



Beauty of Sustainable Clarified PP is More than Skin Deep

Polypropylene is an ideal answer to the challenges of improving the environmental responsibility of plastic packaging. Its low density helps reduce the amount of material needed, as well as overall packaging weight, which cuts fuel usage during shipping. It also has a low carbon footprint, thanks to fewer emissions released during manufacture. Perhaps most significant, polypropylene is easily recycled in existing waste management systems, allowing the material to be reused indefinitely. Plus, it does not exhibit undesirable side effects during recycling, such as crosslinking and forming a gel, or off-gassing.

However, while a plastic's environmental advantages are increasingly important today, they are only a part of the criteria for a winning material. To differentiate their products and appeal to consumers while controlling costs, manufacturers still need containers and packaging that are beautiful, distinctive and cost-effective.

Although its environmental credentials were impeccable, polypropylene did not measure up in the aesthetic department. As a semicrystalline material with natural haze, it simply was not sufficiently transparent to replace less-sustainable clear plastics, such as polyethylene terephthalate (PET) and polycarbonate (PC), or glass. Adding color tended to reduce clarity even further, limiting design options.

Expanding the Possibilities

Enter Millad[®] NX8000 clarifier from Milliken Chemical. This breakthrough technology reduces haze in polypropylene by 50 percent or more compared with less-advanced clarifiers. Polypropylene clarified with Millad NX8000 offers beauty and elegance as well as environmental benefits – plus easy processing and high performance. Packaging manufacturers now can replace more expensive and less sustainable materials with clear, low-density, easily recycled polypropylene.

But Milliken didn't stop there. The company offers two other innovations that enhance polypropylene even further. The first is ClearTint[®] colorant technology, which adds dramatic effects and brilliant, rich color without impacting the exceptional clarity provided by Millad NX8000. ClearTint colorants are oligomeric coloring materials that combine the exceptional aesthetics of dyes with the migration resistance of pigments. They give designers a wealth of new possibilities for adding glamour and drama to clarified polypropylene containers and packaging.

The second innovation is Hyperform[®] nucleating agents, which make polypropylene easier to recycle and encourage sustainability efforts. Hyperform nucleating agents overcome variables in the waste stream, such as colorants and nucleators in mixed batches of polypropylene, which can cause processing issues including shrinkage and warpage. Added at any time in the compounding process, Hyperform nucleating agents enhance process stability and part quality by leveling the properties of different recycle streams.

A Blend of Beauty and Responsibility

Polypropylene clarified with Millad NX8000 and colored with ClearTint colorants offers both glamour and sustainability for today's environmentally aware yet style-conscious consumers. Thanks to design, cost and performance advantages for manufacturers, clarified polypropylene is widely used in products from baby bottles to cosmetic and toiletries containers to food storage and packaging.

- *Sealing the Deal*

Home Concepts Products selected polypropylene clarified with Millad NX8000 for the Reynolds[®] Casuals line of food storage containers that were introduced in January 2009. In addition to excellent aesthetics, the material offers enhanced sustainability and safety. With the high clarity imparted by Millad NX8000, Home Concepts achieved the see-through visibility that is so important in food storage products. Unlike some other clear plastics, clarified polypropylene does not use Bisphenol A (BPA) in its manufacture.

Also, the lower density of polypropylene reduces the amount of material required for these containers by a third compared to PC.

- *Serving up Design Elegance*

To create a sleek yet durable cutlery tray, Italian manufacturer Guzzini selected polypropylene clarified with Millad NX8000 agent based on its exceptional clarity. This injection-molded tray was originally made with styrene acrylonitrile (SAN), but Guzzini redesigned the product using clarified polypropylene to reduce cost, boost impact resistance and enhance sustainability.

High Performance, Easy Processing

Millad NX8000 clarifier makes polypropylene an appealing choice because of its broader processing window, material strength and rigidity, and chemical resistance. It can be processed using all available technologies, including injection molding, blow molding and thermoforming.

Clarified polypropylene can replace a wide range of clear materials such as PET, PC, SAN, polyvinyl chloride (PVC), polystyrene (PS), acrylic and glass.

New Solutions for the Future of Packaging

Today, designers are finding a new source of inspiration in transparency. They are turning to the clarity, recyclability, performance and cost-effectiveness of polypropylene – elegantly clarified with Millad NX8000, vibrantly colored with ClearTint colorants, and infinitely recyclable using Hyperform nucleating agents.

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