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Energizing Chemistry

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PLASTICS ENERGIZED BY **LANXESS**
Energizing Chemistry

Product range injection molding grades with reference data

X Durethan®

HIGH PERFORMANCE MATERIALS

Plastics with growth potential

Durethan® and Pocan® are plastic materials on the rise, offering outstanding potential for growth and innovation. Thanks to our efficient production facilities and intensive product and application development, we are one of the most competitive providers in the field.

The production of Durethan® and Pocan® is further supported by our manufacture of strategically relevant pre-production products. Our facilities in Krefeld-Uerdingen and Antwerp, among the largest of their kind, produce caprolactam and glass fibers on a global scale.

Industries and areas of application

Durethan® has a property profile that makes it ideal for applications in the automotive and electrical/electronics industries and in the construction sector.

Pocan® is used primarily in the electrical/electronics industry, although applications for this versatile material can also be found in the automotive and commercial vehicles industry, in medicine, and in the sports and leisure sectors.

Key brands and products:

Durethan®: Engineering resins based on polyamide 6, polyamide 66 and co-polyamides

Pocan®: Engineering resins based on polybutylene terephthalate

Tepex®: Continuous fiber reinforced thermoplastic composite sheets

HiAnt®: Engineering expertise and joint promotion of innovation

THE POWER OF INNOVATION

HiAnt®

In the development of innovative applications we support our customers with extensive technical service and know-how. The name HiAnt® stands for our expertise in this area. It is derived from the words "high-tech" and "ant". Ants are renowned for their well-organized teamwork, industriousness, interlinking through effective communication, and success through combined effort.

We make a distinction between the following key areas:

HiAnt® material development: Tailored material to satisfy demanding customer requirements.

HiAnt® concept development: Leadership in lightweight technology to drive evolutions.

HiAnt® Computer Aided Engineering: Top-notch simulation methods for exact prediction of component performance.

HiAnt® part testing: State-of-the-art testing facilities for practice-oriented component qualification.

HiAnt® processing: Development of material-process combinations to enable new applications.



NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

NON-REINFORCED		PAGE		
Basic Grades	B 30 S	low viscosity, standard grade	6	
	B 31 SK	low viscosity, fast cycle	7	
	B 40 SK	high viscosity	7	
Improved Toughness	BC 30	enhanced impact resistance compared to B 30 S	7	
	BC 40 SR2	high impact resistance	7	
	BC 304 H3.0	high impact resistance	7	
REINFORCED/FILLED				
Basic Grades	BKV 15 H2.0	15% glass fibers, PA 6 Copolymer	8	
	BKV 15 H2.0 DUS008	15% glass fibers	8	
	BKV 30 H2.0	30% glass fibers	11	
	ECCO PA GF30	30% glass fibers, mainly PA 6, contains recyclate	15	
	ECCO BV 30 H2	30% glass fibers, contains recyclate	14	
	BKV 35 H2.0	35% glass fibers	15	
	ECCO BV 35 H2	35% glass fibers, contains recyclate	16	
	BKV 40 H2.0	40% glass fibers	17	
	BKV 50 H2.0	50% glass fibers	18	
	BM 240 H2.0	40% mineral, isotropic properties, reduced warpage	20	
	BM 40 X H2.0 DUS009	40% glass fibers and mineral	19	
	BG 30 X H2.0	30% glass fibers and glass beads, reduced warpage	21	
	DP 1100/30 H2.0	30% glass beads, reduced warpage, improved surface quality	20	
	Improved Flowability	BKV 30 H2.0 EF	30% glass fibers	11
		BKV 30 H2.0 EF DUS029	30% glass fibers, reduced crystallinity	11
		BKV 35 H2.0 EF	35% glass fibers	15
		DP BKV 35 XF	35% glass fibers, extreme flow	15
		BKV 40 H2.0 EF	40% glass fibers	17
		BKV 50 H2.0 EF	50% glass fibers	18
		BKV 50 H2.0 EF DUS030	50% glass fibers, reduced crystallinity	18
BKV 50 H EF DUS022		50% glass fibers, improved heat stabilization	19	
DP BKV 60 H2.0 EF		60% glass fibers	19	
BM 29 X H2.0 EF		30% glass fibers and mineral	19	
DP 1441/40 H2.0 EF	40% glass fibers and mineral	20		
Improved Toughness	BKV 115 H2.0 DUS008	15% glass fibers	8	
	BKV 130 H2.0 DUS008	30% glass fibers	12	
	BKV 140 H2.0 DUS008	40% glass fibers	17	
	BKV 215 H2.0 DUS008	15% glass fibers	9	
	BKV 230 H2.0 DUS008	30% glass fibers	12	
	DP BKV 240 H2.0	40% glass fibers, PA 6 Copolymer	17	
Improved Surface Quality	BKV 15 G H2.0	15% glass fibers, PA 6 Copolymer	9	
	DP 2131/20 H2.0	20% glass fibers	10	
	BKV 30 G H2.0	30% glass fibers	12	
Improved Heat Stabilization	BKV 30 HTS	30% glass fibers	13	
	BKV 35 HTS	35% glass fibers	16	
GIT/WIT	BKV 130 GIT DUS008	30% glass fibers	14	
Improved Welding Performance	BKV 25 H2.0 LT	25% glass fibers	10	
	BKV 330 H2.0	30% glass fibers	14	
Improved Light and Weathering Stabilization	BKV 215 W1	15% glass fibers, high impact resistance	9	
	DP 2131/20 W1	20% glass fibers, improved surface quality	10	
	BKV 30 W1	30% glass fibers	13	
	BKV 30 G W1	30% glass fibers, improved surface quality	13	
	BG 30 X W1	30% glass fibers and glass beads, low warpage	21	
Improved Electric Conductivity	BCF 30 X H2.0	30% glass fibers and carbon fibers	21	
	MuCell BKV 35 CX H2.0	35% glass fibers	16	
PA 6I				
NON-REINFORCED				
Transparent grades	T 40		21	
	T 40 ZS	easy release	21	

NON-FLAME-RETARDANT PA 66

NON-REINFORCED		PAGE		
Basic Grades	A 30	low viscosity, standard grade	22	
	A 30 S	low viscosity, standard grade, easy-release	22	
	DP A 32	improved processing stability	22	
Improved Toughness	AC 30 DUS027		23	
	DP 2325 H3.0	enhanced toughness	23	
Improved Flowability	DP 2325 H2.0 DUS031	enhanced toughness	23	
REINFORCED/FILLED				
Basic Grades	AKV 15 H2.0	15% glass fibers	23	
	AKV 30 H2.0	30% glass fibers	23	
	AKV 35 H2.0	35% glass fibers	25	
	AKV 40 H2.0	40% glass fibers	26	
	AKV 50 H2.0	50% glass fibers	27	
	AM 40 X H2.0	40% glass fibers and mineral, reduced warpage	27	
	Improved Flowability	DP AKV 30 HR EF	30% glass fibers, improved hydrolysis resistance	24
		Improved Surface Quality AKV 30 G H2.0 SR1	30% glass fibers	24
		AKV 35 H2.0 SR1	35% glass fibers	25
	Improved Hydrolysis Resistance	AKV 30 HR H2.0	30% glass fibers	24
AKV 35 HR H2.0		35% glass fibers	26	
DP AKV 50 HR H2.0		50% glass fibers	27	
GIT/WIT	AKV 30 G HR DUS023	30% glass fibers, improved hydrolysis resistance	25	
	AKV 30 GIT H2.0	30% glass fibers	25	
	DP AKV 30 X HR EF	30% glass fibers	25	
MuCell	AKV 35 CX H2.0	35% glass fibers	26	

FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

NON-REINFORCED			
Basic Grade	B 30 S F30	UL94V-0 (0.4 mm)	28
	Halogen-free B 30 S FN30	UL94V-0 (0.4 mm)	29
	B 30 S FN40	UL94V-2 (0.75 mm)	29
REINFORCED/FILLED			
Basic Grade	BKV 25 F30	25% glass fibers, UL94V-0 (0.4 mm)	30
	Halogen-free DP 1801/30 H3.0	30% glass fibers, UL94V-2 (0.75 mm)	30
	BKV 20 FN00	18% glass fibers, UL94V-0 (0.4 mm)	29
	BKV 20 FN20	20% glass fibers, UL94V-2 (0.75 mm)	29
	BKV 30 FN00	30% glass fibers, UL94V-0 (0.75 mm)	30
	BM 25 FN20	25% mineral, UL94V-2 (0.75 mm)	31
	BM 25 FN20 DUS013	25% mineral, UL94V-2 (0.75 mm), optimized for laser marking	31
	DP BM 65 X FM30	65% glass fibers and mineral, UL94V-0 (1.2 mm), easy flow	31

FLAME-RETARDANT PA 66

NON-REINFORCED			
Halogen-free	A 30 S FN31	UL94V-0 (0.4 mm)	32
	DP 2801	UL94V-2 (0.75 mm)	32
REINFORCED/FILLED			
Basic Grades	AKV 25 F30	25% glass fibers, UL94V-0 (0.4 mm)	32
	Halogen-free DP 2802/30	30% glass fibers, UL94V-2 (0.75 mm)	33
	DP AKV 30 FN00	30% glass fibers, UL94V-0 (0.75 mm)	33
	DP AKV 30 FN00 DUS013	30% glass fibers, UL94V-0 (0.75 mm), optimized for laser marking	33
STABILIZATION *			
H2.0		Heat stabilization for black and dark colors	
H3.0		Special heat stabilization for electro/electronic applications	
HTS		Special heat stabilization for long-term temperatures	
W1		Light and weathering stabilization	

* also available with heat stabilizations or with other than mentioned stabilization

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

NON-REINFORCED

GRADE	PA 6
COLOR	B 30 S 000000

KEY CHARACTERISTICS	UNITS	TEST CONDITIONS	STANDARDS
Basic grade			
Improved flowability			
Improved toughness			
Improved hydrolysis resistance			
Reduced warpage			
Good surface quality			
Improved heat stabilization			
GIT/WIT			
Improved welding performance			
Improved weathering stabilization			
Improved electric conductivity			
High modulus			
MuCell			
Transparency			
Proportion of recycle			

GENERAL PROPERTIES (23 °C)

Glass fiber/glass bead/filler content	%	-	ISO 3451-1
Density	kg/m³	-	ISO 1183
Water absorption (saturation value)	%	water at 23 °C	ISO 62
Water absorption (equilibrium value)	%	23 °C; 50% r. h.	ISO 62

MECHANICAL PROPERTIES (23 °C/50% R. H.)

				dry as molded	conditioned
Tensile modulus	MPa	1 mm/min	ISO 527-1,-2	3200	1000
Yield stress	MPa	50 mm/min	ISO 527-1,-2	80	40
Yield strain	%	50 mm/min	ISO 527-1,-2	4.0	2.0
Nominal strain at break	%	50 mm/min	ISO 527-1,-2	20	> 50
Stress at break	MPa	5 mm/min	ISO 527-1,-2		
Strain at break	%	5 mm/min	ISO 527-1,-2		
Flexural strain at flexural strength	%	2 mm/min	ISO 178-A	6.0	8.0
Flexural stress at 3.5% strain	MPa	2 mm/min	ISO 178-A	95	25
Charpy impact strength 23 °C	kJ/m²	+23 °C	ISO 179-1eU	N	N
Charpy impact strength -30 °C	kJ/m²	-30 °C	ISO 179-1eU	N	N
Charpy notched impact strength 23 °C	kJ/m²	+23 °C	ISO 179-1eA	< 10	20
Charpy notched impact strength -30 °C	kJ/m²	-30 °C	ISO 179-1eA	< 10	< 10
Izod impact strength 23 °C	kJ/m²	+23 °C	ISO 180-1U	N	N
Izod impact strength -30 °C	kJ/m²	-30 °C	ISO 180-1U	N	N
Izod notched impact strength 23 °C	kJ/m²	+23 °C	ISO 180-1A	< 10	< 10
Izod notched impact strength -30 °C	kJ/m²	-30 °C	ISO 180-1A		

THERMAL PROPERTIES

Melting temperature	°C	10 °C/min	ISO 11357-1,-3	222
HDT, Method Af	°C	1.80 MPa	ISO 75-1,-2	55
HDT, Method Bf	°C	0.45 MPa	ISO 75-1,-2	160
Coefficient of linear thermal expansion, parallel	10 ⁻⁴ /K	23 to 55 °C	ISO 11359-1,-2	1.0
Coefficient of linear thermal expansion, across	10 ⁻⁴ /K	23 to 55 °C	ISO 11359-1,-2	1.1

FLAMEABILITY RATING

Burning behavior UL94 (UL Yellow Card)	Classification	(mm)	UL94	V-2 (0,38 NC), V-2 (1.5)
Glow Wire Flammability Index (GWFI)	°C	(mm)	IEC 60695-2-12	750 (2.0)
Glow Wire Ignition Temperature (GWIT)	°C	(mm)	IEC 60695-2-13	

ELECTRICAL PROPERTIES (23 °C/50% R. H.)

Relative permittivity; 1 MHz	-	1 MHz	IEC 60250	3.5	4.0
Dissipation factor; 1 MHz	10 ⁻⁴	1 MHz	IEC 60250	200	1200
Volume resistivity	Ohm·m		IEC 60093	1E13	1E10
Surface resistivity	Ohm		IEC 60093	1E14	1E13
Comparative Tracking Index (CTI)	Rating	Test solution A	IEC 60112	600 - 1.3	

SHRINKAGE (Plaque 60 x 60 x 2 mm)

Processing conditions of shrinkage plaques	°C/°C/bar	Melt-/mold temp./holding pressure	260/80/500***
Molding shrinkage, parallel	%	ISO 294-4	1.02
Molding shrinkage, across	%	ISO 294-4	1.16
Post-shrinkage, parallel; 120 °C; 4 h*	%	ISO 294-4	0.32
Post-shrinkage, across; 120 °C; 4 h*	%	ISO 294-4	0.4

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

NON-REINFORCED

B 31 SK		B 40 SK		PA 6		BC 40 SR2		BC 304 H3.0	
000000		000000		BC 30		000000		000000	

1140	1140	1103	1100	1060
10	10	9	9	7.5
3	3	2.7	2.7	2.2

dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
3500	1100	3200	900	2800	1200	2700	1200	1800	800
85	50	85	40	65	40	70	40	45	35
4.0	2.0	4.0	2.5	4.0	2.0	4.0	3.0	4.5	3.0
10	> 50	20	> 50	> 10	> 50	> 20	> 50	> 50	> 50
6.0	8.0	6.0	9.0	7.0	9.0	7.0	9.0	7.0	9.0
100	30	95	25	75	20	80	20	55	25
N	N	N	N	N	N	N	N	N	N
N	N	N	N	N	N	N	N	N	N
< 10	25	< 10	50	10	50	20	100	85	120
< 10	< 10	< 10	< 10	< 10	< 10	15	15	20	20
115	N	N	N	N	N				
116	N	N	N	N	N				
< 10	< 10			< 10	50	18	100	70	100
< 10	< 10	< 10	< 10	< 10	< 10			30	17

222	222	222	222	222
60	55	55	50	50
170	150	145	130	90
0.7	0.8	1.0	0.9	1.5
0.9	0.9	1.35	1.0	1.6

V-2 (0,38 NC), V-2 (1.5)	HB (1.5)	HB (0.75 NC)	HB (1.6)**	HB (1.6)**
750 (2.0)	750 (2.0)	800 (2.0)	750 (2.0)	650 (2.0)

3.5	4.0	3.5	4.0	3.3	3.8	3.3	4.0	3.0	3.5
200	1000	200	1350	190	660	200	900	150	900
1E13	1E10	1E13	1E09	1E13	1E11	1E13	1E10	1E13	1E10
1E15	1E14	1E14	1E13	1E15	1E14	1E15	1E13	1E15	1E14
600	600	600	600	600	600	600	600	600 - 1.7	600 - 1.7

280/80/400***	280/80/500***	260/80/400***	260/80/400***	260/80/500***
0.9	0.9	1.05	1.23	1.14
1.1	0.96	1.57	1.65	1.45
0.15	0.21	0.35	0.17	0.38
0.15	0.2	0.44	0.25	0.46

* deviant figures in parenthesis, ** own measurement, *** measurement on plaques 150 x 105 x 3 mm (n accordance with ISO 2577)
N = no failure, Conditioning in accordance with ISO 1110 (70 °C, 62% r. h.)

