



## Excellence in Polymerization

Recent technical advancements in NUREL polymerization processes have enabled us to diversify from upstream polyamide single supply channels into all polyamide markets involving new and exciting products and partnerships.

## Your Polyamide Service and Design Partner becoming part of your business

With sophisticated laboratories for analysing both chemical and mechanical properties, along with parallel synergies with other polymerization companies within our SAMCA Group, NUREL can take customer requests for new developments from laboratory stages to full scale industrial production in months. Why not ask us?

## Promyde® Polyamide 6

Promyde® is processed by injection moulding and extrusion to produce parts and components for electrical and electronics, automotive and general industry combining cost effectiveness with performance.

## Your local supply of Promyde

Nurel has a PAN European distribution network giving a broad offer of polyamide, technical advice, with a quick delivery service.





## Promyde® Product Overview – Unfilled PA6

Unfilled Promyde® is produced in NUREL's polymerization process in which unique additivition packages and polymer chain modifications are made combining cost effectiveness and differential properties.

Customers receive Promyde unfilled polyamide 6 in its purest state. Promyde unreinforced products are melted for the first time in our customer's injection moulding machines.

Unfilled Promyde is not melted and extruded to incorporate special additives. Hence, optimizing processing and performance.

### Promyde® Unreinforced Polyamide Viscosity Range

Features	Viscosity Number (ISO 307)	Relative Viscosity
<b>Extremely Fast Injection</b>	100	2.1
<b>Fast Running</b>	125	2.4
<b>Improved Transparency</b>	125	2.4
<b>Wide Processing Window</b>	145	2.65
<b>Resilience &amp; Tenacity</b>	203	3.3
<b>Injection / Extrusion</b>	228	3.6
<b>Injection /Extrusion &amp; Blow Moulding</b>	263	4.0

\* Full product portfolio including impact modified, transparent copolyamides and flame retardant products is published at the end of this brochure.



## Promyde® Product Overview: Filled PA6

NUREL's self dependence on polymer supply guarantees that our customers receive consistency in processing and product behaviour.

### Promyde® filled products include:

#### **10-50% Glass Filled**

For stiffness and strength  
Including high flowing glass filled

#### **Impact Modified**

Both medium and high impact resistant products

#### **Flame Retardant and Self Extinguishing**

For electrical and electronics

#### **30% & 40% Mineral Filled**

For extra flatness



## Product Application Overview

### Promyde® Product Use / Advantage

#### Multi Purpose Fast Injection

B300 P	Extremely High Flowing for design innovation, For very small pieces. Also to aid production of large parts in smaller machines
B15 P	For very fast multi cavity moulding of small parts
B20 P	For precise technical moulding of both large or small parts
B30 P	Wide processing window for general purpose unreinforced applications. B30 P is UL Certified with a Glow Wire Flammability Index 850°C applicable for electrical parts
B30 PN	Non nucleated with slightly improved impact resistance over B30 P Product also has excellent colourability
B30 TR P	For improved transparency on applications requiring chemical resistance

#### Promyde High Viscosity Polyamide

B33 L	Extrusion of thin diameter corrugated pipe, ropes and high tenacity yarns
B33 LN	For strong wheels and castors required to lift heavy loads
B36 L	High viscosity Promyde for Injection and extrusion
B36 LN	High viscosity injection moulding grade
B40 L	Extrusion of corrugated pipe for electric conduits, semi finished products, profiles, ropes, mandrels, and special textiles for automotive
B40 LN	High viscosity injection moulding grade suitable for both small and large heavy duty wheels and castors

#### Impact Modified Promyde

B30 P MI D	Injection of wall plugs, fixing systems and other applications requiring resistance to breakage by impact. Also useful in over moulding
B30 P2 HI	For applications requiring extra resistance to breakage by impact

#### Unreinforced Flame Retardant Promyde

B15 U	For small electrical parts. Glow Wire Flammability Index 960°C
B30 U	UL certified for natural and coloured electrical parts requiring a Glow Wire Flammability Index of 960°C
B30 P2 U0	UL certified for standard unfilled V0 requests

#### Promyde Glass Reinforced Grades

Promyde is available from 10%-50% glass reinforced, also flame retardant UL certified, Impact modified glass filled grades, including high flow grades

## Copolyamide: Improved transparency

Recent market requests, asking for transparent polyamides, have coincided with NUREL's continued development programme.

