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UBE NYLON 1022FDR4

Technical Product Information: AIR-BLOWN – PA monolayer film properties

UBE NYLON 1022FDR4 is a medium viscosity modified Polyamide 6 homopolymer. The grade is especially suitable for retort applications. This material has the following features:

- Good processability
- Good mechanical properties
- Good heat resistance
- Outstanding hydrolysis resistance

Basic Properties [1]	Method	Unit	Value
Polymer	-	-	PA6
Melting Point	ISO 11357	°C	220
Relative Viscosity (96% H_2SO_4)	JIS K6810	-	3,37
Density	DIN 53479	g/cm^3	1,14

Mechanical Properties [2]	Method	Unit	Value
Tensile strength at yield	ISO 527-3	MPa	32 - 36
Tensile strength at break		MPa	90 - 110
Tensile elongation at break		%	360 - 380
Tensile modulus		MPa	700 - 800
Tear resistance	ASTM D 1922	N	0,6 - 0,8
Puncture energy	JAS P-1019	mJ	25 - 27
Puncture deformation		mm	7,0 - 8,0
Spencer impact resistance	ASTM D 3420	mJ	700 - 800
Flex crack (23°C, 1000 cycles / 5°C, 100 cycles)	Mil B-131C	Holes/0,04m^2	< 40 / < 10

Optical Properties [2]	Method	Unit	Value
Haze	ASTM D 1003	%	20 - 22
Gloss	ASTM D 523	%	75 - 95

Gas Barrier [2]	Method	Unit	Value
Oxygen (T=23°C, RH=0%)	ASTM D 3985	ml/m^2.day	20 - 22
Water Vapour (T=40°C, RH=90%)	JIS Z-0208	g/m^2.day	120 - 140

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Slip Properties [2]	Method	Unit	Value
Coefficient of friction (static)	ASTM D 1894	-	0,28 - 0,32
Coefficient of friction (dynamic)		-	0,28 - 0,32

Thermoforming Properties [2]	Method	Unit	Value
Max. Thermoforming depth	UBE METHOD	mm	60 - 70

Regulation	Method	Unit	Value
FDA / EC	-	-	I&D / I&D

I: Approved for indirect food contact D: Approved for direct food contact

(1) Measured on base resin
(2) All tests carried out with a 5 layers airblown line, Die diameter = 90 mm · Die gap=1,4 mm
Structure: PE (outer) / PE / PA (medium) / PE / PE (inner), PA layer delaminated for the tests
Layer thickness distribution: PE = 50 µm, PA = 50 µm, PE = 50 µm (Total film thickness = 150 µm) · Cooling conditions: Chiller temp. = 13 °C · Take off rolls = 35 °C
Film orientation: Blow-up ratio = 2,1 · Take-off speed = 6m min-1 · Sample conditioning and testing conditions: T = 23°C, RH =50%

Processing conditions

	Extruder					Adaptor	Die
	Hopper	Zone 1	Zone 2	Zone 3	Zone 4		
Temperature (°C)	40 - 120	200 - 210	240 - 250	250 - 260	245 - 255	250 - 260	250 - 260

Drying conditions

UBE NYLON is supplied dry (moisture content < 0,1%) and packed in high barrier films. However, as polyamide is a hygroscopic material, the user should take a special care of the possible moisture absorption once the bag or liner box has been opened. In case of moisture absorption, the material should be dried with dehumidified air at 80°C for more than 4 hours.

Storage

Well-sealed packages could be stored in cool and dry conditions over long periods of time. Protect the packages from heat and direct sunlight to prevent possible damages.

Health & environmental data

Please refer to the corresponding **UBE NYLON** grade SDS.

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