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

GRADE COLOR	REINFORCED (10 - 25% GLASS FIBERS)		
	PA 6	PA 6	PA 6
	DP 2131/20 H2.0	DP 2131/20 W1	BKV 25 H2.0 LT
	900051	901317	904040

KEY CHARACTERISTICS

UNITS

Basic grade			
Improved flowability			
Improved toughness			
Improved hydrolysis resistance			
Reduced warpage			
Good surface quality	■	■	
Improved heat stabilization			
GIT/WIT			
Improved welding performance			■
Improved weathering stabilization	■	■	
Improved electric conductivity			
High modulus			
MuCell			
Transparency			
Proportion of recycle			

GENERAL PROPERTIES (23 °C)¹

Glass fiber/glass bead/filler content	%	20	20	25
Density	kg/m ³	1280	1280	1320
Water absorption (saturation value)	%			7.5
Water absorption (equilibrium value)	%			2.2

MECHANICAL PROPERTIES (23 °C/50% R.H.)

		dry as molded		conditioned		dry as molded		conditioned	
Tensile modulus	MPa	7600		7600	4700	8400		5100	
Yield stress	MPa								
Yield strain	%								
Nominal strain at break	%								
Stress at break	MPa	150		150	100	160		90	
Strain at break	%	3.0		3.0	7.0	3.0		6.0	
Flexural strain at flexural strength	%	4.5		4.1	6.4	5.0		6.0	
Flexural stress at 3.5% strain	MPa	200		197	110	230		120	
Charpy impact strength 23 °C	kJ/m ²	45	60	45	60	60		80	
Charpy impact strength -30 °C	kJ/m ²	40	40	40	40	45		45	
Charpy notched impact strength 23 °C	kJ/m ²	< 10		< 10		< 10		10	
Charpy notched impact strength -30 °C	kJ/m ²	< 10		< 10		< 10		< 10	
Izod impact strength 23 °C	kJ/m ²	35		30	40	65		85	
Izod impact strength -30 °C	kJ/m ²	35		30	30	60		65	
Izod notched impact strength 23 °C	kJ/m ²	< 10	< 10	< 10	< 10	< 10		< 10	
Izod notched impact strength -30 °C	kJ/m ²	< 10	< 10	< 10	< 10	< 10		< 10	

THERMAL PROPERTIES

Melting temperature	°C	222		222		222	
HDT, Method Af	°C	215		215		200	
HDT, Method Bf	°C	213		213		215	
Coefficient of linear thermal expansion, parallel	10 ⁻⁴ /K	0.23		0.23		0.3	
Coefficient of linear thermal expansion, across	10 ⁻⁴ /K	0.89		0.89		0.9	

FLAMEABILITY RATING

Burning behavior UL94 (UL Yellow Card)	Classification		HB (1.6)**		HB (1.6)**		HB (0.75)
Glow Wire Flammability Index (GWFI)	°C						650 (2.0)
Glow Wire Ignition Temperature (GWIT)	°C						

ELECTRICAL PROPERTIES (23 °C/50% R.H.)

Relative permittivity; 1 MHz	-	3.74	4.27	3.74	4.27	4.0	5.0
Dissipation factor; 1 MHz	10 ⁻⁴	180	650	180	650	150	1600
Volume resistivity	Ohm·m	3E13	1E10	3E13	1E10	1E13	1E10
Surface resistivity	Ohm	2E15	2E13	2E15	2E13	1E14	1E12
Comparative Tracking Index (CTI)	Rating					400	

SHRINKAGE (Plaques 60 x 60 x 2 mm)

Processing conditions of shrinkage plaques	°C/°C/bar	280/80/600		260/80/500***		280/80/500***	
Molding shrinkage, parallel	%	0.35		0.22		0.21	
Molding shrinkage, across	%	0.54		0.67		0.88	
Post-shrinkage, parallel; 120 °C; 4 h [†]	%	0.12		0.07		0.04	
Post-shrinkage, across; 120 °C; 4 h [†]	%	0.19		0.20		0.14	

¹ For test conditions and standards refer to p. 6

* deviant figures in parenthesis; ** own measurement; *** measurement on plaques 150 x 105 x 3 mm (n accordance with ISO 2577)

N = no failure, Conditioning in accordance with ISO 1110 (70 °C, 62 % r.h.)

PLEASE NOTE THAT OUR PRODUCT INFORMATION AND DATA ARE SUBJECT TO CONTINUOUS EXAMINATION AND UPDATES. MAKE SURE YOU REFER TO FURTHER INFORMATION AND THE LATEST UPDATES AT WWW.DURETHAN.COM

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

GRADE COLOR	REINFORCED (30% GLASS FIBERS)		
	PA 6		
	BKV 30 H2.0	BKV 30 H2.0 EF	BKV 30 H2.0 EF DUS029
	901510	901510	901510

Basic grade			
Improved flowability			
Improved toughness			
Improved hydrolysis resistance			
Reduced warpage			
Good surface quality	■	■	■
Improved heat stabilization			
GIT/WIT			
Improved welding performance			
Improved weathering stabilization			
Improved electric conductivity			
High modulus			
MuCell			
Transparency			
Proportion of recycle			

	dry as molded		conditioned		dry as molded		conditioned	
Tensile modulus	9500	5800	9400	5500	9500			
Yield stress								
Yield strain								
Nominal strain at break								
Stress at break	170	100	170	100	155			
Strain at break	3.0	6.0	3.0	5.8	2.9			
Flexural strain at flexural strength	4.0	6.0	3.6	5.5				
Flexural stress at 3.5% strain	260	140	255	140				
Charpy impact strength 23 °C	75	90	65	80	65			
Charpy impact strength -30 °C	65	60	55	55	50			
Charpy notched impact strength 23 °C	10	20	11	15				
Charpy notched impact strength -30 °C	< 10	10	< 10					
Izod impact strength 23 °C	65	80	60	75	60			
Izod impact strength -30 °C	60	55	55	50	50			
Izod notched impact strength 23 °C	10	20	10	20	10			
Izod notched impact strength -30 °C	< 10	< 10	< 10		< 10			

Melting temperature	222		221				
HDT, Method Af	200		210			205	
HDT, Method Bf	215		219			220	
Coefficient of linear thermal expansion, parallel	0.2		0.2			0.2	
Coefficient of linear thermal expansion, across	1.0		1.0			0.9	

Burning behavior UL94 (UL Yellow Card)			HB (0.75)				
Glow Wire Flammability Index (GWFI)			700 (1.5)				
Glow Wire Ignition Temperature (GWIT)							

