

DEK STANDARD ENGINEERING INSTRUCTION

Title

Page 1 of 2

Physical Properties of Plastics

DSM300

	NYLON 66	NYLON 6	NYLATRON GS	NYLATRON GSAI/MS01 MonoCast	NYLATRON NSM	ACETAL Copolymer	ACETAL Homopolymer	DELIN A.F.	ULTRA-WEAR	PEEK	TORLON 4203	TORLON 4301	Q200LS	PTE	FILLED PTFE	FLUOROSINT
Tensile strength (kgf/cm ²)	630-940	620-900	700-980	780-980	660	6-20	680	470	220-250	900	1,110	835	565/700	120/240	50/200	>40
Elongation (%)	20-200	20-200	5-150	10-100	50	60	30	15	450	50	5	<5	<5	100/300	10/300	5/15
Modulus of elasticity (kgf/cm ²)	17,500-28,000	28,000	21,400-42,000	24,600-31,600	22,500	28,800	28,000	28,500	5,000	36,000	50,000	64,000	17,000	3500-6500	5000/10000	10500/14000
HARDNESS (Rockwell R) (Rockwell M) (Shore D)	112-120 80-85	110 77	110-125 80-90	112-120 80-85	108 85	120	94	118	64-67	120	119	106	80-85	60-65	65-75	70-80
Flexural strength (kgf/cm ²)	880-940	860-920	1,100-1,300	1,050-1,100	915	960	960	700	270	1,700	1,530	2,100	700-1,050			
Deformation under load 140 kgf/cm ² At 50°C after 24 hr (%)	1.0-3.0	2.0-3.5	0.5-2.5	0.5-1.0	0.90	1.0	0.5	0.6					<1% at 275 kgf/cm ²			1.3 at 150°C and 88 kgf/cm ² for 24 hours
Impact strength - 1200-23°C (Wg/cm notch)	5.4	5.4	3.4	5.4	4.9	6.5	6.5	3.9	No Break	8.3	14.7	6.5		16		
Linear thermal expansion coefficient 30-100°C / °C	100 × 10 ⁻⁴	85 × 10 ⁻⁴	43 × 10 ⁻⁴	100 × 10 ⁻⁴		95 × 10 ⁻⁴	-	100 × 10 ⁻⁴	200 × 10 ⁻⁴	48 × 10 ⁻⁴	30 × 10 ⁻⁴	25 × 10 ⁻⁴	90 × 10 ⁻⁴	100-120 × 10 ⁻⁴	< PTFE (Anisotropic)	28-40 × 10 ⁻⁴
Melting point °C	260	213	260	225	225	165	175	175	135/138	334				327	327	327
Flammability	Self Extinguishing	Self Extinguishing	Self Extinguishing	Self Extinguishing	Self Extinguishing	Slow Burning	Slow Burning	Slow Burning	Slow Burning	Non Flammable	Non Flammable	Non Flammable	Slow Burning	Non Flammable	Non Flammable	Non Flammable
Thermal conductivity (Kcal/m hr. °C)	0.21	0.21	0.21			0.2	-	-	0.36	0.22	0.22	0.32		0.22	0.22/1.0	0.65
Deflection temp. °C at 4.6 kgf/cm ² 18.6 kgf/cm ²	204 93	145 60	204 93	204 93	92	158 110	170 125	168 118	95	160	260	260	260	132 49	>250	
Permittivity 50-10 ⁶ Hz	3.4-4.1	3.7	3.5-4.2	3.7		3.7	3.7	3.7	2.3	3.4	4.0	5.7	2.6	2.02/1		2.92/6
Dielectric strength (kV/mm)	>12	>12	>12	>20		>16	20	16	>28	19.0	34.0		2747	>24		>12
Volume resistivity (ohm.cm.)	>10 ¹³	10 ¹²	>10 ¹³	>10 ¹²		10 ¹⁴	10 ¹³	3 × 10 ¹⁴	>10 ¹⁷	5 × 10 ¹⁴	>10 ¹⁷		>10 ¹⁵	>10 ¹⁴		>10 ¹⁵
Chemical resistance	Resists common solvents and lubricants. Hydrocarbons, esters ketones, aqueous solutions of acids and alkalis between pH 5 and pH 11. Not resistant to phenols, cresols, formic acid, conc. mineral acid and alkalis, strong oxidizing agents including halogens					As Nylon 66 but slightly more prone to attack	Similar to copolymer but slightly less resistant to alkalis, hot water and U.V.	As homo-polymer	All commonly used chemicals. Not resistant to strong oxidizing acids. Aromatic hydrocarbons, halogenated hydrocarbons, ketones, esters, alcohols and chlorinated hydrocarbons may cause slight swelling	Extremely resistant to wide range of chemicals. Only common solvent is conc. sulphuric acid	Resistant to wide range of acids and hydrocarbons. Limited resistance to alkalis	As Teflon 4203	Resists alkalis, dilute acids and some solvents. Not resistant to conc. to conc. treated oxidizing agents, esters, ketones, alcohols and chlorinated hydrocarbons	Only attacked by molten or dissolved alkali metal and some fluoric compounds at high temperature	Filler dependent	As PTFE except that hot conc. acids and alkalis on long exposure attack slightly and may cause swelling
Specific gravity (g/cm ³)	1.14-1.15	1.14	1.14-1.18	1.15-1.17	1.13	1.4-1.42	1.42	1.54	0.94	1.26-1.32	1.4	1.45	1.05	2.1-2.3		2.2-2.4
Water absorption (%) 24 hr. (2) Saturation	0.6-1.5 7-9	2.9 9.5	0.5-1.3 6-8	0.8-1.4 6-7	1.2 5.3	0.22 0.80	0.25 0.90	0.2 0.7	Non-absorbent	0.14	0.4	0.4	0.02	0.01		0.05-0.15 <1.0

