

**RETAIN™ 3000****Recycle Compatibilizer****General Information**

Product Description RETAIN™ 3000 is a functional polymer which promotes compatibilization between polyolefins and polar polymers such as ethylene vinyl alcohol (EVOH) and polyamide (Nylon) and blends of polar polymers.

RETAIN™ 3000 is a unique technology designed to effectively compatibilize polar and non-polar polymeric components typically found in recycle streams. This compatibilizer was developed using Dow's expertise in material science and reactive chemistry to compatibilize two otherwise immiscible materials while maintaining critical physical properties.

Status

Material Status Commercial: Active

Typical Characteristics

Composition Ultra High% By Weight Maleic Anhydride
Graft levels are defined as:
Low < 0.2%; Medium 0.2-0.5%; High 0.5-1.0%; Ultra high > 1.0%

Features Pellets are dusted with an anti-massing agent.

Characteristics / Benefits Main Characteristics:
* Good compatibilization between polyolefins and polar polymers
* Wide range of process and service temperature
* For blown and cast film
* May be used in-line or pre-compounded

RETAIN™ 3000 disperses polar polymers into the polyolefin matrix and decreases the size of polar domains which results in lower haze. This applies for both polyethylene and polypropylene dominant streams.

Applications RETAIN™ 3000 is most specifically designed to compatibilize polyamide (nylon) and ethylene-vinyl alcohol (EVOH) into a continuous polyethylene matrix. These polymers achieve their functionality by reacting with the polar polymers and then efficiently dispersing them into the polyethylene majority matrix.

Due to the complex nature of a recycle stream, the typical properties reflect those found in select instances but serve as a guide for anticipated properties while recognizing that the reprocessing equipment selected will define the ultimate utility of the compatibilizer. Additionally, the level of recycle compatibilizer needed to achieve maximum physical properties is dependent on the amount and type of polar polymer present in the recycle stream.

Typical Properties

Physical	Nominal Values	Test Method(s)	
*Density ()	0.870 g/cm ³	ASTM D792	ISO 1183
*Melt Flow Index (190°C / 2.16 kg - estimate)	660 g/10 min		
Brookfield Viscosity @ 177C (350F) (measured, and used to estimate Melt Flow Rate listed above)	13.0 Pa-sec	ASTM D1084	
Gardner Color	< 5.0	ASTM D1544	

Thermal**Nominal Values****Test Method(s)**

*Melting Point(DSC)	68 °C (154.4 °F)	Dow Method
*Glass Transition Temperature (DSC)	-58 °C (-72.4 °F)	Dow Method

Processing Information

*Maximum Processing Temperature 260 °C (500 °F)

General Processing Information

* For recycle streams containing EVOH, the recommended addition level of RETAIN™ 3000 is a 1:1 ratio of RETAIN™ 3000 to EVOH in the recycle stream.

* For recycle streams containing nylon, the recommended addition level of RETAIN™ 3000 is a 1:2 ratio of RETAIN™ 3000 to nylon in the recycle stream.

* The addition rate of RETAIN™ 3000 should not exceed 20% in a recycle stream

* Note: For recycle streams containing PET (polyethylene terephthalate), RETAIN™ 3000 is not recommended as a recycle compatibilization additive.

FDA Status Information

RETAIN™ 3000 Recycle Compatibilizer complies with Food and Drug Administration Regulation 21 CFR 175.105 - - Adhesives. This Regulation describes adhesives that may be used as components of articles intended for use in packaging, transporting, or holding food, subject to the limitations and requirements therein.

The information and certifications provided herein are based on data we believe to be reliable, to the best of our knowledge. The information and certifications apply only to the specific material designated herein as sold by Dow and do not apply to use in any process or in combination with any other material. They are provided at the request of and without charge to our customers. Accordingly, Dow cannot guarantee or warrant such certifications or information and assumes no liability for their use.

