

MA1350Q

MA1350Q is a compound that is composed of polylactic acid (PLA) and an amorphous polyhydroxyalkanoate (aPHA). Specifically, the aPHA used is PHACT™ A1000P from CJ Biomaterials and the PLA is Ingeo™ 6202D. This compound is designed for nonwoven (spunbond) applications. The PLA/aPHA composition of MA1350Q is 55% PLA/45% aPHA by weight. This product is designed to facilitate the inclusion of amorphous PHA at desired levels by the converter, with final performance dictating the relative amount of MA1350Q blended into PLA. MA1350Q may be used directly or added (dry-blended with PLA) during the conversion of PLA based nonwovens to add the following performance features:

- Faster composting rate (potential for home composting; ask CJBMS team for details)
- Improved flexibility
- Improved softness and strength (almost twice the strength of pure PLA)
- Maintains the biobased carbon content

Properties of PHACT™ MA1350Q

Properties	Units	ASTM No	PHACT™ MA1350Q
Forms	-		Pellet
Density	g/cc	D1505	1.22
Melting Temperature ¹⁾	°C	D3418	150 to 170
Glass Transition Temperature ¹⁾	°C	D3418	~ -17 (aPHA), ~60 (PLA)
Melt Flow Rate (190 °C, 2.16 kg)	g/10 min	D1238	10-20
Biobased Carbon content	%	D6866	100

2) Differential Scanning Calorimeter (DSC) at 10 °C/min. heating rate after cooling from 200 °C at 10 °C/min.

Safety Precautions

MA1350Q must be handled and processed with adequate ventilation and proper personal protective equipment. Temperatures above 200°C (392°F) can result in considerable polymer degradation. Therefore, adequate ventilation should be provided where hot polymer may reside for prolonged periods such as in leak areas, above the die, in screen changers, in vent ports, etc.

Drying & Moisture Management

MA1350Q will be supplied in pellet form in aluminum foil-lined packaging with a moisture content of 0.04% (400 ppm) or less when packed. A moisture content of less than 0.04% (400



ppm) is highly recommended to prevent viscosity degradation during processing. Typical drying conditions are 4 hours at 75 °C (167 °F) to a dew point of -35 °C (-30 °F), with an airflow rate greater than 0.5 cfm/lb of resin throughput. The resin should not be exposed to atmospheric conditions after drying. Keep the package sealed until ready to use and promptly reseal any unused material.

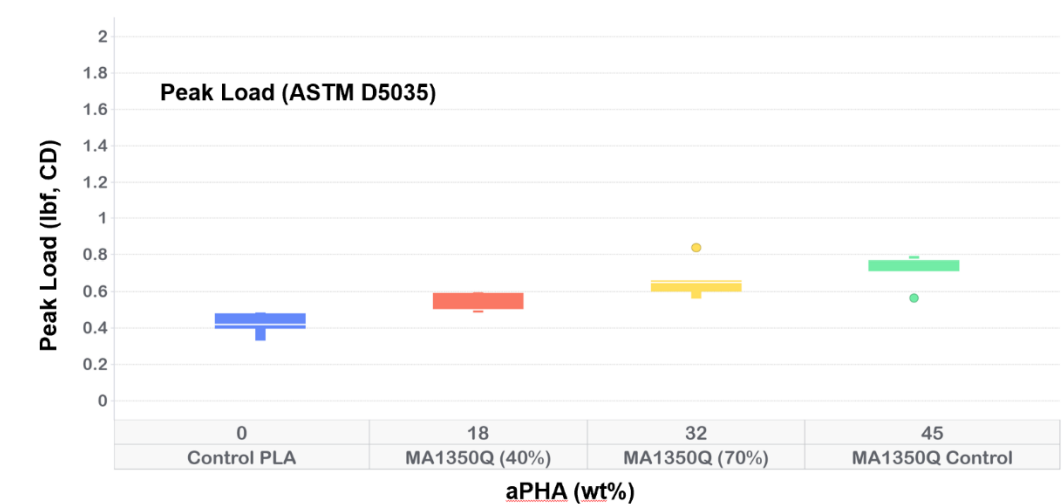
Processing/Extrusion Details

MA1350Q is not compatible with polyolefins and particular care must be given to purging and cleaning the line (including feeders to avoid contamination) prior to the introduction of this product. In-line drying is recommended.

When MA1350Q is blended with PLA, processing conditions employed must be consistent with those recommended for the PLA grade used, keeping the upper temperature limit of 200 °C for MA1350Q in consideration. MA1350Q may be processed easily on conventional extruders with either smooth-bore feed sections or grooved-feed sections. A low shear screw with a low compression ratio (CR) is ideal for processing and performance. Recommended extrusion temperatures for processing MA1350Q alone are as follows starting from the feed throat to the die:

Zone 1 (Feed)	50 °C (122 °F)	Zone 5	175 °C (347 °F)
Zone 2	175 °C (347 °F)	Zone 6	175 °C (347 °F)
Zone 3	175 °C (347 °F)	Adapters	185 °C (365 °F)
Zone 4	175 °C (347 °F)	Die	200 °C (392 °F)

The charts below display the enhancement of peak load and elongation at break of PLA as a function of aPHA in a spunbond product; aPHA was introduced using the M1350Q product.



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