Relative permittivity; 1 MHz	3.8	4.4					
Dissipation factor; 1 MHz	170	780					
Volume resistivity	1E13	1E10					
Surface resistivity	1E14	1E13					
Comparative Tracking Index (CTI)	425		400				

Processing conditions of shrinkage plaques	280/80/600		280/80/600		280/80/600		
Molding shrinkage, parallel	0.3		0.29		0.23		
Molding shrinkage, across	0.69		0.81		0.70		
Post-shrinkage, parallel; 120 °C; 4 h [†]	0.06		0.05		0.05		
Post-shrinkage, across; 120 °C; 4 h [†]	0.13		0.1		0.14		

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

REINFORCED (30% GLASS FIBERS)

PA 6

GRADE	BKV 130 H2.0 DUS008	BKV 230 H2.0 DUS008	BKV 30 G H2.0
COLOR	901510	000000	900051

KEY CHARACTERISTICS

UNITS

Basic grade			
Improved flowability			
Improved toughness	■	■	
Improved hydrolysis resistance			
Reduced warpage			
Good surface quality			■
Improved heat stabilization			
GIT/WIT			■
Improved welding performance			
Improved weathering stabilization			■
Improved electric conductivity			
High modulus			
MuCell			
Transparency			
Proportion of recycle			

GENERAL PROPERTIES (23 °C)¹

Glass fiber/glass bead/filler content	%	30	30	30
Density	kg/m ³	1370	1320	1360
Water absorption (saturation value)	%	6.3		6.5
Water absorption (equilibrium value)	%	1.9		1.9

MECHANICAL PROPERTIES (23 °C/50% R.H.)

		dry as molded		conditioned		dry as molded		conditioned	
Tensile modulus	MPa	9300	5200	8600	4400	10000	6200		
Yield stress	MPa								
Yield strain	%								
Nominal strain at break	%								
Stress at break	MPa	155	95	130	85	180	110		
Strain at break	%	3.5	7.5	3.5	8.0	3.0	7.0		
Flexural strain at flexural strength	%	4.0	6.3	4.5	6.2	4.0	6.2		
Flexural stress at 3.5% strain	MPa	240	135	205	105		145		
Charpy impact strength 23 °C	kJ/m ²	90	90			75	75		
Charpy impact strength -30 °C	kJ/m ²	70	75			60	60		
Charpy notched impact strength 23 °C	kJ/m ²					10	13		
Charpy notched impact strength -30 °C	kJ/m ²					< 10	< 10		
Izod impact strength 23 °C	kJ/m ²	80	85	75	90	65	70		
Izod impact strength -30 °C	kJ/m ²	70	70	75	75	55	55		
Izod notched impact strength 23 °C	kJ/m ²	12	20	23	35	< 10	< 10		
Izod notched impact strength -30 °C	kJ/m ²	< 10	< 10	14	15	< 10	< 10		

THERMAL PROPERTIES

Melting temperature	°C	222		220		221	
HDT, Method Af	°C	205		198		195	
HDT, Method Bf	°C	220		218		215	
Coefficient of linear thermal expansion, parallel	10 ⁻⁴ /K	0.2				0.3	
Coefficient of linear thermal expansion, across	10 ⁻⁴ /K	1.0				0.8	

FLAMEABILITY RATING

Burning behavior UL94 (UL Yellow Card)	Classification	HB (0.75)		HB (0.75 BK)		HB (1.6)**	
Glow Wire Flammability Index (GWFI)	°C					600 (2.0)	
Glow Wire Ignition Temperature (GWIT)	°C						

ELECTRICAL PROPERTIES (23 °C/50% R.H.)

Relative permittivity; 1 MHz	-					4.0	4.3
Dissipation factor; 1 MHz	10 ⁻⁴					170	500
Volume resistivity	Ohm-m					1E13	1E10
Surface resistivity	Ohm					1E15	1E13
Comparative Tracking Index (CTI)	Rating					475	

SHRINKAGE (Plaques 60 x 60 x 2 mm)

Processing conditions of shrinkage plaques	°C/°C/bar	280/80/600	280/80/600	280/80/600
Molding shrinkage, parallel	%	0.3	0.35	0.27
Molding shrinkage, across	%	0.7	0.85	0.58
Post-shrinkage, parallel; 120 °C; 4 h [†]	%	0.1	0.4	0.06
Post-shrinkage, across; 120 °C; 4 h [†]	%	0.2	0.14	0.16

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

REINFORCED (30% GLASS FIBERS)

PA 6

GRADE	BKV 30 G W1	BKV 30 W1	BKV 30 HTS
COLOR	901317	000000	901510

Basic grade			
Improved flowability			
Improved toughness			
Improved hydrolysis resistance			
Reduced warpage			
Good surface quality			
Improved heat stabilization			
GIT/WIT			
Improved welding performance			
Improved weathering stabilization			
Improved electric conductivity			
High modulus			
MuCell			
Transparency			
Proportion of recycle			

	dry as molded		conditioned		dry as molded		conditioned	
Tensile modulus	9900	6600	9800	6100	9800	5200		
Yield stress								
Yield strain								
Nominal strain at break								
Stress at break	180	106	180	110	170	75		
Strain at break	2.7	6.1	3.0	7.0	3.0	8.0		
Flexural strain at flexural strength	3.7	5.7	4.0	7.0	4.0	6.0		
Flexural stress at 3.5% strain	260	156	265	135	260	110		
Charpy impact strength 23 °C	60	65	80	90	80	90		
Charpy impact strength -30 °C	50	40	70	70	70	60		
Charpy notched impact strength 23 °C			13	20	12	15		
Charpy notched impact strength -30 °C			10	10	< 10	< 10		
Izod impact strength 23 °C	50	60			70	60		
Izod impact strength -30 °C	45	40			60	40		
Izod notched impact strength 23 °C	10	10	15	25	11			
Izod notched impact strength -30 °C			10	10	< 10	< 10		

Melting temperature	219		222		222	
HDT, Method Af	200		200		205	
HDT, Method Bf	215		215		215	
Coefficient of linear thermal expansion, parallel	0.3		0.2		0.2	
Coefficient of linear thermal expansion, across	0.8		0.8		0.8	

Burning behavior UL94 (UL Yellow Card)			HB (1.6)**		HB (1.6)**	
Glow Wire Flammability Index (GWFI)			600 (2.0)		600 (2.0)	
Glow Wire Ignition Temperature (GWIT)						

Relative permittivity; 1 MHz		4.0	4.0	3.9	5.1
Dissipation factor; 1 MHz		150	1200	230	1300
Volume resistivity		1E13	1E10	1E13	4E13
Surface resistivity		1E14	1E12	1E12	9E11
Comparative Tracking Index (CTI)	500		600		425

Processing conditions of shrinkage plaques	°C/°C/bar	280/80/600	280/80/500***	280/80/600
Molding shrinkage, parallel	%	0.2	0.16	0.3
Molding shrinkage, across	%	0.6	0.82	0.72
Post-shrinkage, parallel; 120 °C; 4 h [†]	%	0.1	0.03	0.05
Post-shrinkage, across; 120 °C; 4 h [†]	%	0.2	0.12	0.1

¹ For test conditions and standards refer to p. 6

* deviant figures in parenthesis; ** own measurement; *** measurement on plaques 150 x 105 x 3 mm (n accordance with ISO 2577)

N = no failure, Conditioning in accordance with ISO 1110 (70 °C, 62 % r.h.)

