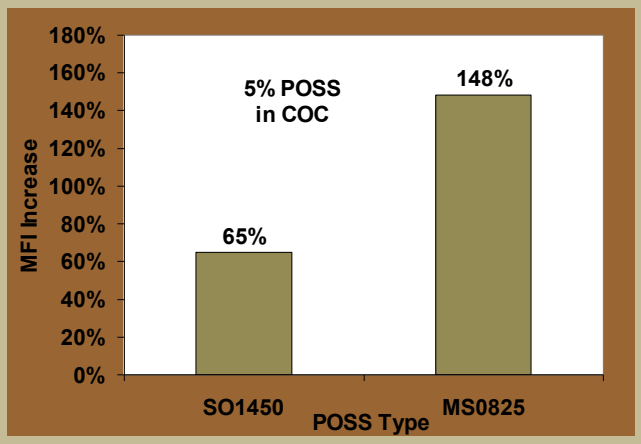


Self Reinforced Polyphenylene (SRP) This resin is the highest performance thermoplastic on the market today, but is also one of the most difficult to process. By the implementation of only 3% POSS® Flow, melt viscosity is decreased by 40%.

Polyamideimide (PAI) One of the highest temperature thermoplastics, POSS® Flow is able to increase the melt flow of PAI by 2 to 3 times and does not have a detrimental effect on the post curing process or mechanical properties.

Polyphenylene Oxide (PPO) Hard-to-process polymers like PPO typically require blending with other resins to achieve an injection moldable material, but mechanical properties are sacrificed and HDT is lowered. Pure PPO nanoreinforced with POSS® Flow shows an increased melt flow index of up to 350%. In addition, POSS® improves flame resistance, mechanical properties and HDT.

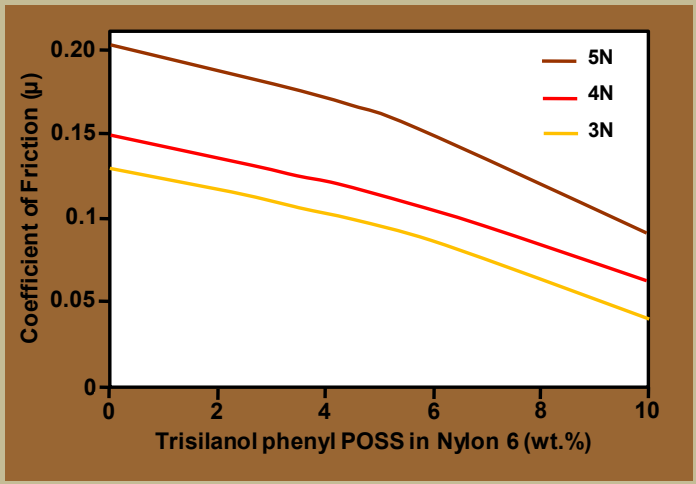




Cyclic Olefin Copolymer (COC) In order to injection mold thin-walled parts, POSS® technology was utilized in COC resin to improve flow, more than doubling the melt flow index, and acting as a mold release agent. All of this was achieved without sacrificing the excellent optical properties COC offers.

POSS® Flow Friction Reducers

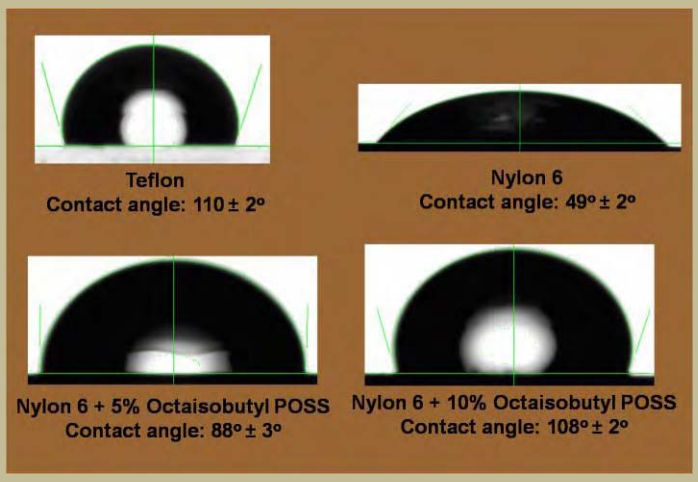
POSS® Flow technology achieves increased hydrophobicity and lower coefficient of friction through structural control at the nanometer level. These enhancements can be realized in most thermoplastic materials and are controlled by the nanoscopic size and reliable dispersion of POSS® cages throughout the resin.



Low Friction Surfaces

A four-fold 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, our POSS® Flow achieves the following results in polypropylene: PP μ = 0.13, 5% POSS® PP = μ 0.10, 10% POSS® Flow μ = 0.04, Teflon® μ = 0.03. Similar results can be obtained in polyamide (see diagram) and many other thermoplastics.

A Hydrophobic Surface is achieved by the same mechanism that lowers friction. Due to a combination of POSS's hydrophobicity and a Nanostructured® surface, water contact angles increase dramatically upon incorporation of POSS® Flow. Improved water run-off is the result. Fluoro POSS® provides surfaces that are ultrahydrophobic and ultra oleophobic.



Hybrid Plastics is one of the top 10 nanotechnology companies in the United States. It is a spin-off of the Air Force Research Laboratory at Edwards Air Force Base in California. POSS technology is the only major category of nanotechnology which remains controlled by one company. In 2005, the President of the United States designated POSS® technology to be in the strategic national interest of the United States.

The POSS® (Polyhedral Oligomeric Silsesquioxane) compounds are being hailed as the next big leap in plastics and molecular technology, and represent the first new class of chemical feedstocks to be developed in 50 years. They are affordable and cost competitive, and represent an entirely new, recyclable polymer feedstock - one that *marries the beneficial properties of plastics (processability and toughness) with those of ceramics (hardness and stability*). Significantly, POSS® based technology allows substantial redirection to more innocuous and abundant natural resources. *Silicates and sand are the equivalent of crude oil for POSS® Nanostructured® materials.* Finally, the POSS® technology can be incorporated directly into existing formulations without modifying manufacturing processes. The result is immediate turn-key applicability and usability.

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