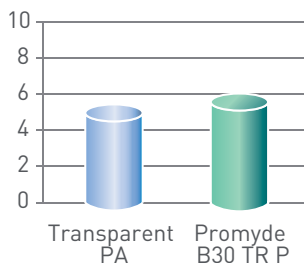
Promyde B30 TR P is available upon request for applications where extra transparency is desired over conventional polyamide 6 applications.

B30 TR P is a semi-crystalline polymer. Therefore, it is only recommended for applications under 60°C. Main applications include:

- **Electrical and electronic** components such as switches
- **Automotive** applications can be used for decorative surfaces and liquid level indicators
- **Filter cups** for fuels and air
- **Window and inspection glasses**, flow meters
- **Decorative applications** such as handles and other decorative pieces
- **Ink cartridges** for printers



**% Haze ASTMD1003**  
(1,5mm; T<sup>a</sup> mold=30°C)



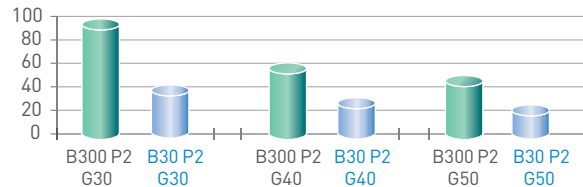
# Newly developed Technical Polyamides

## New NUREL High Flow Polyamides

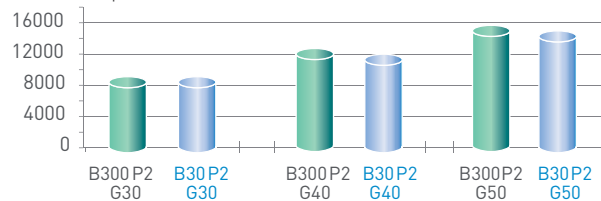
With both unfilled Promyde® High Flow B300 HF, along with 30%, 40% and 50% glass filled High Flow Promyde customers now have an economical choice of producing high glass fibre content parts with:

- **Easy mould filling of large parts**  
Filling all nooks and crannies  
Smaller machines can be used for large part injection
- **Processing at 30°C to 40°C lower temperature**  
Friendly on electricity bills
- **Also meaning the polymer enters mould cooler and is released earlier**  
More parts output / hour welcome if the machine is really busy
- **Innovative design is permitted**  
Extremely small parts can be designed with polyamides

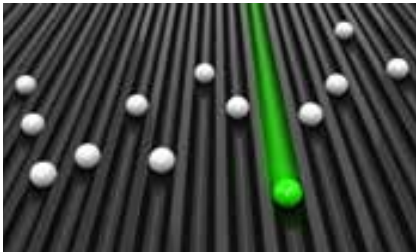
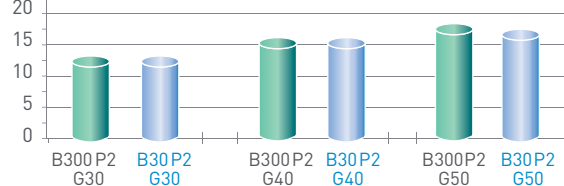
**Melt Volume Rate**  
275°C, 5Kg (cm<sup>3</sup>/10min)



