Technical Datasheet RAMAPET N180

RAMAPET N180 is a general purpose, non-reheat PET resin for bottles, film, thermoformed containers and other transparent applications. It has good optical properties, the mechanical properties are representative for a PET resin with IV of 0.80. RAMAPET thermoplastic polyesters are condensation polymers produced by a continuous melt-phase polymerization process followed by a solid-state polymerization process.

Applications and use:

- Carbonated soft drinks
- Water bottles
- Juices, beer, wine and spirits
- Household products
- Food packaging
- APET sheet and thermoformed containers
- Pharmaceutical and medical applications (European and US Pharmacopoeia approved)

Sales specification:

Property	Unit	Test method	Ramapet N180 value
Intrinsic Viscosity	dl/g	(K) SDP-15 (R) IND-A-AN-G-V-1 (W) VGAS-A-AN-G-V-1	0.80 ± 0.02
Acetaldehyde	ppm	(K) SDP-21 (R) IND-A-AN-G-GC-2 (W) VGAS-A-AN-G-GC-2	Max 1
Colour L*	-	(K) SDP-05 (R) IND-A-AN-G-RS-0001 (W) VGAS-A-AN-G-RS-0001	Min 78
Colour a*	-	(K) SDP-05 (R) IND-A-AN-G-RS-0001 (W) VGAS-A-AN-G-RS-0001	-3.8 to -0.8
Colour b*	-	(K) SDP-05 (R) IND-A-AN-G-RS-0001 (W) VGAS-A-AN-G-RS-0001	-3.5 to 1
Pellet weight	Pieces/gram	(K) SDP-18 (R) IND-A-AN-G-PTM-09 (W) W-P-A-G-PTM-1	60 ± 5
Fines	Wt%	(K) SDP-60 (R) IND-A-AN-G-GA-01 (W) W-P-A-G-PTM-2	Max 0.05

The specification describes a grade of clear copolyester in the form of pellets which meets all of the requirements when tested as directed by the referenced methods.

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UAB Indorama Polymers Europe – UAB Orion Global PET
Metalo g. 16, LT-94102 Klaipėda Tel: +370 46 300749; +370 46 300684; Fax: +370 46 314 323
www.indoramaventures.com
Public Enterprise Center of Registers, Klaipėda, Lithuania # 301489561

Product shipments are not tested for acetaldehyde. Samples that are representative of product are tested in a monitor program to ensure that the process capability for acetaldehyde in the polymer is less than the specification limit.

Typical properties:

Property[a]	Test[b] Method	Typical Value, Units[c]
Pellet Properties		
Crystalline Density Solid Stated pellets	D 1505	1.39 - 1.4 g/cm^3
Bulk Density Poured	D 1895	830 kg/m^3
Bulk Density Vibrated	D 1895	880 kg/m^3
Melt Density @ 285°C	D 1238 (Note A- Table 2)	1.2 g/cm^3
Crystalline Peak Melting Point (T_m) [d]	D 3418	245 ± 5°C
Glass transition point (Tg) (dry)	D 3418	78 ± 2°C
Heat of Fusion [e]	E 793	56 kJ/kg (13 cal/g)
% crystalinity solid Stated pellets		50 ±5 %
Pellet Size		2.5 mm
Pellet Shape		Cubical
Moisture content pellets		<0.3%
[a] *Unless noted otherwise, all tests are run at 23°C (73°F) and 50% relative humidity.* [b] *Unless noted otherwise, the test method is ASTM.* [c] *Units are in SI or US customary units.* [d] *Determined by DSC on the second heating cycle.* [e] *Determined by DSC on the first heating cycle.*		
Properties reported here are typical of average lots. Indorama makes no representation that the material in any particular shipment will conform exactly to the values given.		

Food Contact Position:

RAMAPET N180 is a copolymer made from terephthalic acid (PTA), isophthalic acid (IPA) and mono-ethylene glycol (MEG) complies with the requirements of the European Legislation (EU) No 10/2011 for plastics used in contact with food.

This product is produced under good manufacturing practices in compliance with EU Regulation 2023/2006 and is intended for use to manufacture articles in compliance with the general requirements (in Article 3) of Regulation (EC) 1935/2004.

Under the regulations administered by the U.S. Food en Drug Administration (FDA), RAMAPET N180 may lawfully be used as articles or components of articles intended for the use in contact with food subject to provisions of CFR 177.1630 and 21 CFR 174.5.

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Processing;

PET is hygroscopic, and since moisture adversely affects the IV during melt processing of the polymer, it must be dried prior to molding. Undried PET pellets can contain up to 0.2% (2000 ppm) of moisture. After drying the moisture content typically is below 50 ppm.

In the drying process, there are four variables that should be considered:

- Drying temperature 150 - 170°C
- Residence time in the dryer silo 6 hours
- Dew Point of Drying Air < - 20°C
- Airflow Rate 2.2 m3/h/kg PET

PET has a relatively high melting point of around 245°C. Processing PET pellets on an extruder or injection moulding machine requires temperature setting of 30 – 40°C above the melting point.
A typical temperature profile (from hopper to nozzle) is: 295 – 285 – 280°C and hot-runners can be set at 275 to 285°C. Temperatures above 300°C should be avoided. The melt residence time should be limited to < 2 minutes to avoid discoloration. During machine stops the temperature setting should be reduced to avoid the material to degrade or decompose.

Klaipeda
1 May 2011

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