Laser+® CSD (MB912)

polyethylene terephthalate resin

Product Information

General

Laser+® CSD (MB912) polyethylene terephthalate (PET) resin is a copolymer formulated for conversion to PET bottles by conventional single or two-stage processing technology.

Product Description

Bi-orientation of Laser+® CSD (MB912) by injection/stretch blow molding provides optimal barrier and mechanical properties, including superior stress crack resistance. It performs exceptionally well in the manufacture of CSD bottles made from thick-wall preforms, where heat up rate and temperature profile through the wall are important. Laser+® CSD (MB912) is engineered to improve acetaldehyde (AA) performance without sacrificing intrinsic viscosity (IV), to meet increasing demand for CSD applications. Laser+® CSD (MB912) offers superior heat absorption and processing control, even at higher blowing speeds. A slower crystallization rate enables high injection molding output.

Sales Specifications

Property	Value	Test Method
Intrinsic Viscosity	.84 ± 0.02	AP-QAR-SOP-0012
Color L* CIE	74.5 min	AP-QAR-SOP-0011
Color b* CIE	-4.0 to -1.0	
Acetaldehyde	2 ppm max	AP-QAR-SOP-0010

Certification

Laser+® CSD (MB912) is ideally suited for food packaging applications. A Product Regulatory Information Sheet (PRIS) for Laser+® CSD (MB912) is available upon request.

Typical Properties

Property	Value	Test Method
Moisture Content[1]	0.25% max	AP-QAR-SOP-0013
Fines[1]	0.05% max	AP-QAR-SOP-0014
Crystallinity	>40%	AP-QAR-SOP-0016
Melt Point, nominal	245°C	AP-QAR-SOP-0016

[1] As packaged

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Material Drying

Proper drying of polyethylene terephthalate (PET) is essential to produce a high-quality part (container, film, etc.) with optimum physical properties. PET is hygroscopic, meaning that when it is exposed to humid atmospheres, it will absorb moisture. In PET, the moisture is not only on the surface but diffuses slowly through the whole pellet and is firmly held by molecular attraction. Before processing the PET, this moisture must be removed. Carefully controlled drying of all PET is an essential requirement for optimum processing performance and final product properties. If drying is not carried out properly, loss in molecular weight, process control and mechanical properties of the PET material may occur during melt processing due to hydrolytic degradation.

Drying of PET polymer involves the diffusion of absorbed moisture from the interior of the polymer chip to its surroundings and, subsequently, the removal of moisture from the bulk of polymer chips. Moisture removal can be achieved by heating the polymer chip under dry air or vacuum. In an air-drying system, heated and dehumidified air flows up through a chip bed and returns to the dehumidifier. The key requirements for a reliable drying process are:

Dehumidified air dew point: This should not be allowed to rise above -34°F (-37°C) and should preferably be –40°F (-40°C) or lower, as measured after the desiccant bed. Always check the correct regeneration temperatures and frequency are being used.

Dehumidified air flow through the chip bed: Most dryers operate at around 1 ft^3 per minute (28.3 L/min) of airflow per 1 lb./hr. (0.45 kg/hr.) of PET chip as a minimum requirement, with the airflow at the correct temperature and dew point.

Chip residence time (drying time): A minimum chip residence time for PET of four hours and preferably six hours is recommended. This is the theoretical drying time, which is calculated by dividing dryer capacity throughput. Extended periods of high temperature can adversely affect the polymer processing conditions. In the event of a stoppage for an extended period, dry polymer can be stored in the dryer-hopper by reducing the air temperature to 240°F (116°C) (or even lower) while maintaining dry airflow through the dryer hopper.

Dehumidified air temperature: Correctly designed equipment should operate at temperatures up to 340°F (171°C) measured on entry to the dryer hopper, with an absolute maximum of 356°F (180°C) to prevent possible discoloration.

Drying temperature: The ACTUAL chip temperature should achieve between 300°F (149°C) and 330° F (166°C) measured at the dryer exit.