**Flexural Modulus**  
(Mpa)



**Notched Charpy Impact**  
Dry, 2J (KJ/m<sup>2</sup>)





PHYSICAL PROPERTIES	CONDITIONS	TEST METHOD	UNIT
Density	23 °C	ISO 1183	g/cm <sup>3</sup>
Viscosity Number	25 °C	ISO 307	cm <sup>3</sup> /g
Moisture absorption	23 °C / 50% r.h.	ISO 62	%
Water absorption	23 °C / saturation	ISO 62	%
Flammability	1.5 mm	UL-94	Class
Glow wire flammability index	1.5 mm	IEC 60695-2-12,13	°C
Glow wire ignitability temperature	1.5 mm	IEC 60695-2-12,13	°C
PROCESSING CONDITIONS			
Melt Volume rate	275 °C / 5 kg	ISO 1133	cm <sup>3</sup> /10min
Melt temperature, injection moulding			°C
Mould temperature			°C
Mould Shrinkage	longitudinal		%
	transversal		%
MECHANICAL PROPERTIES			(dry/cond.)*
Tensile modulus	23 °C, 1 mm/min	ISO 527-1/-2	MPa
Tensile strength	23 °C, 50 mm/min	ISO 527-1-2	MPa
Elongation at yield	23 °C, 50 mm/min	ISO 527-1/-2	%
Elongation at break	23 °C, 50 mm/min	ISO 527-1-2	%
Flexural modulus	23 °C, 2 mm/min	ISO 178	MPa
Flexural strength	23 °C, 2 mm/min	ISO 178	MPa
Charpy unnotched impact strength <sup>1)</sup>	23°C	ISO 179/1eU	kJ/m <sup>2</sup>
	-30°C		
Charpy notched impact strength	23°C	ISO 179/1eA	kJ/m <sup>2</sup>
	-30°C		
THERMAL PROPERTIES			
Melting temperature [DSC]	10°C/min	ISO 3146	°C
Heat Deflection Temperature (HDT)	1,8 MPa	ISO 75-1/-2	°C
	0,45 MPa		
Thermal coefficient of linear expansion	23-80°C long.	ISO 11359-1/-2	10 <sup>-4</sup> /K
	23-80°C transv.		
ELECTRICAL PROPERTIES			(dry/cond.)*
Dielectric constant	1MHz	IEC 60250	
Dissipation factor	1MHz	IEC 60250	
Volume resistivity		IEC 60093	Ω.m
Surface resistivity		IEC 60093	Ω
Comparative tracking index		IEC 60112	

HIGH FLOW			
B300 P	B300 P2 G30	B300 P2 G40	B300 P2 G50
1.13	1.36	1.46	1.56
100	100	100	100
3.0	2.1	1.8	1.5
9.5	6.7	6.0	4.5
V-2	HB	HB	HB
875	-	-	-
775	-	-	-
>300	90	57	37
230-250	235-250	235-260	235-260
40-80	40-80	40-80	40-80
0.90-1.10	0.30-0.35	0.30-0.35	0.30-0.35
0.80-1.10	0.40-0.45	0.40-0.45	0.40-0.45
3,300 / 1,100	9,900 / 6,700	14,500 / 8,700	17,000 / 10,000
82 / 40	195 / 115	235 / 150	230 / 160
4.0 / 25	- / -	- / -	- / -
20 / >50	3.0 / 5.0	3.0 / 3.5	3.0 / 3.5
2,800 / 1,000	8,400 / 5,200	12,000 / 7,000	15,500 / 8,500
115 / 35	274 / 180	340 / 200	370 / 195
NB / NB	85 / 95	103 / 130	150 / 200
- / -	75	- / -	- / -
5.5 / 35	13 / 25	15 / 22	17 / 30
4.5 / -	10.0 / -	- / -	- / -
222	222	222	222
65	210	213	215
187	215	215	215
0.70	0.20	0.16	0.13
1.0	0.6	0.6	0.5
3.5 / 7.0	3.8 / 6.8	3.9 / 6.5	4.2 / 6.3
300 / 3,000	230 / 2,200	190 / 1,800	140 / 1,400
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
600	500	500	500

DISCLAIMER: Values have been established by standard tests. The data should be considered as a guide and not as binding minimum values. Because many factors affect processing or applications, we recommend that individual tests are performed to determine the suitability of the product use.