Issue

01

02

03

04

05

06

07

08

DCR

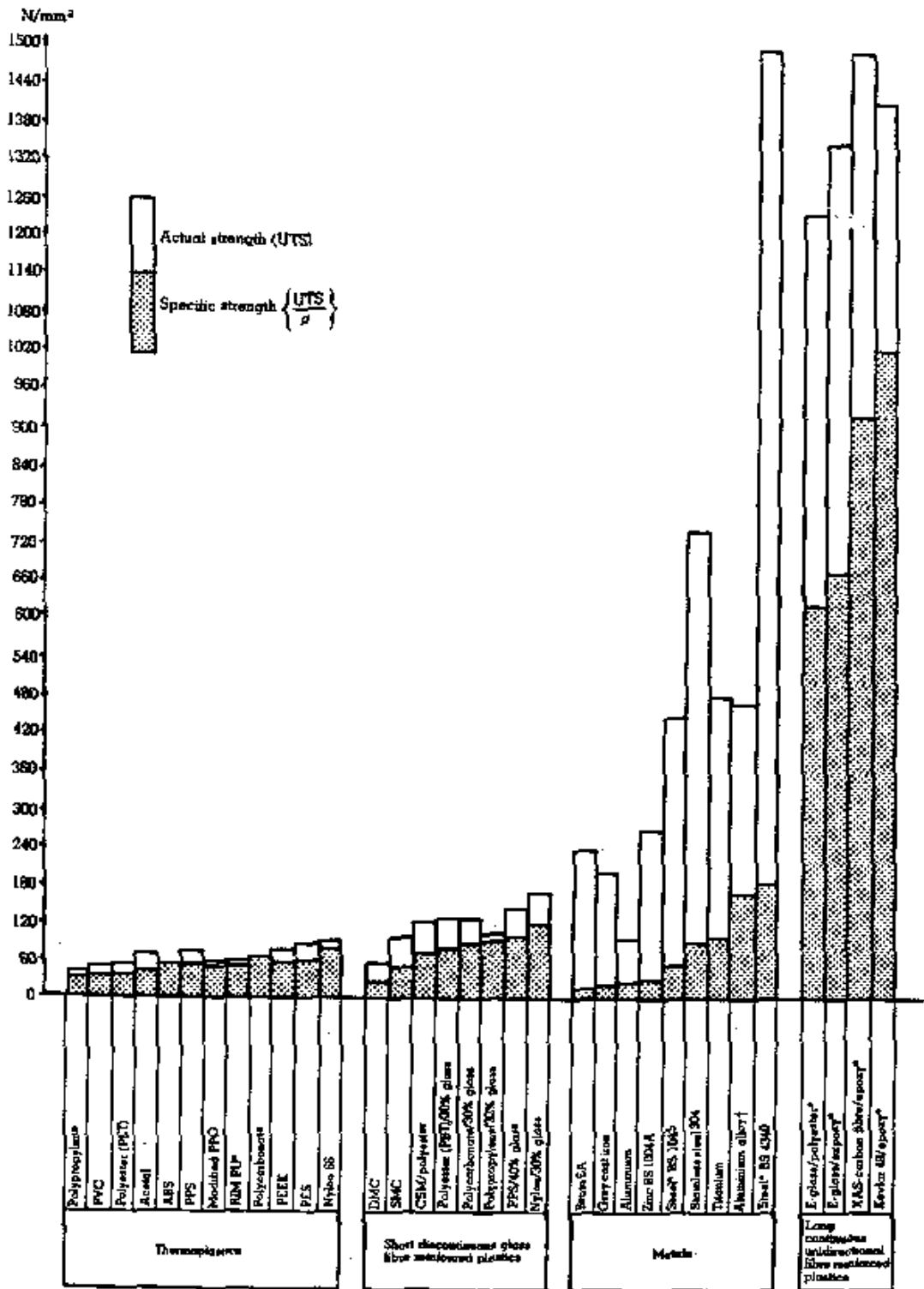
7135

DEK STANDARD ENGINEERING INSTRUCTION

Title Page 2 of 2

Physical Properties of Plastics

DSM300



Issue	01	02	03	04	05	06	07	08
DCR	7135							