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Boost quality and reduce cost of nonwovens filler masterbatch

Key advantages

- Reduced formulation costs by up to 10%
- Up to 2% boost in loading capability
- Better absorption of calcium carbonate in pelletization phase
- Higher quality nonwoven end product

Shanghai Jinchun Plastics & Elastomers Co., Ltd is using Vistamaxx™ performance polymers to transform the performance of its filler masterbatch. Adding Vistamaxx polymers to the masterbatch raises calcium carbonate loading capability and reduces manufacturing costs. When the masterbatch is used for nonwovens, it delivers products with a smoother surface, compared to a masterbatch in which Vistamaxx polymers are not used. It also boosts tensile strength in the final product.

Jinchun, established in 2003, is a leading Chinese producer of modified plastics. The company's products include colour, functional and filler masterbatch.

By adding 4% by weight of Vistamaxx 6202 to its filler masterbatch, Jinchun reduced it's production costs. This has been achieved because the amount of calcium carbonate used in the formulation can be increased. In fact, adding Vistamaxx performance polymers to the mix has helped the company to reduce production costs for filler masterbatch by almost 10%.

Differentiated offering

Jinchun focuses on masterbatch for high performance products that can be produced cost-effectively, while helping to improve end product quality. The company now produces 80-100 tonnes of high-quality fillers every month. The majority is meant for nonwovens products such as medical protective suits and masks, and diapers.

Masterbatch innovation

Filler masterbatch must deliver the highest possible amount of calcium carbonate into a formulation. But, this can be a challenge, as high loadings of more than 80% make pelletization difficult and can generate dust.

At the same time, nonwovens made using these products often have a rough surface and tensile strength can be compromised.

Looking for an innovative solution, Jinchun incorporated Vistamaxx™ 6202 performance polymer into its filler masterbatch formulations to overcome these problems.

The company found the following improvements compared to its masterbatch products in which Vistamaxx polymers are not used:

- lower production costs
- increased calcium carbonate loading
- easier pelletization and cleaner manufacturing environment
- end-product benefits

Lowering costs

By adding 4% by weight of Vistamaxx 6202 to the formulation, the cost of the masterbatch can be lowered by as much as 10%. This is because Vistamaxx performance polymers allow the calcium carbonate content to be increased from 80 to 85% in the new formulation.

Cleaner manufacturing environment

The ability of Vistamaxx polymers to absorb more filler also creates a cleaner manufacturing environment, as less calcium carbonate dust is generated during the operation. This also made product pelletization easier.

End-product benefits

The higher loading has specific effects on the end product. The tensile strength of nonwovens is raised by up to 8%, while elongation at break also increased. The end products were also softer and smoother, with a cotton-like or polyester fiber product feel.

"There were several benefits to working with ExxonMobil Chemical", said Mr Zhang Penglong, general manager, Shanghai Jinchun Plastics & Elastomers Co., Ltd. "These include access to specialty elastomers with cost efficiency, a comprehensive raw material guide for different applications, and technical consulting and support services for our product development needs."

Vistamaxx performance polymers also meet various food law compliance standards from the US, EU and China. This makes them well-suited for use in high-end nonwoven applications.

Mr Zhang Penglong, general manager,
Shanghai Jinchun Plastics & Elastomers Co., Ltd.

	Tensile Strength at Break (N)	Elongation (mm)	Elongation at Break (%)	Time (s)
PP (Secco 2040)	48.41	60.8	81.0	9.2
Add 30% filler masterbatch (without Vistamaxx)	31.12	51.40	71.8	7.6
Add 30% filler masterbatch (with 4% Vistamaxx™)	**39.89**	**76.20**	**98.6**	**8.4**

Benefits for nonwoven end-users using Vistamaxx polymers-based masterbatch include increased tensile strength and elongation at break

All data used and referred to in this case study has been sourced and provided by Shanghai Jinchun Plastics & Elastomers Co., Ltd.

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