

Array[®] EBM 5862

polyethylene terephthalate resin

Product Information

General

Array[®] EBM 5862 polyethylene terephthalate (PET) resin is a copolymer formulated for conversion to PET Extrusion Blow Molded (EBM) bottles by an Extrusion Blow Molding processing technology.

Product Description

Array[®] EBM 5862 polyethylene terephthalate (PET) resin is designed to have the melt strength and slow crystallization rate required to produce large handle ware containers by extrusion blow molding. It performs exceptionally well in the manufacture of thick-walled containers where maintaining clarity and neutral color are important. The higher intrinsic viscosity of this product gives the melt strength required to maintain parison shape in continuous extrusion.

This product can be used with up to 50% in-plant EBM regrind provided regrind has been dried.

In addition, Alpek has designed Array[®] EBM 5862 to be recyclable with other PET products and this product has met the APR Critical Guidance Document guidelines for PET.

Sales Specifications

| Property | Value | Test Method |
|---------------------|-------------|-----------------|
| Intrinsic Viscosity | 1.25 ± 0.03 | AP-QAR-SOP-0012 |
| Color L* CIE | 74 min | AP-QAR-SOP-0011 |
| Color b* CIE | -3.5 ± 2.0 | |
| Acetaldehyde | 2 ppm max | AP-QAR-SOP-0010 |

Certification

Array[®] EBM 5862 is ideally suited for food packaging applications. A Product Regulatory Information Sheet (PRIS) for Array[®] EBM 5862 is available upon request.

Moisture Content before Melting

EBM processing is critically impacted by the moisture content in the PET polymer. The final moisture content of the PET polymer should be **less than 30 ppm** and preferably 10 to 20 ppm.

Typical Properties

| Property | Value | Test Method |
|-------------------------------|-----------|-----------------|
| Moisture Content ¹ | 0.25% max | AP-QAR-SOP-0013 |
| Fines ¹ , +24 Mesh | 0.10% max | AP-QAR-SOP-0014 |
| Crystallinity | >40% | AP-QAR-SOP-0016 |
| Melt Point, nominal | 240°C | AP-QAR-SOP-0016 |

¹ As packaged

These values represent the anticipated performance data for these polyester resins and intermediates; they are not intended to be used as design data. We believe this information is the best currently available on the subject. It is offered as a possible helpful suggestion in the experimentation you may care to undertake along these lines. It is subject to revision as additional knowledge and experience is gained. No guarantee of results, assumption of obligation or liability whatsoever in connection with this information is made. This publication is not a license to operate under, or intended to suggest infringement of, any existing patents.

CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "Medical Caution Statement"



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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 pellet to its surroundings and, subsequently, the removal of moisture from the bulk of polymer pellets. **The final moisture content of the PET polymer should be less than 30 ppm and preferably 10 to 20 ppm.** Moisture removal can be achieved by heating the polymer pellet under dry air or vacuum. In an air drying system, heated dehumidified air flows up through a pellet 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 pellet bed: Most dryers operate at around 1 ft³ per minute (28.3 L/min) of airflow per 1 lb./hr. (0.45 kg/hr.) of PET pellet as a minimum requirement, with the airflow at the correct temperature and dew point.

Pellet residence time (drying time): A minimum pellet 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 350°F (177°C) to prevent possible discoloration.

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