STARTING UP

10-LAYER, 10-EXTRUDER NANO BLOWN FILM: A RUSSIAN FIRST

From: Plastics Technology
Issue: March 2012

Films produced on this line are next-generation nanocomposite barrier films for food packaging.

Russia is advancing in high-tech films. Dual Spiral Systems Inc. (DSS), W. Hamilton, Ont., has supplied what it says is the first line of its kind in that country—a 10-layer, 10-extruder blown film system—to an undisclosed processor in southeastern Russia. The line, which has a 20-in. die and a max. output rate of nearly 1800 lb/hr, was installed in the fourth quarter of 2011, tested in January 2012, and went immediately into production. DSS also furnished the IBC system, melt adapters, heaters, and die cart.

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Films produced on this line are next-generation nanocomposite barrier films for food packaging. The intended application is ready-made meals, which previously used metal foil laminated to coextruded film, resulting in a shelf life of 6 to 24 months. With nanocomposite film, ready-made meals can now be stored up to five years without preservatives. And without the foil layer, these ready-made meals can be microwaved right in the package. Because of the elimination of the lamination process, nanocomposite barrier films are said to be less expensive to produce than traditional foil/coex structures.

The layer-splitting technique used by DSS is said to result in greater film strength through the "plywood effect," meaning that a two-layer film will be stronger than a single-layer of the same overall thickness. The same premise applies to gas barrier. As the number of layers increases, the number of interfaces between barrier layers also increases, providing higher overall barrier to the film.

Barrier properties of a split-barrier-layer film will always be better than a coex film with a single barrier layer of the same material and same total thickness of barrier resin. The reason is that the energy required for oxygen penetration into the barrier layer is higher than the energy required for transmission through the barrier layer. Each interface enhances the barrier, resulting in a lower permeation rate. The permeation rate is further decreased by the use of nanocomposite barrier layers within the film structure.

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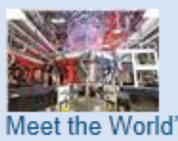

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