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

REINFORCED (> 30% GLASS FIBERS)

GRADE COLOR	REINFORCED (> 30% GLASS FIBERS)		
	PA 6	PA 6 + CO-PA	PA 6
	BKV 50 H2.0	BKV 50 H2.0 EF	BKV 50 H2.0 EF DUS030
	901510	900116	901510

KEY CHARACTERISTICS **UNITS**

Basic grade			
Improved flowability		■	■
Improved toughness			
Improved hydrolysis resistance			
Reduced warpage			
Good surface quality			
Improved heat stabilization			
GIT/WIT			
Improved welding performance			
Improved weathering stabilization			
Improved electric conductivity			
High modulus	■	■	■
MuCell			
Transparency			
Proportion of recycle			

GENERAL PROPERTIES (23 °C)¹

Glass fiber/glass bead/filler content	%	50	50	50
Density	kg/m ³	1570	1570	1570
Water absorption (saturation value)	%	5.0		
Water absorption (equilibrium value)	%	1.5		

MECHANICAL PROPERTIES (23 °C/50% R.H.)

		dry as molded		conditioned		dry as molded		conditioned	
Tensile modulus	MPa	16300	9800	16200	10000	16000	9000		
Yield stress	MPa								
Yield strain	%								
Nominal strain at break	%								
Stress at break	MPa	220	140	215	140	215	130		
Strain at break	%	3.0	5.0	2.7	3.5	2.5	4		
Flexural strain at flexural strength	%	3.0	5.0	3.1	4.4	3.0	4.0		
Flexural stress at 3.5% strain	MPa						200		
Charpy impact strength 23 °C	kJ/m ²	100	100	100	85	90	90		
Charpy impact strength -30 °C	kJ/m ²	85	80	95	85	90			
Charpy notched impact strength 23 °C	kJ/m ²	20	25						
Charpy notched impact strength -30 °C	kJ/m ²	15	13						
Izod impact strength 23 °C	kJ/m ²	85	85	85	80	80	80		
Izod impact strength -30 °C	kJ/m ²	80	80	85	80	80			
Izod notched impact strength 23 °C	kJ/m ²	20	25	17	20	15			
Izod notched impact strength -30 °C	kJ/m ²	12	12	15		15			

THERMAL PROPERTIES

Melting temperature	°C	222		222		220	
HDT, Method Af	°C	205		210		213	
HDT, Method Bf	°C	215		220		220	
Coefficient of linear thermal expansion, parallel	10 ⁻⁴ /K	0.2		0.12		0.1	
Coefficient of linear thermal expansion, across	10 ⁻⁴ /K	0.7		0.9		0.8	

FLAMEABILITY RATING

Burning behavior UL94 (UL Yellow Card)	Classification	HB (0.75)			
Glow Wire Flammability Index (GWFI)	°C	650 (2.0)			
Glow Wire Ignition Temperature (GWIT)	°C				

ELECTRICAL PROPERTIES (23 °C/50% R.H.)

Relative permittivity; 1 MHz	-	4.3	5.0	4.2	4.8		
Dissipation factor; 1 MHz	10 ⁻⁴	240	890	170	774		
Volume resistivity	Ohm·m	1E14	1E11	7E12	4E09		
Surface resistivity	Ohm	1E13	1E13				
Comparative Tracking Index (CTI)	Rating	550		400			

SHRINKAGE (Plaques 60 x 60 x 2 mm)

Processing conditions of shrinkage plaques	°C/°C/bar	280/80/400***	280/80/600	280/80/600
Molding shrinkage, parallel	%	0.16	0.19	0.20
Molding shrinkage, across	%	0.85	0.6	0.60
Post-shrinkage, parallel; 120 °C; 4 h [†]	%	0.02	0.04	0.05
Post-shrinkage, across; 120 °C; 4 h [†]	%	0.05	0.08	0.10

¹ For test conditions and standards refer to p. 6

* deviant figures in parenthesis; ** own measurement; *** measurement on plaques 150 x 105 x 3 mm (n accordance with ISO 2577)

N = no failure, Conditioning in accordance with ISO 1110 (70 °C, 62 % r.h.)

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

REINFORCED (> 30% GLASS FIBERS)

FILLER

REINFORCED (> 30% GLASS FIBERS)		FILLER	
PA 6		PA 6	
BKV 50 H EF DUS022	DP BKV 60 H2.0 EF	BM 29 X H2.0 EF	BM 40 X H2.0 DUS009
900116	900116	900116	901510

50	60	30 (GF+MD)	40 (GF+MD)
1570	1710	1360	1480
	3.6	7.0	
	1.1	2.2	

dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
16200	9500	20500	13100	6500		8000	4000

205	128	230	150	110		115	60
2.3	4.3	2.4	3.1	3.0		2.6	
2.9	4.0	3.0	4.0	4.0		3.4	
	197		175				
85	80	90	90	35	110	45	90
80		90	90	30	35	40	40
13		16					
10		16					
80	70	80	80	30	95	40	70
75		80	80	25	30	35	35
14	20	16	20	< 10	< 10	< 10	< 10
11		16		< 10	< 10	< 10	

220	222	221		222		220	
207	190	213		185		191	
215	210	220		210		215	
0.1	0.3	0.12		0.4		0.35	
0.8	0.9	0.75		0.8		0.85	

		HB (0.75 BK)			
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		4.7	5.1		
		177	651		
		5.8E12	8E09		
		600		425	425

280/80/600	280/80/600	280/80/600	290/80/600
0.2	0.28	0.45	0.51
0.7	0.46	0.63	0.67
0.02	0.02	0.12	0.17
0.07	0.06	0.18	0.15

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

GRADE	FILLER PA 6		
	DP 1441/40 H2.O EF	BM 240 H2.O	DP 1100/30 H2.O
COLOR	900116	901510	901510
KEY CHARACTERISTICS	UNITS		
Basic grade		■	■
Improved flowability	■		
Improved toughness			
Improved hydrolysis resistance			
Reduced warpage	■	■	■
Good surface quality	■		■
Improved heat stabilization			
GIT/WIT			
Improved welding performance			
Improved weathering stabilization			
Improved electric conductivity			
High modulus			
MuCell			
Transparency			
Proportion of recycle			

GENERAL PROPERTIES (23 °C) ¹				
	%	40 (GF+MD)	40 (MD)	30 (GB)
Glass fiber/glass bead/filler content				
Density	kg/m ³	1450	1460	1351
Water absorption (saturation value)	%		6.0	
Water absorption (equilibrium value)	%		1.9	

MECHANICAL PROPERTIES (23 °C/50% R.H.)							
		dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
Tensile modulus	MPa	9000	4500	6000	2200	4300	1350
Yield stress	MPa					80	35
Yield strain	%					3.5	15
Nominal strain at break	%						
Stress at break	MPa	125	65	85	50	75	35
Strain at break	%	2.5	8.7	7.0	40	6.0	155
Flexural strain at flexural strength	%	2.9	6.2	5.0	8.0	5.0	7.5
Flexural stress at 3.5% strain	MPa	200	110	140	50	115	30
Charpy impact strength 23 °C	kJ/m ²	40	65	120	N	30	> 150
Charpy impact strength -30 °C	kJ/m ²	37	45	90	90	20	30
Charpy notched impact strength 23 °C	kJ/m ²	< 10	< 10	< 10	12	3.0	8
Charpy notched impact strength -30 °C	kJ/m ²	< 10		< 10	< 10		
Izod impact strength 23 °C	kJ/m ²	35	60	100	N	25	N
Izod impact strength -30 °C	kJ/m ²	33	30	75	85	20	25
Izod notched impact strength 23 °C	kJ/m ²	< 10	10			3.5	7.5
Izod notched impact strength -30 °C	kJ/m ²	< 10		< 10	< 10		

THERMAL PROPERTIES				
Melting temperature	°C	220	222	222
HDT, Method Af	°C	195	90	70
HDT, Method Bf	°C	215	190	180
Coefficient of linear thermal expansion, parallel	10 ⁻⁴ /K	0.28	0.6	0.8
Coefficient of linear thermal expansion, across	10 ⁻⁴ /K	0.85	0.7	0.8

