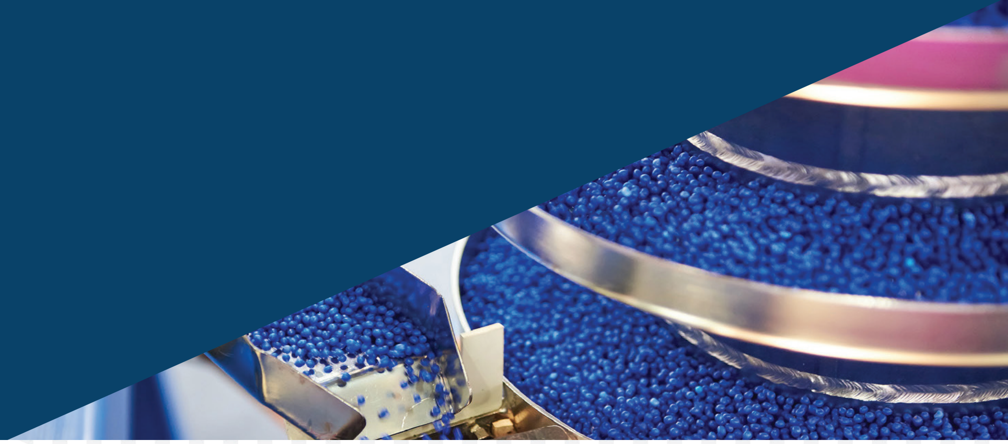


MAGRIStalc

Engineered Nucleation Solutions

- Optimized performance in polyolefins, especially polypropylene
- Enhanced rigidity and impact resistance
- Up to 15% increased injection molding and extrusion output
- Excellent dispersibility

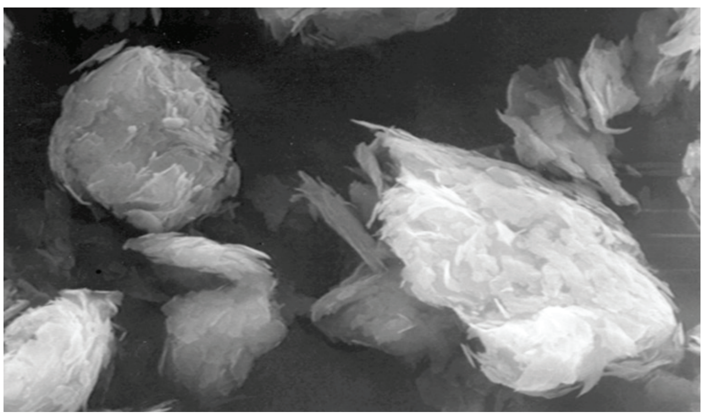
Introduction

Magris JetWhite® acts as an outstanding nucleating agent for polymers. When used in a variety of plastic resin systems like polypropylene (PP), linear polyethylene (PE), and polyamides, low levels of JetWhite® outperform other minerals through their ability to increase crystallization temperatures providing for improved flexural modulus, higher heat deflection temperatures and improved impact performance. While benefits can also be observed in PE and Polyamides, the scope of this document is on JetWhite® used in PP compounds.

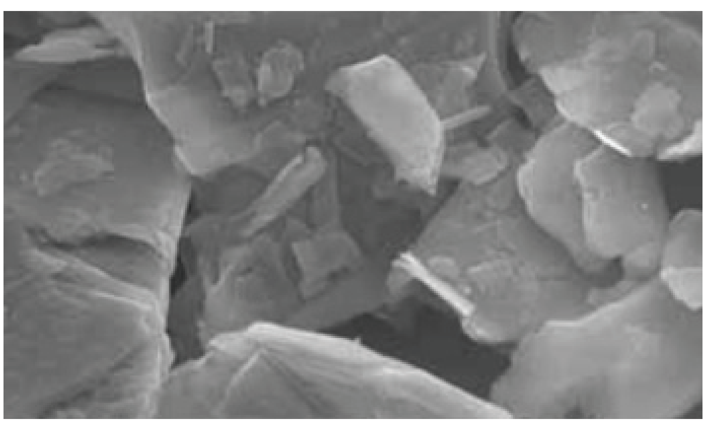
JetWhite®

JetWhite® is a high brightness, micro-lamellar talc that is suited for a variety of nucleation applications. PP nucleated with JetWhite® cools faster during processing improving efficiency by reducing injection molding cycle times and increasing extrusion processing outputs.

The resulting productivity gains translate into significant cost savings for plastics manufacturers.



JetWhtie® micro-lamellar talc (SEM at X2,000) with a high specific surface area showing a higher number of nuclei centers.



Conventional lamellar talc (SEM X2,000)

Polypropylene Nucleation

Polyolefins (PO) and specifically Polypropylene (PP) have become the materials of choice for injected and extruded plastics parts.

