



PARALOID™ BPMS-250 Melt Strength Enhancer
PARALOID™ BPMS-260 Melt Strength Enhancer

For Polylactic Acid Resin (PLA)

Regional Product Availability

- North America
- Europe
- Asia-Pacific

Description

Combining its strong expertise in acrylic technology and polymer rheology and its commitment to sustainable developments, The Dow Chemical Company offers additive solutions to help enhance the performance of bio-plastic resins.

The low melt strength of PLA creates limitations during melt processing, such as sagging and necking, resulting in lower processing rates. PARALOID™ BPMS-2xx series Acrylic Melt Strength Enhancers for PLA are designed to help improve the processability of polylactic acid and its alloys.

PARALOID™ BPMS-250 Acrylic Melt Strength Enhancer increases the melt elasticity of the blend even at addition levels as low as 2 wt%. It is completely miscible in the PLA matrix with an optimal refractive index match and does not affect the clarity of the blend making it suitable for use in transparent packaging, paper coating and foam applications.

With its higher molecular weight, **PARALOID™ BPMS-260** Melt Strength Enhancer can strengthen PLA melt properties even more.

Applications / Uses

These additives are useful in applications where additional melt strength is needed in the processing of polylactic acid, such as blown film extrusion, extrusion blow moulding, sheet and foam extrusion or calendering.

PARALOID™ BPMS-250 Acrylic Melt Strength Enhancer is designed for applications where extremely high clarity is needed with a moderate increase in melt-strength.

PARALOID™ BPMS-260 Acrylic Melt Strength Enhancer is designed for PLA applications where a very demanding increase in melt-strength is needed.

Melt-Strength Enhancement

The entanglement of the chains of the high-molecular weight PARALOID™ BPMS Acrylic Melt Strength Enhancers with those of the PLA produces a physical network with a high resistance to break in the melt.

Use levels as low as 2 wt% are effective in increasing PLA melt strength. Loadings up to 5 wt% have been tested and indicate proportionally higher effect on the melt viscosity of the compound.

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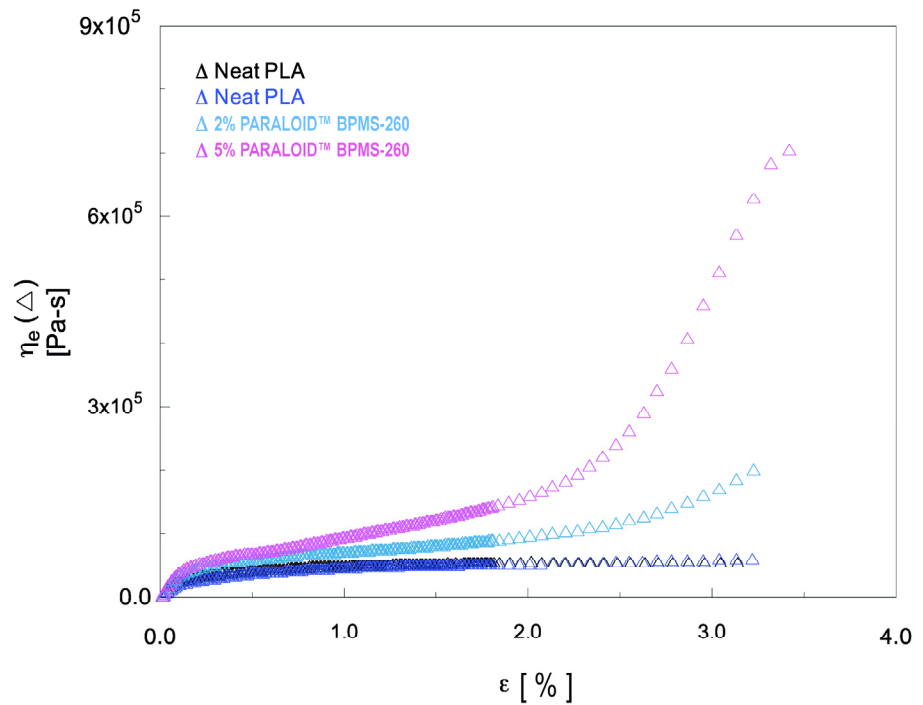
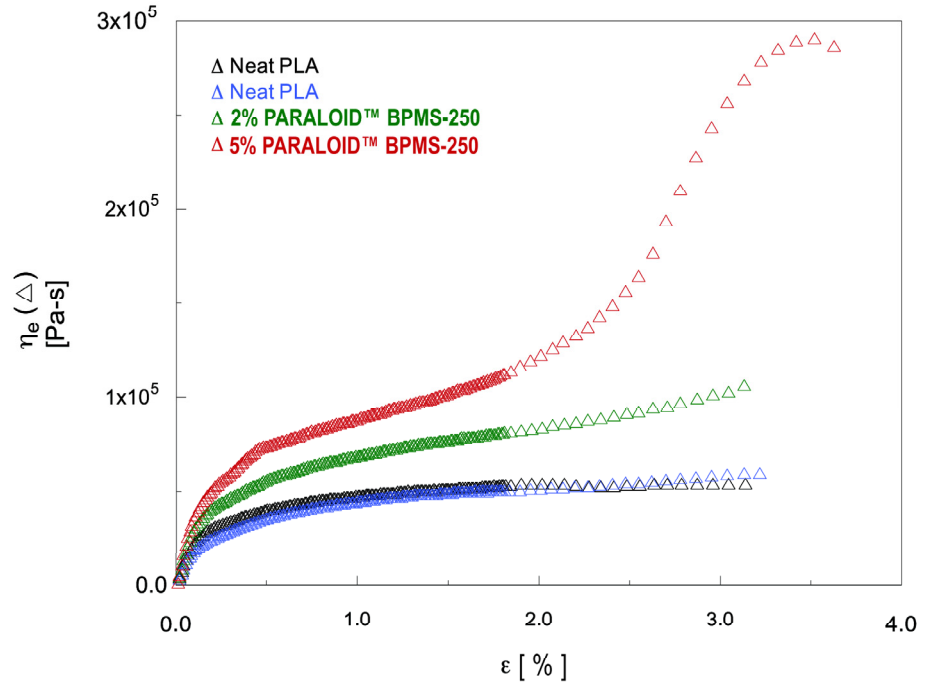
PARALOID™ BPMS-250 Melt Strength Enhancer,