# Promyde® Unreinforced: Injection Moulding Grades

PHYSICAL PROPERTIES	CONDITIONS	TEST METHOD	UNIT
Density	23 °C	ISO 1183	g/cm <sup>3</sup>
Viscosity Number	25 °C	ISO 307	cm <sup>3</sup> /g
Moisture absorption	23 °C / 50% r.h.	ISO 62	%
Water absorption	23 °C / saturation	ISO 62	%
Flammability	1.5 mm	UL-94	Class
Glow wire flammability index	1.5 mm	IEC 60695-2-12,13	°C
Glow wire ignitability temperature	1.5 mm	IEC 60695-2-12,13	°C
PROCESSING CONDITIONS			
Melt Volume rate	275 °C / 5 kg	ISO 1133	cm <sup>3</sup> /10min
Melt temperature, injection moulding			°C
Mould temperature			°C
Mould Shrinkage	longitudinal		%
	transversal		%
MECHANICAL PROPERTIES			(dry/cond.)*
Tensile modulus	23 °C, 1 mm/min	ISO 527-1/-2	MPa
Tensile strength	23 °C, 50 mm/min	ISO 527-1-2	MPa
Elongation at yield	23 °C, 50 mm/min	ISO 527-1/-2	%
Elongation at break	23 °C, 50 mm/min	ISO 527-1-2	%
Flexural modulus	23 °C, 2 mm/min	ISO 178	MPa
Flexural strength	23 °C, 2 mm/min	ISO 178	MPa
Charpy unnotched impact strength <sup>1)</sup>	23°C	ISO 179/1eU	kJ/m <sup>2</sup>
	-30°C		
Charpy notched impact strength	23°C	ISO 179/1eA	kJ/m <sup>2</sup>
	-30°C		
THERMAL PROPERTIES			
Melting temperature (DSC)	10°C/min	ISO 3146	°C
Heat Deflection Temperature (HDT)	1,8 MPa	ISO 75-1/-2	°C
	0,45 MPa		
Thermal coefficient of linear expansion	23-80°C long.	ISO 11359-1/-2	10 <sup>-4</sup> /K
	23-80°C transv.		
ELECTRICAL PROPERTIES			(dry/cond.)*
Dielectric constant	1MHz	IEC 60250	
Dissipation factor	1MHz	IEC 60250	
Volume resistivity		IEC 60093	Ω.m
Surface resistivity		IEC 60093	Ω
Comparative tracking index		IEC 60112	

UNREINFORCED		
B15 P	B20 P	B30 P
1.13	1.13	1.13
120	125	145
3.0	3.0	3.0
9.5	9.5	9.5
V-2	V-2	V-2
850	850	850
700	700	725
260	226	145
250-270	250-270	250-270
40-80	40-80	40-80
0.90-1.10	0.90-1.10	0.90-1.10
0.80-1.10	0.80-1.10	0.80-1.10
3,300 / 1,100	3,300 / 1,100	3,300 / 1,100
85 / 40	85 / 40	85 / 40
3.5 / 25	3.5 / 25	3.5 / 25
18 / > 50	18 / > 50	18 / > 50
2,800 / 1,000	2,800 / 1,000	2,800 / 1,000
110 / 30	110 / 30	110 / 30
NB / NB	NB / NB	NB / NB
320 / -	320 / -	- / -
5.0 / 30	5.0 / 30	5.0 / 30
4.5 / -	4.5 / -	4.5 / -
222	222	222
65	65	65
187	187	187
0.70	0.70	0.70
1.0	1.0	1.0
3.5 / 7.0	3.5 / 7.0	3.5 / 7.0
300 / 3,000	300 / 3,000	300 / 3,000
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
600	600	600

<sup>1)</sup>NB: No break. \* dry = dry as moulded / cond. = conditioned according to ISO 1110

