ENSINGER
ASK. THINK. SUCCEED.

Material Data Sheet, December 2007

TECAMID 12

Chemical Designation :	Polyamide 12
DIN-Abbreviation:	PA 12
Colours, fillers:	opaque

Main features

- tough
- wear resistant
- resistant to many oils, greases, diesels and petrol
- good electrical insulation
- high dimensional stability
- good sliding properties
- very low moisture absorption
- low density
- easily machined
- easily welded and bonded

Preferred Fields

- transport and conveyor technology
- textile machinery
- printing machinery
- domestic appliance
- mechanical engineering
- food technology
- packaging and paper processing machinery
- drinks dispensing machinery
- electrical engineering
- automotive engineering

Applications

Conveyor screw sleeves, cutting pads, friction strips, friction bearings, gear wheels, housing parts, fan impeller wheels, switch parts, castors, plug parts, impact plates, damping plates

Properties

Mechanical	dry / moist		standard
Tensile strength at yield	40	MPa	DIN EN ISO 527
Elongation at yield	8	%	DIN EN ISO 527
Tensile strength at break		MPa	
Elongation at break	240	%	DIN 53 455
Modulus of elasticity in tension	1200	MPa	DIN EN ISO 527
Modulus of elasticity after flexural test		MPa	
Hardness	72		DIN 53 505 (Shore Härte D)
Impact strength 23° C (Charpy)	n.b.	KJ/m²	DIN EN ISO 179 (Charpy)
Creep rupture strength after 1000 h with static load	23	MPa	
Time yield limit for 1% elongation after 1000 h	3,5	MPa	
Co−efficient of friction p = 0,05 N/mm²v=0,6 m/s on steel, hardened and ground	0,32−0,38		
Wear p = 0,05 N/mm²v=0,6 m/s on steel, hardened and ground	0,8	µm/km	

Thermal	dry / moist		standard
Crystalline melting point		°C	
Glass transition temperature	45	°C	DIN 53 765
Heat distortion temperature HDT, Method A	50	°C	ISO−R 75 Verfahren A (DIN 53 461)
Heat distortion temperature HDT, Method B	140	°C	ISO−R 75 Verfahren B (DIN 53 461)
Max. service temperature			
short term	150	°C	
long term	110	°C	
Thermal conductivity (23° C)	0,23	W/(K·m)	
Specific heat (23° C)	2,1	J/g.K	
Coefficient of thermal expansion (23−55°C)	10	10^{-5}1/K	DIN 53 752

Properties

Electrical	dry / moist		standard
Dielectric constant (10^6 Hz)	3,1−3,6		DIN 53 483, IEC−250
Dielectric loss factor (10^6 Hz)	0,03−0,04		DIN 53 483, IEC−250
Specific volume resistance	10^14	Ω*cm	DIN IEC 60093
Surface resistance	10^14	Ω	DIN IEC 60093
Dielectric strength	24−30	kV/mm	ASTM D 149
Resistance to tracking	KA 38 CTI 600		DIN 53 480, VDE 0303 Teil 1

Miscellaneous	dry / moist		standard
Density	1,02	g/cm^3	DIN 53 479
Moisture absorption (23°C/50RH)	0,7	%	DIN EN ISO 62
Water absorption to equilibrium	1,6	%	DIN EN ISO 62
Flammability acc. to UL standard 94	HB		

(1) Testing of semi−finished products

The above information corresponds with our current knowledge and indicates our products and possible applications. We cannot give a legally binding guarantee of chemical resistance, of certain properties and the suitability of our products and their applications. Our products are not destined for use in medical and dental implants. Existing commercial patents must be observed. Unless otherwise stated, these values represent averages taken from injection moulding samples, dry as moulded. We reserve the right to make technical alterations.