

	Product Data Sheet	Issue Date : 01.10.11
Product Name	Futura PTN – Type 404	Old Type No. 2001

Recommended Applications

- ▶ Applications requiring high CO₂ and O₂ barrier such as:
 - a) Multilayer containers.
 - b) Specialty barrier films.
- ▶ Specialty barrier Sheets for Thermoforming and Vacuum forming applications.

Product Features

- ▶ Futura PTN is Polytrimethylene naphthalate thermoplastic polyester resin.
- ▶ Futura PTN derived from NDC (dimethyl-2,6-naphthalene dicarboxylate) and PDO (1,3-propane diol) provides improved gas and water vapor barrier properties, enhanced flavor retention and extended shelf life in packaging application.
- ▶ Futura PTN is in full compliance with USFDA regulations for multilayer applications.
- ▶ Futura PTN is recyclable.

Properties

Characteristic	Unit	Type 404		Test Method
		D8	D9	
Intrinsic Viscosity @ 30°C	dL/g	0.65 ± 0.02	0.72 ± 0.02	FPL-QP-V-20-58
b* Color	CIE Lab	1 max.	2 max.	FPL-QP-S-20-55-Part-B-XXI
Carboxyl Number	meq/kg	25 max.	25 max.	FPL-QP-T-20-55-Part-B-VIII
Melting Point	°C	204 ± 5	204 ± 5	FPL-QP-DSC-20-55-Part-B-XVIII #
Bulk Density	g/cc	0.80 ± 0.10	0.80 ± 0.10	FPL-QP-P-20-55-Part-B-XX
Weight of 20 Chips	mg	300 ± 50	300 ± 50	FPL-QP-W-20-55-Part-A-I
Moisture (when packed)	wt. %	0.25 max.	0.25 max.	FPL-QP-E-20-55-Part-B-VI

Determined using DSC second heating cycle.

Properties	cc.mm/m ² /atm/24 hr	cc.mil/100in ² /atm/24 hr	Test Method
Oxygen Transmission Rate ¹	0.32	0.80	ASTM D 3985
Carbon dioxide Transmission Rate ¹	0.68	1.70	ASTM D 3985
Water Vapor Transmission Rate ²	0.60	1.50	ASTM F 1249

¹ @ 23°C, 100% RH

² @ 38°C, 90% RH

Notched Izod Impact	1.5 ft.lb/in	80 J/m	ASTM D 256
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Processing Parameters

a) Drying Condition

Granules must be thoroughly dried before processing to limit the occurrence of hydrolytic degradation.

Drying temperature	155 ± 5 °C
Drying time	4- 5 hours
Dew point	- 40 °C
Residual moisture content	≤ 25 ppm

b) Process Temperature** (Injection Stretch Blow Molding)

Barrel Temperature	250 ± 5 °C
Mold Temperature	250 ± 5 °C

** The values quoted above are typical numbers for benchmarking. Individual machine parameters should be determined on a case-by-case depending on the design of the product(s).

Packaging

Resin can be supplied in 1000 kg PP jumbo bags with LDPE liner at 20 bags per 20 ft FCL container as required.

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