							UNREINFORCED
B30 PN	B33 L	B33 LN	B36 L	B36 LN	B40 L	B40 LN	B30 TR P
1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.11
145	203	203	228	228	263	263	125
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
V-2	V-2	V-2	V-2	V-2	V-2	V-2	V-2
-	-	-	-	-	-	-	800
-	-	-	-	-	-	-	675
145	35	35	25	25	14	14	180
250-270	260-280	260-280	260-280	260-280	260-280	260-280	220-250
40-80	40-80	40-80	40-80	40-80	40-80	40-80	0-30
1.20-1.40	1.00-1.20	0.90-1.10	1.00-1.20	0.90-1.10	1.00-1.20	0.90-1.10	0.80-1.00
1.08-1.40	0.90-1.10	0.80-1.10	0.90-1.10	0.80-1.10	0.90-1.10	0.80-1.10	0.70-0.90
3,200 / 1,100	3,300 / 1,100	3,350 / 1,100	3,300 / 1,100	3,400 / 1,100	3,300 / 1,100	3,400 / 1,100	2,600 / 1,000
85 / 40	85 / 40	85 / 40	85 / 40	85 / 40	85 / 40	90 / 40	75 / 35
3.5 / 25	4.0 / 25	4.0 / 25	4.0 / 25	4.0 / 25	4.0 / 25	4.0 / 25	4.0 / 40
18 / > 50	50 / > 50	50 / > 50	60 / > 50	60 / > 50	70 / > 50	70 / > 50	140 / > 50
2,700 / 1,000	2,800 / 1,000	2,800 / 1,000	2,800 / 1,000	2,800 / 1,000	2,800 / 1,000	2,900 / 1,000	2,500 / 1,000
105 / 30	110 / 30	110 / 30	110 / 30	110 / 30	110 / 30	115 / 30	100 / 30
NB / NB	NB / NB	NB / NB	NB / NB	NB / NB	NB / NB	NB / NB	95 / NB
- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
5.5 / 30	6.0 / 35	5.7 / 35	6.2 / 35	6.0 / 35	6.4 / 35	6.2 / 38	5.0 / 30
- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
222	222	222	222	222	222	222	210
65	65	65	65	65	65	65	55
197	197	197	197	197	197	197	180
0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
3.5 / 7.0	3.5 / 7.0	3.5 / 7.0	3.5 / 7.0	3.5 / 7.0	3.5 / 7.0	3.5 / 7.0	3.5 / 7.0
230 / 3,000	230 / 3,000	300 / 3,000	230 / 3,000	230 / 3,000	300 / 3,000	300 / 3,000	300 / 3,000
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
600	600	600	600	600	600	600	600

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Glow wire flammability index	1.5 mm	IEC 60695-2-12,13	°C
Glow wire ignitability temperature	1.5 mm	IEC 60695-2-12,13	°C
PROCESSING CONDITIONS			
Melt Volume rate	275 °C / 5 kg	ISO 1133	cm <sup>3</sup> /10min
Melt temperature, injection moulding			°C
Mould temperature			°C
Mould Shrinkage	longitudinal		%
	transversal		%
MECHANICAL PROPERTIES			(dry/cond.)*
Tensile modulus	23 °C, 1 mm/min	ISO 527-1/-2	MPa
Tensile strength	23 °C, 50 mm/min	ISO 527-1-2	MPa
Elongation at yield	23 °C, 50 mm/min	ISO 527-1/-2	%
Elongation at break	23 °C, 50 mm/min	ISO 527-1-2	%
Flexural modulus	23 °C, 2 mm/min	ISO 178	MPa
Flexural strength	23 °C, 2 mm/min	ISO 178	MPa
Charpy unnotched impact strength	23°C	ISO 179/1eU	kJ/m <sup>2</sup>
	-30°C		
Charpy notched impact strength	23°C	ISO 179/1eA	kJ/m <sup>2</sup>
	-30°C		
THERMAL PROPERTIES			
Melting temperature (DSC)	10°C/min	ISO 3146	°C
Heat Deflection Temperature (HDT)	1,8 MPa	ISO 75-1/-2	°C
	0,45 MPa		
Thermal coefficient of linear expansion	23-80°C long.	ISO 11359-1/-2	10 <sup>-4</sup> /K
	23-80°C transv.		
ELECTRICAL PROPERTIES			(dry/cond.)*
Dielectric constant	1MHz	IEC 60250	
Dissipation factor	1MHz	IEC 60250	
Volume resistivity		IEC 60093	Ω.m
Surface resistivity		IEC 60093	Ω
Comparative tracking index		IEC 60112	

FILLED		
B30 P2 G10	B30 P2 G15	B30 P2 G20
1.20	1.22	1.28
145	145	145
2.8	2.6	2.3
8.5	8.0	6.9
HB	HB	HB
-	-	-
-	-	-
75	60	55
260-290	260-290	260-290
40-80	40-80	40-80
0.40-0.80	0.40-0.70	0.40-0.70
0.70-1.00	0.60-0.90	0.60-0.90
4,500 / 2,700	6,000 / 3,400	6,500 / 4,500
110 / 68	150 / 78	145 / 85
- / -	- / -	- / -
3.5 / 7.0	3.5 / 7.0	3.5 / 6.5
4,300 / 2,400	5,000 / 2,400	5,500 / 3,500
160 / 90	180 / 90	195 / -
40 / 80	50 / 90	70 / 95
30	43	- / -
5.0 / 8	5.5 / 12	8.0 / 26
4.0 / -	5.0 / -	- / -
222	222	222
190	190	205
215	215	215
0.30	0.30	0.20
0.7	0.7	0.6
3.6 / 6.9	3.6 / 6.9	3.8 / 6.8
250 / 2,200	250 / 2,200	250 / 2,200
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
500	500	500

