

PROCESSING GUIDANCE

PLA Injection Molding



•Introduction

This is a processing guidance of PLA injection molding. Hisun has developed different kinds of injection-molding-use PLA grades which meet the requirements of transparency, heat resistance, toughness, etc. Typical applications include disposable cutlery, heat-resistant household, stationery, toys and gardening supplies, etc. These PLA grades can be processed by conventional injection molding machines.

Injection molding is a general processing technology. The process parameters provided in this processing guidance are only for your reference. It is suggested that the above parameters should be adjusted according to your own equipment and processing conditions in order to find the best process conditions suitable for you.

•Typical Physical Properties

Physical Properties			Neat PLA		Compound
Application	Unit	Test standard	REVO DE 210	REVO DE 290	REVO DE 213S
Density	g/cm ³	GB/T1033.1-2008	1.20-1.30	1.20-1.30	1.40-1.50
Melt index (190°C/2.16Kg)	g/10min	GB/T3682.1-2018	12-40	12-40	10~25
Melting poin	°C	GB/T19466.3-2004	160-170	170-180	-
Glass transition temperature	°C	GB/T19466.2-2004	60	60	-
Tensile strength	MPa	GB/T1040.1-2018	≥50	≥50	≥40
Elongation at break	%	GB/T1040.1-2018	≥3	≥3	≥2
Notched impact strength	kJ/m ²	GB/T1043.1-2008	≥1	≥1	≥2

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•Storage condition

Because PLA is easy to absorb water, being exposed to air for a long time will lead to the increase of resin's flow rate and brittleness of final products during processing. Please use it as soon as possible after opening the package, and seal it quickly if not finished. PLA should be stored in a ventilated, dry warehouse instead of open air which is away from the source of fire and direct sunlight. The ambient temperature should not exceed 40 °C during storage.

•Drying

REVODE PLA has been dried before leaving the factory and sealed with vacuum aluminum-plastic composite bags to keep its moisture content less than 500ppm. Laminate/coating processing has strict requirements on moisture, so it is recommended to dry the moisture below 100ppm before processing. For the drying conditions of resin, please refer to the following table:

Drying Parameter	Unit	REVODE 210	REVODE 290	REVODE 213S
Residence Time	h	2-3	2-3	2-3
Air Temperature	°C	50	60	80
Air Dew Point	°C	-40	-40	-40
Air Flow Rate	m ³ /hr-kg resin	>1.85	>1.85	>1.85

•Requirements on the Equipment

REVODE PLA can be processed on a conventional injection molding machine equipped with water chiller/ mold temperature controller to control the mold temperature, the mould is required to have a good cooling runner. The mold shrinkage should be controlled at 0.3-0.5%.

When stopping for a short time (usually within half an hour) during processing, close the baffle at the bottom of the hopper and empty the leftover material in the barrel. When restarting production, open the baffle to add material. If the material yellowing, degradation and other phenomena occur during processing, the material in the

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barrel should be emptied first, and the state of the material should be observed to see if it returns to normal after the replacement of the new material. If it is not normal, you need to observe whether water absorption, high processing temperature or other problem occurred, or you can also contact us to solve it.

•Processing Temperature

	Unit	REVOCODE 210	REVOCODE 290	REVOCODE 213S
Feed Throat	°C	20-40	20-40	20-40
Convey Section	°C	170-190	180-200	180-200
Compression Section	°C	180-200	190-210	190-210
Metering Section	°C	180-200	190-210	190-210
Nozzle	°C	180-200	190-210	190-210
Back Pressure	°C	100-300	100-300	100-300
Mould	°C	20-30	20-30	80-90

Notice: The above parameters can be adjusted according to the equipment and production conditions.

•Coloring

It is recommended to use special toner or PLA-based color masterbatch, improper toner and color masterbatch may make the final products brittle, unsmooth and even unable to be extruded, etc. If the raw materials for coloring can not be processed within 2 hours after opening, please seal it.