FLAMEABILITY RATING			
Burning behavior UL94 (UL Yellow Card)	Classification		HB (0.75 NC)
Glow Wire Flammability Index (GWFI)	°C		700 (2.0)
Glow Wire Ignition Temperature (GWIT)	°C		

ELECTRICAL PROPERTIES (23 °C/50% R.H.)				
Relative permittivity; 1 MHz	-		4.0	4.7
Dissipation factor; 1 MHz	10 ⁻⁴		150	1000
Volume resistivity	Ohm·m		1E13	1E09
Surface resistivity	Ohm		1E15	1E13
Comparative Tracking Index (CTI)	Rating		525	

SHRINKAGE (Plaques 60 x 60 x 2 mm)				
Processing conditions of shrinkage plaques	°C/°C/bar	290/80/600	280/80/500***	280/80/500***
Molding shrinkage, parallel	%	0.31	1.25	1.07
Molding shrinkage, across	%	0.72	1.22	1.13
Post-shrinkage, parallel; 120 °C; 4 h [†]	%	0.05	0.17	0.31
Post-shrinkage, across; 120 °C; 4 h [†]	%	0.11	0.2	0.31

¹ For test conditions and standards refer to p. 6
^{*} deviant figures in parenthesis; ^{**} own measurement; ^{***} measurement on plaques 150 x 105 x 3 mm (n accordance with ISO 2577)
 N = no failure, Conditioning in accordance with ISO 1110 (70 °C, 62 % r.h.)

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 MAKE SURE YOU REFER TO FURTHER INFORMATION AND THE LATEST UPDATES AT WWW.DURETHAN.COM

NON-FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

FILLER PA 6			NON-REINFORCED PA 6I	
BG 30 X H2.O	BG 30 X W1	BCF 30 X H2.O	T 40	T 40 ZS
901510	000000	901510	000000	000000
■				
■	■			
	■	■		
			■	■
30 (GB+GF)	30 (GB+GF)	30 (GB+GF)	-	-
1350	1360	1334	1180	1180
7.0	7.0		6.0	6.0
2.2	2.2		2.0	2.0

dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
6300	3100	6400	3200	13500	6700	3000	3000	3000	3300
						110	90	110	90
						6.0	5.0		
				3.5					
120	60	125	65	185	100				
3.5	10	4	10	2.9	5.0				
4.5	7.5	5.0	8.0	3.5	5.0	7.0	5.0	7.0	5.0
170	75	175	80	145	105	110	105	110	110
35	70	45	75	75	80	N	N	N	N
35	35	40	45	60	60	N	N	N	N
< 10	< 10	< 10	10	11		< 10	< 10	< 10	< 10
< 10	< 10	< 10	< 10	< 10		< 10	< 10	< 10	< 10
30	50	35	80	65	65				
25	25	30	40	60	60				
< 10	< 10	< 10	< 10	10					
< 10	< 10	< 10	< 10			< 10	< 10	< 10	< 10

222		222		220					
190		190		205		105		105	
210		210		219		115		115	
0.3		0.3		0.2		0.7			
0.9		0.9		0.9		0.8			

HB (0.75)		HB (0.75 BK)		V-2 (0.75 NC), V-2 (1.5)		V-2 (0.75 NC), V-2 (1.5)
650 (2.0)				960 (2.0)		960 (2.0)

4.0				3.8	4.0	3.8	4.0
189				900	1100	900	1100
1E13			2E03	1E13	1E13	1E13	1E13
1E14			4E04	1E15	1E15	1E15	1E15
325			150	600		600	

280/80/400***	280/80/600	280/80/600	280/80/500***	280/80/500***
0.42	0.5	0.22	0.53	0.53
0.93	0.7	0.77	0.49	0.49
0.09	0.1	0.03	0.13	0.13
0.19	0.2	0.08	0.09	0.09

FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

NON-REINFORCED

PA 6	
GRADE	B 30 S F30
COLOR	000000

KEY CHARACTERISTICS	UNITS	TEST CONDITIONS	STANDARDS
VDE certificate			
Thin wall applications			
Halogen-free			
Glow wire application			
Optimized for laser marking			
Improved flowability			

GENERAL PROPERTIES (23 °C)

Glass fiber/glass bead/filler content	%	-	ISO 3451-1
Density	kg/m ³	-	ISO 1183
Water absorption (saturation value)	%	water at 23 °C	ISO 62
Water absorption (equilibrium value)	%	23 °C; 50% r. h.	ISO 62

MECHANICAL PROPERTIES (23 °C/50% R.H.)

				dry as molded	conditioned
Tensile modulus	MPa	1 mm/min	ISO 527-1,-2	3600	
Yield stress	MPa	50 mm/min	ISO 527-1,-2	70	
Yield strain	%	50 mm/min	ISO 527-1,-2	3.7	
Nominal strain at break	%	50 mm/min	ISO 527-1,-2	9.0	
Stress at break	MPa	5 mm/min	ISO 527-1,-2		
Strain at break	%	5 mm/min	ISO 527-1,-2		
Flexural strain at flexural strength	%	2 mm/min	ISO 178-A	5.5	
Flexural stress at 3.5% strain	MPa	2 mm/min	ISO 178-A	100	
Charpy impact strength 23 °C	kJ/m ²	+23 °C	ISO 179-1eU	150	
Charpy impact strength -30 °C	kJ/m ²	-30 °C	ISO 179-1eU	130	
Charpy notched impact strength 23 °C	kJ/m ²	+23 °C	ISO 179-1eA	< 10	
Charpy notched impact strength -30 °C	kJ/m ²	-30 °C	ISO 179-1eA	< 10	
Izod impact strength 23 °C	kJ/m ²	+23 °C	ISO 180-1U	120	
Izod impact strength -30 °C	kJ/m ²	-30 °C	ISO 180-1U	100	
Izod notched impact strength 23 °C	kJ/m ²	+23 °C	ISO 180-1A	< 10	
Izod notched impact strength -30 °C	kJ/m ²	-30 °C	ISO 180-1A	< 10	

THERMAL PROPERTIES

Melting temperature	°C	10 °C/min	ISO 11357-1,3	222
HDT, Method Af	°C	1.80 MPa	ISO 75-1,-2	70
HDT, Method Bf	°C	0.45 MPa	ISO 75-1,-2	
Coefficient of linear thermal expansion, parallel	10 ⁻⁴ /K	23 to 55 °C	ISO 11359-1,-2	
Coefficient of linear thermal expansion, across	10 ⁻⁴ /K	23 to 55 °C	ISO 11359-1,-2	

FLAMEABILITY RATING

Burning behavior UL94 (UL Yellow Card)				
5VB / 5VA ab mm	Classification (mm)	UL94		1.5 / 2.0
V-0, V-1, V-2 ab mm	Classification (mm)	UL94		V-0 (0.4)
Glow Wire Flammability Index (GWFI)	°C (mm)	IEC 60695-2-12		960 (0.4 - 3.0)
Glow Wire Ignition Temperature (GWIT)	°C (mm)	IEC 60695-2-13		960 (0.4), 900 (0.75), 850 (3.0)

ELECTRICAL PROPERTIES (23 °C/50% R.H.)