\* dry = dry as moulded / cond. = conditioned according to ISO 1110

FILLED

B30 P2 G30	B30 P2 G35	B30 P2 G40	B30 P2 G50	B30 P2 GFC15	B30 P2 GFC30	B30 P2 GB30	B30 P2 M30	B30 P2 M40
1.36	1.40	1.46	1.56	1.22	1.36	1.36	1.36	1.46
145	145	145	145	145	145	145	145	145
2.1	2.0	1.8	1.5	2.6	2.1	2.1	2.1	1.8
6.7	6.2	6.0	4.5	8.0	6.7	6.7	6.7	5.7
HB	HB	HB	HB	HB	HB	HB	HB	HB
-	-	-	-	-	-	-	-	750
-	-	-	-	-	-	-	-	700
45	35	26	25	60	45	45	45	70
260-290	270-290	270-290	270-290	260-290	260-290	260-290	260-290	270-290
80-95	80-95	80-95	80-95	40-80	80-95	80-95	40-80	40-80
0.30-0.35	0.30-0.35	0.30-0.35	0.30-0.35	0.40-0.70	0.30-0.35	0.30-0.35	-	- / -
0.40-0.45	0.40-0.45	0.40-0.45	0.40-0.45	0.60-0.90	0.40-0.45	0.35-0.40	-	- / -
9,300 / 6,200	11,000 / 7,500	13,000 / 8,500	15,600 / 10,000	6,000 / 3,400	9,300 / 6,200	4,400 / 1,900	5,200 / 2,000	7,000
190 / 110	195 / 130	205 / 138	215 / 150	150 / 78	190 / 110	60 / 40	80 / 50	95 / 60
- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
3.0 / 5.0	3.0 / 4.0	3.0 / 3.5	3.0 / 3.5	3.5 / 7.0	3.0 / 5.0	8.0 / -	3.0 / 7.0	3.0 / 7.0
8,000 / 5,100	9,500 / 6,000	10,600 / 6,500	14,000 / 8,000	5,000 / 2,400	8,000 / 5,100	4,000 / 1,700	3,900 / 2,000	6,000 / 3,500
250 / 180	275 / -	285 / 180	340 / -	180 / 90	250 / 180	120 / 70	94 / 50	145 / 110
85 / 95	90 / 100	95 / 100	95 / 110	50 / 90	85 / 95	50 / 75	- / -	- / -
75	- / -	- / -	- / -	43 / -	75 / -	40 / -	- / -	-
13.0 / 25	14.0 / 25	16.0 / 22	19.0 / 27	5.5 / 12	13.0 / 25	4.0 / 10	5.3 / 25	4.0 / 20
10.0 / -	- / -	- / -	- / -	5.0 / -	10.0 / -	3.0 / -	4.0 / -	3.0 / -
222	222	222	222	222	222	222	222	222
210	213	213	215	190	210	90	210	100
215	215	215	215	215	215	180	215	-
0.20	0.18	0.16	0.13	0.30	0.20	0.20	0.20	0.30
0.6	0.6	0.6	0.5	0.7	0.6	0.6	0.6	0.6
3.8 / 6.8	3.8 / 6.5	3.9 / 6.5	4.2 / 6.3	3.6 / 6.9	3.8 / 6.8	3.7 / 6.1	3.8 / 6.2	3.9 / 6.2
230 / 2,200	230 / 2,200	190 / 1,800	140 / 1,400	250 / 2,200	230 / 2,200	220 / 2,100	200 / 2,000	180 / 1,800
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
500	500	500	500	500	500	500	501	500

DISCLAIMER: Values have been established by standard tests. The data should be considered as a guide and not as binding minimum values. As many factors may affect processing or applications, we recommend that individual tests are performed to determine the suitability of the product use.