PARALOID™ BPMS-260 Melt Strength Enhancer / Plastics Additives

Form No. 874-03901-0411

PA11N012, Rev. 0

PARALOID™ BPMS-250 and BPMS-260 Acrylic Melt Strength Enhancers help improve PLA Melt Strength

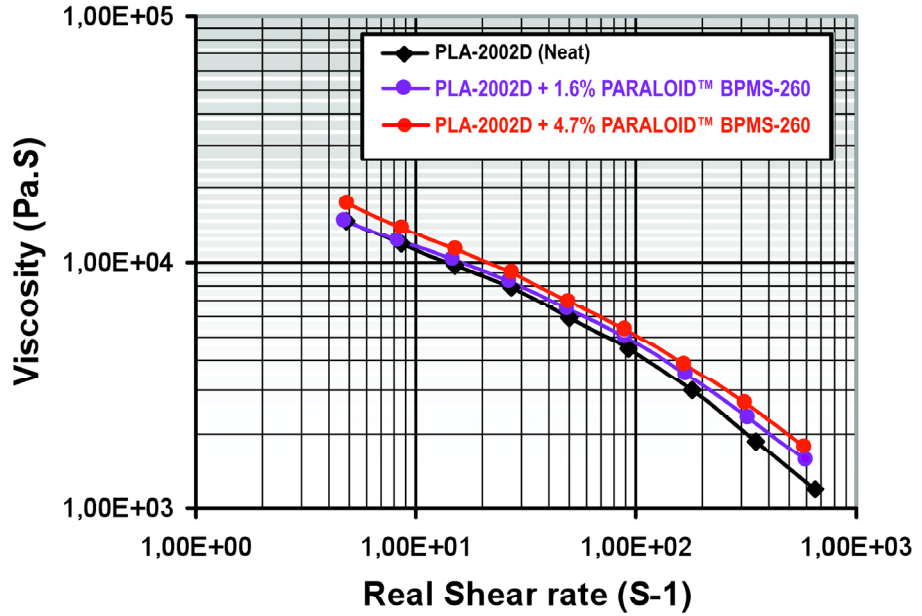


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Melt-Strength Enhancement (Continued)