Relative permittivity; 1 MHz	-	1 MHz	IEC 60250	
Dissipation factor; 1 MHz	10 ⁻⁴	1 MHz	IEC 60250	
Volume resistivity	Ohm·m		IEC 60093	
Surface resistivity	Ohm		IEC 60093	
Comparative tracking index CTI	Rating	Test solution A	IEC 60112	300
Comparative tracking index CTI M	PLC		UL746A	2

SHRINKAGE (Plaques 60 x 60 x 2 mm)

Processing conditions of shrinkage plaques	°C/°C/bar	Melt/mold temp./holding pressure	260/80/600
Molding shrinkage, parallel	%	ISO 294-4	1.1
Molding shrinkage, across	%	ISO 294-4	1.1
Post-shrinkage, parallel; 120 °C; 4 h*	%	ISO 294-4	0.4
Post-shrinkage, across; 120 °C; 4 h*	%	ISO 294-4	0.4

FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

NON-REINFORCED

PA 6		REINFORCED	
PA 6		PA 6	
B 30 S FN30	B 30 S FN40	BKV 20 FN00	BKV 20 FN20
000000	000000	000000	000000

		18	20
1140	1140	1345	1310
	3		

dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
3700	1200	3400	1100	7960	4500	6100	
80	40	90	45				
3.5	20	4.0	22.5				
10	> 50	9.6	265	3.4	4.5		
		60	65	110	60	100	
		15.5	293	3.0	4.9	3.0	
5.5	8	5.9	8.1	3.3	4.5	4.5	
110	35	100	26	95	165		
100	N	N	N	45	50		
75	75						
90	N	N	N	40	45	30	
65	85						
		< 10		< 10	12	< 10	
		< 10					

222		222		222		222
65		66		200		185
185		166		218		215
0.7		0.9		0.3		
0.8		0.8		0.9		

V-0 (0.4)	V-2 (0.75)	V-0 (0.4)	V-2 (0.75)
960 (0.4 - 3.0)	960 (0.75 - 3.0)	960 (0.75 + 3.0)	960 (0.75 - 3.0)
960 (0.4 + 0.75), 775 (3.0)	875 (0.75), 850 (1.5), 750 (3.0)	775 (0.75 + 1.5), 800 (3.0)	775 (0.75 - 3.0)

1E13			
1E16			
	600 - 1.6	575	
0	0	1	1

260/80/600	260/80/600	260/80/600	260/80/600
0.9	0.9	0.34	0.6
0.9	0.9	0.64	0.7
0.3	0.3	0.08	0.1
0.3	0.3	0.14	0.1

* deviant figures in parenthesis, ** own measurement, *** measurement on plaques 150 x 105 x 3 mm (in accordance with ISO 2577)
N = no failure, Conditioning in accordance with ISO 11110 (70 °C, 62% r. h.)

FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

GRADE	REINFORCED		
	PA 6		
	BKV 25 F30	BKV 30 FN00	DP 1801/30 H3.0
COLOR	000000	000000	000000

KEY CHARACTERISTICS

UNITS				
VDE certificate		■	■	
Thin wall applications		■		
Halogen-free			■	■
Glow wire application		■	■	
Optimized for laser marking				
Improved flowability				

GENERAL PROPERTIES (23 °C)¹

Glass fiber/glass bead/filler content	%	25	30	30
Density	kg/m ³	1600	1427	1400
Water absorption (saturation value)	%			5.9
Water absorption (equilibrium value)	%			

MECHANICAL PROPERTIES (23 °C/50% R.H.)

		dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
Tensile modulus	MPa	11000	7300	10800	6700	7600	3400
Yield stress	MPa					96	50
Yield strain	%					2.4	9.7
Nominal strain at break	%						
Stress at break	MPa	150	90	150	90	93	47
Strain at break	%	2.3	4.4	3.0	6.1	4.0	28
Flexural strain at flexural strength	%	2.5	4.0	2.7	4.6	4.0	6.9
Flexural stress at 3.5% strain	MPa				128	170	65
Charpy impact strength 23 °C	kJ/m ²	55	55	60	65	50	84
Charpy impact strength -30 °C	kJ/m ²	45	50				
Charpy notched impact strength 23 °C	kJ/m ²	10	15	< 10		< 10	
Charpy notched impact strength -30 °C	kJ/m ²	< 10	< 10	< 10		< 10	
Izod impact strength 23 °C	kJ/m ²	50	55	55	55	35	80
Izod impact strength -30 °C	kJ/m ²	45	50				
Izod notched impact strength 23 °C	kJ/m ²	10	15	< 10			
Izod notched impact strength -30 °C	kJ/m ²	< 10	< 10	< 10		< 10	

THERMAL PROPERTIES

Melting temperature	°C	222		224		222	
HDT, Method Af	°C	205		204		180	
HDT, Method Bf	°C	215		218		210	
Coefficient of linear thermal expansion, parallel	10 ⁻⁴ /K	0.2		0.22		0.40	
Coefficient of linear thermal expansion, across	10 ⁻⁴ /K	0.9		0.81		0.61	

FLAMEABILITY RATING

Burning behavior UL94 (UL Yellow Card)				
5VB / 5VA ab mm	Classification	-/1.0		-/1.5
V-0, V-1, V-2 ab mm	Classification	V-0 (0.4)		V-0 (0.75)
Glow Wire Flammability Index (GWFI)	°C	960 (0.4 - 3.0)		960 (0.35 - 3.0)
Glow Wire Ignition Temperature (GWIT)	°C	850 (0.4 - 3.0)		800 (3.0), 775 (3.5 - 1.5)
				725 (0.75 - 3.0)

ELECTRICAL PROPERTIES (23 °C/50% R.H.)

Relative permittivity; 1 MHz	-			
Dissipation factor; 1 MHz	10 ⁻⁴			
Volume resistivity	Ohm·m	3.4E12		1E13
Surface resistivity	Ohm	4.1E13		1E13
Comparative tracking index CTI	Rating	400		600
Comparative tracking index CTI M	PLC	1		0
				1

SHRINKAGE (Plaques 60 x 60 x 2 mm)

Processing conditions of shrinkage plaques	°C/°C/bar	280/80/600		280/80/600		260/80/600	
Molding shrinkage, parallel	%	0.3		0.22		0.60	
Molding shrinkage, across	%	0.6		0.62		0.70	
Post-shrinkage, parallel; 120 °C; 4 h [*]	%	0.1		0.08		0.20	
Post-shrinkage, across; 120 °C; 4 h [*]	%	0.1		0.18		0.20	

FLAME-RETARDANT PA 6 AND CO-POLYAMIDES

GRADE	FILLER		
	PA 6		
	BM 25 FN20	BM 25 FN20 DUS013	DP BM 65 XFM30
COLOR	700350	000000	901510

VDE certificate					
Thin wall applications					
Halogen-free					
Glow wire application					
Optimized for laser marking					
Improved flowability					

Glass fiber/glass bead/filler content	%	25 (MD)		25 (MD)		65 (MD+GF)	
Density	kg/m ³	1380		1425		1690	
Water absorption (saturation value)	%	6.7		6.7		3.5	
Water absorption (equilibrium value)	%					1.2	

	dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
Tensile modulus	5700	2100	5700	2100	12100	6000
Yield stress	80	30	80	30		
Yield strain	3.0	8.0	3.0	8.0		
Nominal strain at break						
Stress at break	80	30	80	30	120	73
Strain at break	3.0	7.0	3.0	7.0	1.6	2.2
Flexural strain at flexural strength	3.5	6.8	3.3	6.8	1.8	2.6
Flexural stress at 3.5% strain	130	43	130	43		
Charpy impact strength 23 °C	38	135	38	135	30	23
Charpy impact strength -30 °C						
Charpy notched impact strength 23 °C						
Charpy notched impact strength -30 °C						
Izod impact strength 23 °C	30	100	30	100	25	22
Izod impact strength -30 °C						
Izod notched impact strength 23 °C	< 10	< 10	< 10	< 10	< 10	< 10
Izod notched impact strength -30 °C						

Melting temperature	°C	220		220		220	
HDT, Method Af	°C	90		90		181	
HDT, Method Bf	°C	195		195		200	
Coefficient of linear thermal expansion, parallel		0.6		0.6		0.3	
Coefficient of linear thermal expansion, across		0.7		0.7		0.5	