# Injection Moulding Grades: flame retardant, impact modified, nano clay

PHYSICAL PROPERTIES	CONDITIONS	TEST METHOD	UNIT
Density	23 °C	ISO 1183	g/cm <sup>3</sup>
Viscosity Number	25 °C	ISO 307	cm <sup>3</sup> / g
Moisture absorption	23 °C / 50% r.h.	ISO 62	%
Water absorption	23 °C / saturation	ISO 62	%
Flammability	1.5 mm	UL-94	Class
Glow wire flammability index	1.5 mm	IEC 60695-2-12,13	°C
Glow wire ignitability temperature	1.5 mm	IEC 60695-2-12,13	°C
PROCESSING CONDITIONS			
Melt Volume rate	275 °C / 5 kg	ISO 1133	cm <sup>3</sup> /10min
Melt temperature, injection moulding			°C
Mould temperature			°C
Mould Shrinkage	longitudinal		%
	transversal		%
MECHANICAL PROPERTIES			(dry/cond.)*
Tensile modulus	23 °C, 1 mm/min	ISO 527-1/-2	MPa
Tensile strength	23 °C, 50 mm/min	ISO 527-1-2	MPa
Elongation at yield	23 °C, 50 mm/min	ISO 527-1/-2	%
Elongation at break	23 °C, 50 mm/min	ISO 527-1-2	%
Flexural modulus	23 °C, 2 mm/min	ISO 178	MPa
Flexural strength	23 °C, 2 mm/min	ISO 178	MPa
Charpy unnotched impact strength <sup>1)</sup>	23°C	ISO 179/1eU	kJ/m <sup>2</sup>
	-30°C		
Charpy notched impact strength	23°C	ISO 179/1eA	kJ/m <sup>2</sup>
	-30°C		
THERMAL PROPERTIES			
Melting temperature (DSC)	10°C/min	ISO 3146	°C
Heat Deflection Temperature (HDT)	1,8 MPa	ISO 75-1/-2	°C
	0,45 MPa		
Thermal coefficient of linear expansion	23-80°C long.	ISO 11359-1/-2	10 <sup>-4</sup> /K
	23-80°C transv.		
ELECTRICAL PROPERTIES			(dry/cond.)*
Dielectric constant	1MHz	IEC 60250	
Dissipation factor	1MHz	IEC 60250	
Volume resistivity		IEC 60093	Ω.m
Surface resistivity		IEC 60093	Ω
Comparative tracking index		IEC 60112	

FLAME RETARDANT				
B15 U	B30 U	B30 P2 U0	B30 P2 G20 U0	B30 P2 G30 U0
1.13	1.13	1.18	1.36	1.4
120	145	125	125	125
3	3	2.5	2.3	2.1
9.5	9.5	9.0	6.9	6.5
V-2	V-2	V-0	V-0	V-0
960	960	960	960	960
750	775	775	775	775
260	145	145	-	-
250-270	250-270	250-270	250-270	250-270
40-80	40-80	40-80	40-80	40-80
0.9-1.1	0.9-1.1	0.9-1.1	0.3-0.35	0.2-0.5
0.8-1.1	0.8-1.1	0.8-1.1	0.4-0.45	0.7-0.9
3,300 / 1,100	3,300 / 1,100	3,800 / 1,500	8,300 / 5,000	9,900 / 6,500
85 / 40	85 / 40	85 / 40	95 / 40	160 / 110
3.5 / 25	3.5 / 25	3.5 / 25	- / -	- / -
18 / > 50	18 / > 50	9 / > 50	2.5 / 5	3.3 / 6
2,800 / 1,000	2,800 / 1,000	3,400 / 1,200	7,200 / 3,500	9,300 / 5,800
110 / 30	110 / 30	116 / 50	180 / 90	140 / 80
NB / NB	NB / NB	60 / -	60 / 80	70 / 95
320 / -	- / -	55 / -	- / -	- / -
5 / 30	5 / 30	3 / 18	6.5 / 25	6.5 / 20
4.5 / -	- / -	- / -	- / -	- / -
222	222	222	222	220
65	65	80	200	211
187	187	200	-	-
0.7	0.7	0.9	0.2	0.2
1	1	0.9	0.6	0.6
3.5 / 7	3.5 / 7	3.5 / 7	3.7 / 6.8	3.7 / 6.8
300 / 3,000	300 / 3,000	300 / 3,000	230 / 2,200	230 / 2,200
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
600	600	600	600	600