Recent progress in polymerization technology has resulted in a vast spectrum of PP grades, ranging from rigid, highly isotactic products to soft and highly ductile thermoplastic olefin (TPO) grades. The apparent rigidity of PP is influenced by its molecular weight and weight distribution, as well as its polymer chain structure, which has an impact on the level of crystallinity. As a semi-crystalline resin, PP will only crystallize up to a certain level. Talc modifies PP morphology during crystallization by increasing the number and type of nuclei formed during the polymer melt. Used as a nucleating agent, talc influences the way and the speed at which the resin crystallizes, significantly improving mechanical performance in terms of rigidity, impact resistance, and heat deflection temperature. For maximum performance at a superior cost position, we recommend Magris JetWhite® nucleation products. Adding 0.5-5.5% to your polypropylene allows for the best cost/performance ratio.

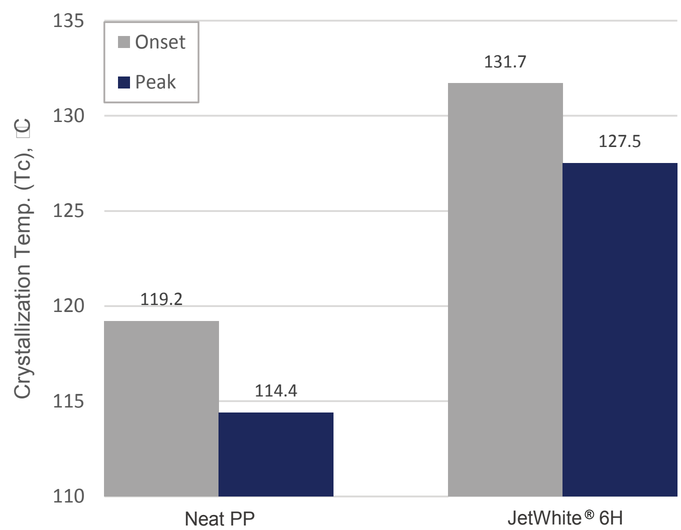


Fig. 1 - Onset and peak Crystallization Temperature (Tc) for the PP copolymer tested with and without the addition of 20 wt% JetWhite®

Highlighted Products

Product	Median Diameter (D50)	Top Size Hegman	Y Brightness	Compacted, Treated, Powder
JetWhite® 1H/HC	1.1	7.5 (~6.25 microns)	90	P/C
Cimpact® 699	1.5	7.0 (~12.5 microns)	88	P
Nicron® 665	1.2	6.5 (~18.75 microns)	87*	P
JetWhite® 6H/HC	2.4	6.0 (~25.0 microns)	91	P/C
Mistron® ZSC	2	6.0 (~25.0 microns)	87*	P,T
MistroFoam™	2.2	5.5 (~31.5 microns)	82	P,T
Mistron® Vapor RE	2.2	5.5 (~31.5 microns)	80	P
Mistron® Vapor	3.5	5.0 (~37.5 microns)	87	P

*Brightness measurements in GEB

Talc Nucleating Agents Enhance Mechanical Properties

Certain chemical substances such as organic acid metal salts are also commonly used as nucleating additives. Typically, such substances require low incorporation rates in order to fully nucleate a resin matrix but, beyond that, they do not provide additional reinforcement. Although only small amounts of these additives are used, they are expensive, inflating formulations costs. The measurement of mechanical properties during PP nucleation shows an increase in flexural modulus, flexural strength and HDT (Figures 2-4). It also shows that notched Izod impact (Figure 5) improves at the nucleation loadings compared to neat PP in talc containing systems. The increase detected in Izod impact implies enhanced nucleation forming finer crystalline structure that could increase the Izod impact resistance.

