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

**Gent, Belgium – 26 November, 2009** – The market for very clear thick-walled bottles and jars that has remained largely untapped by polypropylene is now opening up as the result of a cooperative project between 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 for injection-blow moulding technology. Millad NX8000 has been shown to provide at least a 50% improvement in the haze of PP over the current benchmark grade, enabling a growing number of processors to take advantage of the polymer's performance and cost advantages.

Polypropylene is already the preferred choice for many packaging applications, due to the clarity that can be achieved with Milliken's clarifiers, and because of PP's cost effectiveness, low density, excellent stiffness/Impact balance, and thermal and chemical resistance. Its excellent taste and odour properties have furthermore enabled it to be used in a wide range of food-contact applications. The polymer is also very well suited for squeezable containers. From a sustainability point of view, life cycle analysis shows that the environmental footprint of polypropylene is very favourable relative to other clear packaging options.

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

Milliken's new clarifier has food-contact approval from both the Food and Drug Administration (FDA) in the US and the European Food Safety Authority (EFSA) in Europe.

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 this new clarifier produces excellent results in personal care packaging having 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 is now changing all that.”

Millad NX8000 is in fact already in use in several applications. A producer of a PP drinks bottle with a 2-mm wall thickness, 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 applications.

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 usually supplied directly to polypropylene producers, who offer specific high-clarity compounds. Grades of PP containing Millad NX8000 are now being introduced into 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 (METRA) making moulds for glass

containers and the other (ADOP France) making moulds for 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.

For more information about ADOP France, please visit [www.adopfrance.fr](http://www.adopfrance.fr).

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### **About Milliken & Company**

A leading international corporation, Milliken is a privately-held, technology-based company serving textile, chemical, and floor covering markets, and is dedicated to building a strong culture of integrity, innovation, and excellence.

### **About Milliken Chemical**

Milliken Chemical, a division of Milliken & Company, specializes in developing and producing additives and colorants for the global plastics and household care industries. Milliken Chemical has application and development centers around the world dedicated to customer support.

For more information about Milliken Chemical's polymeric pigments and colorants, please visit [www.millikenchemical.com](http://www.millikenchemical.com).

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