



## Polyacetal

Polyacetal is a naturally white, tough thermoplastic material with a very useful combination of properties:

- High physical strength and rigidity.
- Resistance to repeated impacts.
- Good electrical insulating properties.
- Resistance to abrasion.
- Easily machined.
- Resilience - suitable for "snap fit" and "spring" applications.
- Dimensional stability - almost no moisture absorption.
- A low coefficient of friction.
- A wide service temperature range.
- Resistance to attack by almost all organic solvents.

**Chemical Resistance** - Polyacetal has a high resistance to a variety of organic compounds - alcohols, aldehydes, esters, ethers, hydrocarbons, many weak acids (pH greater than 4) and weak bases. The copolymer is resistant to strong bases, the homopolymer is not resistant to strong bases. Polyacetal is not resistant to strong acids (pH less than 4), materials that liberate strong acids and oxidizing agents.

**Weathering** - Natural white Polyacetal is adversely affected by prolonged exposure to ultra violet radiation. Black material should be used for outdoor applications.

AVAILABILITY - Polyacetal

- Rod 5mm - 250mm diameter
- Sheet 0.5mm - 100mm thick
- Sections cut from sheet
- Machined components
- Injection moulded components
- Tube 20 x 10mm - 450 x 410mm diameter

MECHANICAL PROPERTIES	ASTM Test Method	Homopolymer "Derin"	Co-Polymer "Kematal"	Units
Density	D792	1.42	1.41	g/cm <sup>3</sup>
Tensile Strength at Yield	D638	-55°C	101	N/mm <sup>2</sup>
		-40°C		94
		23°C	69	61
		70°C	48	34
		100°C	36	
		122°C	26	
Elongation at Break	D638	-55°C	38	%
		-40°C		30
		23°C	75	75
		70°C	230	250
		100°C	>260	
		122°C	>260	
Tensile E Modulus	D638	3100	2830	N/mm <sup>2</sup>
Shear Strength	D732	66	53	N/mm <sup>2</sup>
Flexural Modulus	D790	-55°C	3650	N/mm <sup>2</sup>
		23°C	2620	2590
		70°C	1550	1240
		100°C	895	690
		122°C	620	
Flexural Fatigue Endurance Limit	D761	32	23	N/mm <sup>2</sup>
Compressive Stress 1% Deformation	D695		36	31
		10% Deformation	124	110
Izod Impact Strength	D256	unnotched	no break	no break
		notched		
		-40°C	96	64
		23°C	123	80
Tensile Impact Strength	D1822	350	189	kJ/m <sup>2</sup>
Deformation under Load (14N/mm <sup>2</sup> at 50°C)	D621	0.5	1	%
Hardness, Rockwell	D785	M94	M78	
Water Absorption	D570	24 hours immersion	0.25	0.22
		equilibrium 50% R.H.	0.22	0.16
		equilibrium, continuous immersion	0.90	0.80
Coefficient of Dynamic Friction	D1894 -61T			0.15
		against Steel no lubricant	0.10 - 0.30	
		water lubricated	0.10 - 0.20	
		oil lubricated	0.05 - 0.10	0.15
		against Brass		0.15
		against Aluminium		0.35
against Polyacetal				