Fig. 2 Flexural Modulus

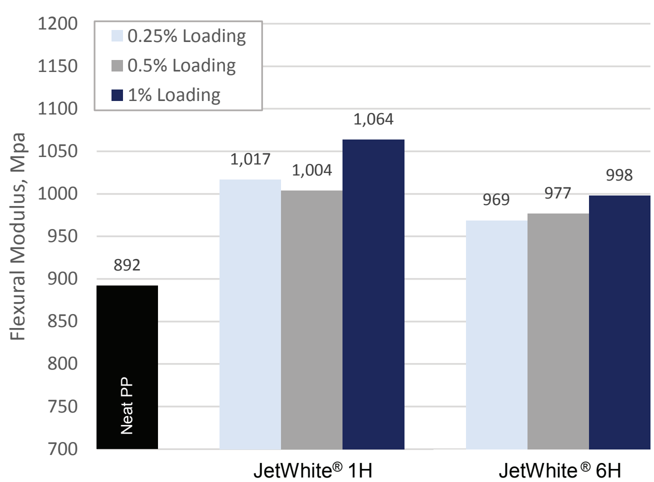


Fig. 3 Flexural Strength

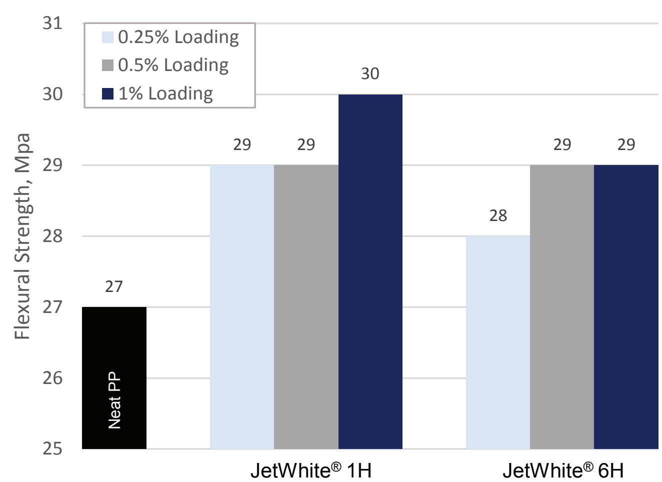


Fig. 4 HDT

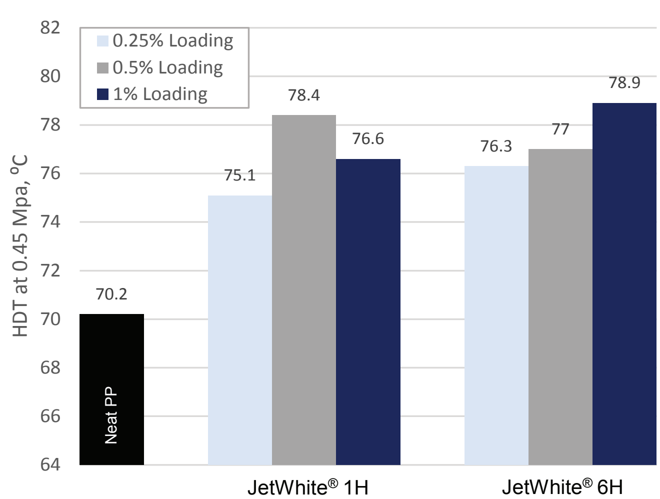
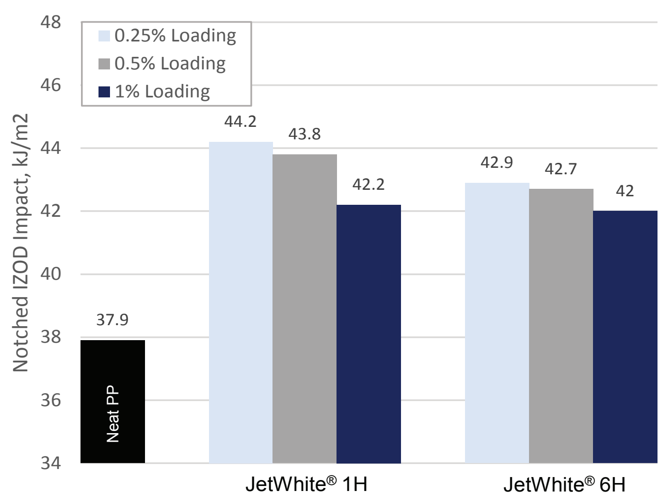


Fig. 5 Notched Izod Impact



Conclusion

JetWhite® is a micro-lamellar, very bright, cost effective and highly efficient talc grade for nucleation. It can be incorporated at rates as low as 0.5% for the complete nucleation of PP homopolymers and copolymers. At concentrations of up to 5.5%. JetWhite® has a reinforcement effect which increases linearly with the addition rate without compromising impact resistance. JetWhite® demonstrates excellent mixing behavior in resin and additive powder blending, and disperses well in industrial granulation equipment. When used as a nucleation additive in injection molding and extrusion applications JetWhite® can increase production machine output by 10-15% resulting in significant cost savings. JetWhite® is available in compacted form for easy handling, less dust and improved productivity.

About Magris Talc

Magris Talc is one of the world's leading talc producers, supplying around 15 percent of world demand from our mines and processing plants in Canada and the United States. We are the acknowledged leaders in product quality, supply reliability and technical support – the services that create value for our customers and set us apart from competitors. With over a hundred years' experience in the extraction and processing of talc, we offer the highest quality talc products on the market today.

About Talc

Talc is a surprisingly versatile, functional mineral which possesses a unique combination of properties. Talc is soft, water repellent, chemically inert and highly platy and has oleophilic properties. Our industry experts have harnessed these properties to bring customers improved performance in a wide range of applications such as paper, paints, plastics, rubber, ceramics, agriculture, food and pharmaceuticals.

Meeting Today's Needs. Securing Tomorrow's.

We believe that running a successful business and sustaining quality of life and the environment go hand in hand. From implementing behavior-based safety training to rehabilitating the land, we think it's important that future generations' needs are not compromised by our actions today.

Our Fundamental Sustainability Principles are:

Safety – We promote the health and safety of employees, contractors, customers, neighbors and consumers through active caring.

Partnership – We seek to understand the issues that are important to our neighbors, and to make a lasting contribution to the communities in which we operate.

Environmental Protection – We work to minimize our environmental footprint by using natural resources efficiently, preventing pollution, complying with applicable laws and regulations and continually improving our performance.

Accountability – We conduct business in an accountable and transparent manner, relying on external auditing and reporting to understand and reflect our stakeholders' interests.

Magris Talc
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Magris Talc_Brochure_Engineered Nucleation_2025