<sup>1)</sup> NB: No break. \* dry = dry as moulded / cond. = conditioned according to ISO 1110. \*\* measured with 2-Joule pendulum

IMPACT MODIFIED							
B30 P MI D	B30 P2 MI	B30 P2 HI	B30 P2 G10 MI	B30 P2 G15 MI	B30 P2 G30 MI	B30 P2 G40 MI	B30 P2 G45 MI
1.13	1.1	1.08	1.19	1.21	1.33	1.43	1.5
-	125	125	145	145	145	-	145
3.3	2.5	2.4	2.5	2.2	2	1.5	1.6
9.5	8.5	7.6	8	7	6.3	4.9	5
HB	HB	HB	HB	HB	HB	HB	HB
850	-	-	-	-	-	-	-
800	-	-	-	-	-	-	-
130	100	70	40	35	30	30	20
250-270	250-270	250-270	260-290	260-290	260-290	260-290	260-290
40-80	40-80	40-80	60-80	80-95	80-95	80-95	80-95
0.90-1.10	0.9-1.1	0.8-1	0.4-0.7	0.3-0.35	0.3-0.35	-	0.3-0.35
0.80-1.10	0.8-1.1	0.7-1	0.6-0.9	0.4-0.45	0.4-0.45	-	0.4-0.45
2,800 / 1,100	2,800 / 1,100	2,200 / 1,100	4,000 / 2,500	4,500 / 2,400	8,300 / 6,000	11,000 / 6,200	14,300 / 9,300
75 / 35	75 / 35	65 / 35	100 / 60	90 / 50	160 / 90	170 / 115	210 / 130
4.0 / 25	5 / 25	4.5 / 35	- / -	- / -	- / -	- / -	- / -
50 / 180	25 / 180	35 / > 50	4 / 8	10 / -	3 / 6	4.5 / 9.5	2.5 / 8
2,400 / 600	2,300 / 750	1,700 / 400	4,100 / 2,300	3,900 / 2,000	7,200 / 4,000	9,500 / 6,000	11,900 / 7,000
98 / 32	85 / 25	65 / 20	150 / 90	137 / 70	235 / -	240 / 140	250 / 150
NB / NB	NB / NB	NB / NB	60 / 80	75 / 100	95 / 105	100 / 130	95 / 120
-	NB / -	NB / -	50 / -	60 / -	85 / -	95 / -	90 / -
13.0 / 120	14 / NB**	100 / 125	10 / 19	16 / 30	16 / 30	22 / 40	17 / 40
10.0 / -	11.5 / -	31.5 / -	8 / -	10	14	17 / -	13
222	222	222	222	222	222	222	222
60	55	50	180	182	200	205	210
150	150	-	200	200	215	215	215
0.70	0.7	0.7	0.35	0.3	0.2	0.15	0.1
1.0	1	1	0.75	0.7	0.6	0.5	0.45
3.5 / 6.5	3.5 / 7	3.5 / 6	3.8 / 7	3.7 / 6.8	3.8 / 6.8	4 / 5.5	4 / 5
250 / 2,500	260 / 3,000	240 / 2,400	250 / 2,400	250 / 2,200	230 / 2,200	230 / 2,000	200 / 1,800
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>	10 <sup>13</sup> / 10 <sup>10</sup>
600	600	600	500	500	500	500	500

NANO CLAY
B30 NC100
1.14
132
2.3
7
V-2
-
-
145
250-270
20-80
0.7-0.85
0.8-0.9
4,000 / 2,000
100 / 52
3.5 / 25
4 / > 25
3,500 / 1,400
130 / 70
NB / NB
- / -
4.3 / 10
- / -
222
100
-
0.3
0.8
3.6 / 6.5
250 / 2,500
10 <sup>13</sup> / 10 <sup>10</sup>
10 <sup>13</sup> / 10 <sup>10</sup>
500

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