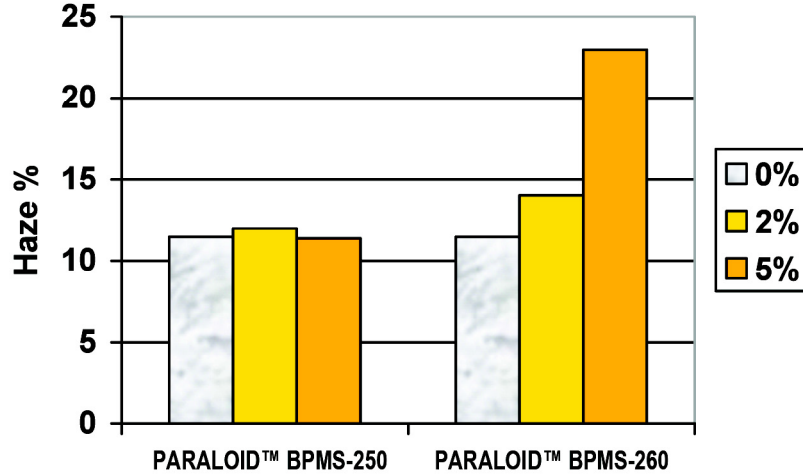
Effect on the PLA Melt Viscosity with PARALOID™ BPMS-260 Acrylic Melt Strength Enhancer



Optical Performance

Since PARALOID™ BPMS-250 Melt Strength Enhancer is a good match of refractive index and completely miscible with the PLA resin, the addition up to 5 wt% has minimal effect on the haze of the compound.

Effect on clarity with PARALOID™ BPMS Melt Strength Enhancer



Physical Description

Appearance: Free-flowing white powders
 Bulk density: 0.4–0.52 g/cm³

Process Information

PARALOID™ BPMS-200 series Acrylic Melt Strength Enhancers are supplied in a free-flowing powder form. They are easily dispersed into PLA by controlled addition of the additive during melt mixing in a single or twin screw extruder. It is recommended that both the melt strength enhancers and PLA resin be thoroughly dried to below 250 ppm moisture before processing.

Regulatory Compliance

PARALOID™ BPMS-250 Melt Strength Enhancer is compliant for use as an additive in rigid PVC at a maximum level of 2% according to Regulation (EU) 10/2011, which governs plastic food contact materials in the European Union. Activities are on-going to extend the scope to other products, such as PLA. Please contact our local office for the latest food contact status, including relevant restrictions.

PARALOID™ BPMS-260 Melt Strength Enhancer is compliant for use as an additive in rigid PVC at a maximum level of 1% according to Regulation (EU) 10/2011, which governs plastic food contact materials in the European Union. Activities are on-going to extend the scope to other products, such as PLA. We recommend that you verify the latest regulatory compliance with your local Dow Chemical representative.

PARALOID™ BPMS-250 and BPMS-260 Melt Strength Enhancers have limited clearance under FDA Food Additive Regulations 21CFR178.3790 and 21CFR177.1010 governing their use in semi-rigid and rigid vinyl plastics and semi-rigid and rigid acrylic and modified acrylic plastics for food packaging and food-contact applications. The maximum allowable amount of modifier depends on the number, quantity and type of modifiers in the formulation.

Storage, Handling and Safety

Refer to the MSDS for guidelines.

Handling Precautions

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

CAUTION! Keep combustible and/or flammable products and their vapors away from heat, sparks, flames and other sources of ignition including static discharge. Processing or operating at temperatures near or above product flashpoint may pose a fire hazard. Use appropriate grounding and bonding techniques to manage static discharge hazards.

CAUTION! Failure to maintain proper volume level when using immersion heaters can expose tank and solution to excessive heat resulting in a possible combustion hazard, particularly when plastic tanks are used.

Storage

Store products in tightly closed original containers at temperatures recommended on the product label.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Plastics Additives Technical Representative for more information.

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Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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- 2) use in cardiac prosthetic devices regardless of the length of time involved ("cardiac prosthetic devices" include, but are not limited to, pacemaker leads and devices, artificial hearts, heart valves, intra-aortic balloons and control systems, and ventricular bypass-assisted devices);
- 3) use as a critical component in medical devices that support or sustain human life; or
- 4) use specifically by pregnant women or in applications designed specifically to promote or interfere with human reproduction.

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