

Milliken's Millad® NX8000 clarifying agent opens up a world of opportunity for highly transparent injection-blow moulded PP containers

A largely untapped market for very clear thick-walled bottles and jars could open up as the result of a cooperative project involving Milliken Chemical, market leader for clarifying agents for polypropylene, and precision blow mould maker ADOP France.

The project has demonstrated that Milliken's breakthrough product Millad NX8000, introduced at the K 2007 plastics exhibition for extrusion-blow and injection moulding in polypropylene (PP), is also ideally suited to injection-blow moulding technology. Millad NX8000 provides at least 50% better improvement in the clarity of PP than the current benchmark grade in the market, enabling a growing number of processors to take advantage of the polymer's performance and cost advantages.

Polypropylene is already appreciated for its low cost, low density, its excellent stiffness/toughness balance, and its thermal and chemical resistance, as well as its optimal organoleptic properties. There are no issues surrounding its use in food-contact applications. The polymer is also very well suited to production of squeezable containers. Furthermore, polypropylene is the ideal packaging material from an environmental point of view, since the entire process chain is low on consumption of raw materials and energy.

Millad NX8000 clarifying agent raises the clarity of polypropylene to virtually the same level as more expensive solutions. A 2-mm-thick test plaque in a random PP has a haze level of around 7% when processed in optimal conditions, while in a 1-mm plaque the level is around 2%, which is only marginally above that of several more expensive plastics. Haze values are around half those obtainable with the previous top-performing PP clarifier.

ADOP France approached Milliken during K 2007 with the idea of fine-tuning the injection-blow moulding process technology for the use of PP containing Millad NX8000. Around 80% of ADOP's moulds are for injection-blow moulding, and it has customers all over the world. In the months after the show, the two companies carried out numerous trials using the additive in various types of random copolymer and homopolymer PP, including metallocene grades.

Injection-blow moulding technology is ideal for the production of small containers with high-surface quality and precision neck finishes. It delivers parts that exactly replicate the mould surface, and so can yield optimal clarity and gloss, thus maximizing the benefits of clarifying agents.

"There are a lot of clarified PP's on the market," says Hervé Desjonquères General Manager at ADOP France, "but polypropylene with Millad NX8000 produces the best results I have ever seen." He says that with the right mould and machine control, PP with the new clarifier produces excellent results in personal care packaging with wall thicknesses up to around 1.2 mm. He also says that it is possible to obtain high clarity even in containers with thick walls – something that is generally difficult to do with rival materials such as PET. This opens up opportunities for PP in jars for cosmetics, pharmaceuticals, baby bottles and other high-value products.

"Injection-blow moulding is a highly under-valued technology, it is like a hidden jewel that is only now being fully discovered," says Bernard Vermeersch, senior development engineer with Milliken Chemical. In recent months, several producers of extrusion-blow moulding equipment have

introduced new injection-blow moulding machine models, he notes. “In the past, the technology has struggled to yield containers with glass like appearance because it failed to provide the necessary clarity in the thicker parts of the container, but PP clarified with Millad NX8000 could change all that.”

Millad NX8000 is in fact already in use in several applications. A North American producer of a PP drinks bottle with a 2-mm wall thickness and intended for outdoor activities, for example, claims benefits in sustainability over alternative clear plastics. The bottles are up to 25% lighter and more durable than most alternatives. Several other customers are currently carrying out evaluations for diverse uses.

Most injection-blow moulding equipment is designed for processing polyolefins, so processors already using the technology can use polypropylene containing Millad NX8000 without having to make any major hardware modifications. One important advantage over competing materials is that PP does not need to be pre-dried before processing.

Milliken Chemical’s Millad clarifying agents are mostly supplied directly to polypropylene producers, who offer specific high-clarity compounds. Grades of PP containing Millad NX8000 are now being introduced onto the market by several suppliers. Extrusion-blow moulding grades are equally suitable for processing by injection-blow moulding.

About ADOP France and ADOP Group

Founded in 1970 and based in Arques la Bataille in northern France, ADOP Group is a mouldmaker for the global packaging industry. With two main divisions, one making moulds for glass containers (METRA) and the other (ADOP France) making moulds for all blowing technologies for producing plastics containers (extrusion-blow, injection-blow, injection-stretch-blow), the ADOP Group services processors all around the world (50-60% of turnover is from sales outside France).

ADOP France is a fully integrated mouldmaker, having its own R&D department and sampling facilities, as well as a design and drawing office. Never competing with its customers, ADOP France is proud of the innovative and technical support it provides them, which derives in part from close relationships with complementary technology supplies such as Milliken Chemical.

For more information about ADOP France, please visit www.adopfrance.fr

For further information contact:

ADOP France, rue Gabrielle d’Estrées, BP 14 , 76880 Arques la Bataille, France
Tel : (33) 235 855 334 Fax : (33) 235 855 787

ADOP herve.desjonquieres@adopfrance.fr
METRA stephane.franconville@metra-verre.fr