Burning behavior UL94 (UL Yellow Card)				
5VB / 5VA ab mm	Classification			-/3.0
V-0, V-1, V-2 ab mm	Classification	V-2 (0.75)		V-2 (0.75)**
Glow Wire Flammability Index (GWFI)	°C	960 (0.75 - 3.0)		960 (0.8 - 3.0)
Glow Wire Ignition Temperature (GWIT)	°C	725 (0.75 - 3.0)		725 (0.75 - 3.0)
				775 (0.75 - 3.0)

Relative permittivity; 1 MHz	-			
Dissipation factor; 1 MHz	10 ⁻⁴			
Volume resistivity	Ohm·m			
Surface resistivity	Ohm			
Comparative tracking index CTI	Rating	450		600
Comparative tracking index CTI M	PLC	1		0
				1

Processing conditions of shrinkage plaques	°C/°C/bar	280/80/600		280/80/600		280/80/500	
Molding shrinkage, parallel	%	0.9		0.9		0.4	
Molding shrinkage, across	%	0.9		0.9		0.5	
Post-shrinkage, parallel; 120 °C; 4 h [*]	%	0.2		0.2		0.1	
Post-shrinkage, across; 120 °C; 4 h [*]	%	0.2		0.2		0.1	

¹ For test conditions and standards refer to p. 28

* deviant figures in parenthesis; ** own measurement; *** measurement on plaques 150 x 105 x 3 mm (n accordance with ISO 2577)

N = no failure, Conditioning in accordance with ISO 1110 (70 °C, 62 % r.h.)

REFERENCE DATA

FLAME-RETARDANT PA 66

GRADE	NON-REINFORCED		REINFORCED
	PA 66		PA 66
	A 30 S FN31	DP 2801	AKV 25 F30
COLOR	000000	000000	000000

KEY CHARACTERISTICS

	UNITS		
VDE certificate	■	■	■
Thin wall applications	■	■	■
Halogen-free	■	■	■
Glow wire application	■	■	■
Optimized for laser marking	■	■	■
Improved flowability	■	■	■

GENERAL PROPERTIES (23 °C)¹

Glass fiber/glass bead/filler content	%			25
Density	kg/m ³	1169	1143	1600
Water absorption (saturation value)	%			3.9
Water absorption (equilibrium value)	%			1.2

MECHANICAL PROPERTIES (23 °C/50% R.H.)

		dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
Tensile modulus	MPa	3800	1500	3500	1400	10500	8000
Yield stress	MPa	85	50	94	55		
Yield strain	%	4.1	> 20	4.2	20		
Nominal strain at break	%			10	155		
Stress at break	MPa			80	55	150	100
Strain at break	%			11	230	2.2	2.8
Flexural strain at flexural strength	%	5.8	7.8	6.2	8.0	2.5	3.5
Flexural stress at 3.5% strain	MPa	120	40	105	36		
Charpy impact strength 23 °C	kJ/m ²	60	N	110	N	50	50
Charpy impact strength -30 °C	kJ/m ²	50	80	120	185	40	40
Charpy notched impact strength 23 °C	kJ/m ²	< 10	< 10	< 10	15		
Charpy notched impact strength -30 °C	kJ/m ²			< 10	< 10		
Izod impact strength 23 °C	kJ/m ²	55	N	80	N	45	45
Izod impact strength -30 °C	kJ/m ²	55	60	110	130	40	40
Izod notched impact strength 23 °C	kJ/m ²	< 10	< 10	< 10	10	< 10	10
Izod notched impact strength -30 °C	kJ/m ²			< 10	< 10		

THERMAL PROPERTIES

Melting temperature	°C	265	265	260
HDT, Method Af	°C	80	75	238
HDT, Method Bf	°C	212	210	> 240
Coefficient of linear thermal expansion, parallel	10 ⁻⁴ /K	0.8	0.7	0.3
Coefficient of linear thermal expansion, across	10 ⁻⁴ /K	0.7	0.9	0.8

FLAMEABILITY RATING

Burning behavior UL94 (UL Yellow Card)				
5VB / 5VA ab mm	Classification			-/1.0
V-0, V-1, V-2 ab mm	Classification	V-0 (0.4)	V-2 (0.75)	V-0 (0.4)
Glow Wire Flammability Index (GWFI)	°C	960 (0.4 - 3.0)	960 (0.75 - 3.0)	960 (0.4 - 3.0)
Glow Wire Ignition Temperature (GWIT)	°C	775 (0.4 - 3.0)	775 (0.75 - 3.0)	900 (0.75 - 3.0), 875 (0.4)

ELECTRICAL PROPERTIES (23 °C/50% R.H.)

Relative permittivity; 1 MHz	-	4.0	4.0	
Dissipation factor; 1 MHz	10 ⁻⁴	190	550	
Volume resistivity	Ohm·m	1E12	1E11	
Surface resistivity	Ohm	1E15	1E13	
Comparative tracking index CTI	Rating	600	600	400
Comparative tracking index CTI M	PLC	0	0	1

SHRINKAGE (Plaque 60 x 60 x 2 mm)

Processing conditions of shrinkage plaques	°C/°C/bar	270/80/600	280/80/600	290/80/600
Molding shrinkage, parallel	%	1.1	1.14	0.4
Molding shrinkage, across	%	1.1	1.22	0.7
Post-shrinkage, parallel; 120 °C; 4 h [*]	%	0.1	0.42	0.1
Post-shrinkage, across; 120 °C; 4 h [*]	%	0.1	0.11	0.3

FLAME-RETARDANT PA 66

REINFORCED		
PA 66		
DP AKV 30 FN00	DP AKV 30 FN00 DUS013	DP 2802/30
000000	000000	000000

		■
■	■	
■	■	■
	■	■

30	30	30
1417	1430	1400

dry as molded	conditioned	dry as molded	conditioned	dry as molded	conditioned
10500	6500	10500	6500	6000	3900
					58
					7.8
135	85	120	75	85	56
2.8	5.4	2.5	5.1	3.5	13.2
3.1	5.2	2.7	4.8	4.3	6.5
	120		120	165	80
65				35	60
60					
< 10				< 10	< 10
< 10					
55	57	45	47	30	50
50					
< 10		10		< 10	< 10
< 10					

260	260	263
224	224	200
> 250	> 250	~ 250
		0.39
		0.71

V-0 (0.75)	V-0 (0.75)**	V-2 (0.75)
960 (0.75 - 3.0)	960 (0.75 - 3.0)	960 (0.75 - 3.0)
750 (0.75 - 3.0)	750 (0.75 - 3.0)	850 (0.75)

3.7	4.1	3.7	4.1
120	700	120	700
5E13	5E10	5E13	5E10
3E16	4E14	3E16	4E14
600		600	600
0			0

270/80/600	270/80/600	280/80/600
0.2	0.2	0.80
0.7	0.7	0.90
0.1	0.1	0.20
0.1	0.1	0.20

¹ For test conditions and standards refer to p. 28

* deviant figures in parenthesis; ** own measurement; *** measurement on plaques 150 x 105 x 3 mm (n accordance with ISO 2577)

N = no failure, Conditioning in accordance with ISO 1110 (70 °C, 62% r.h.)



DURETHAN® COLOR NOMENCLATURE



Durethan® is available in a large number of colors. We use a six-digit number to precisely characterize the color, which follows on after the grade designation. The first two digits specify the color class, while the remaining digits are used for administrative purposes in the color laboratory. The material's natural color generally has the designation "000000".

Color class	First two digits
NATURAL	00
WHITE	01
YELLOW	10
ORANGE	20
RET	30
PURPLE	40
BLUE	50
GREEN	60
GRAY	70
BROWN	80
BLACK	90



Example: Durethan® BKV 30 H3.0 000000: natural color
Durethan® BKV 30 H2.0 901510: black

