

# Acetal (POM-C & POM-H)

## Technical Datasheet



A versatile engineering plastic for many applications

Service. Quality. Value.

### Typical Applications

Mechanical engineering, automotive, textile and foodstuff industries - e.g. gears, meter components, valve discs, impellers, seals, bearings, sliding & spring elements, valve bodies, snap-on connections, pump components, bearing cages, clutch and gearbox parts, sorting & feeding devices.

Electrical & electronic industry- e.g. coil bodies, insulators, relay and transformer housings.

Medical technology -

E.g. instrument handles, adapters.

### Product Description

A high-quality general purpose engineering plastic material; the chemical name is polyoxymethylene. It's available in a range of grades and forms to suit many applications.

### Technical Description

Smiths' range of extruded Acetal includes the following grade options -

Grade	Modification	Purpose
Acetal co-polymer (POM-C)	Colours, natural black, blue, others on application.	Component identification.
Acetal co-polymer +25% glass (POM-C GF25)	Reinforced with 25% glass fibre	Increased strength and stiffness.
Acetal co-polymer (ESD60 & ESD90)	Additives to provide electrical conductivity or electro-static dissipation.	To prevent uncontrolled static discharge in sensitive electronic environments or in explosive atmospheres.
Acetal co-polymer - Medical Grade	Special production and testing. colour coded for component identification.	Certified bio-compatibility to USP Class VI and cytotoxicity to DIN EN ISO 10993-5.
Acetal co-polymer - GLD160	Tribological modification.	Improved bearing & wear properties.
Acetal homo-polymer (POM-H)	Colours natural and black.	Component Identification.

### Machinability

The machinability of un-modified acetal is excellent. Good chip forming leads to fine surface finishes. As with all plastic materials, experience has shown that extra care must be taken with larger diameters, especially in the colder months when plastic materials lose some of their toughness and so have less resistance to machining stresses. It's therefore important that these materials are not machined while in a chilled condition. Full machining instructions may be supplied on request.

### Product Attributes

Range of grades available.

High mechanical strength & stiffness.

Able to resist very high impact loads.

High surface hardness.

Good chemical resistance.

May be used in contact with foodstuffs

Very good dimensional stability.

Good resistance to creep.

Minimal absorption of moisture.

Good sliding properties. High wear resistance.

Product sourced from long-standing manufacturer with ISO accreditation.

### Customer Benefits

Correct grade selection for application is optimised.

Very good all-round product for diverse engineering applications.

Stability when dimensional accuracy is important.

Good wear life in many industrial bearing & gear applications.

Consistent quality ensures uniform characteristics in machining & performance

### Product Availability \*

Extruded round bar	Natural colour made up to 600mm dia, black to 350mm. Modified grades - please call for a quotation
Extruded sheet/plate	Natural and black colours made to 250mm thk and in a range of area formats. Modified grades - please call for a quotation.
Tubular bar Strip	Natural up to 350mm o/d. Natural from 0.30mm thk.

\* Sizes not stocked are available on relatively short delivery time. 1, 2 or 3m lengths supplied or cut to customer requirements.

### Chemical Resistance

Acetal co-polymer has chemical resistance similar to nylon 66, but is slightly more prone to attack - having good resistance to many common solvents, lubricant, esters, ketones and aqueous solutions of acids and alkalis between pH5 and pH11. The co-polymer is not resistant to phenols, cresols, formic acid, concentrated mineral acids and alkalis, and strong oxidising agents including halogens. The homo-polymer has slightly reduced resistance to alkalis and hot water compared with co-polymer.

# Acetal (POM-C & POM-H)



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Natural or Black un-modified    Acetal-C +25% Glass    Acetal-C + PTFE    Acetal-C ESD60, conductive    Acetal-C ESD90, dissipative

## Mechanical Properties

Density at 20°C	1.41	1.58	1.52	1.40	1.34	g/cm <sup>3</sup>
Tensile strength @ yield	67	65	50	40	42	MPa
Elongation @ break	30	3.0	16	30	20	%
Tensile modulus of elasticity	2800	4500	2500	1900	1800	MPa
Notched impact strength (Charpy)	6	4	4	5	5	kJ/m <sup>2</sup>
Ball indentation hardness	150	195	120	100	90	N/mm <sup>2</sup>
Hardness (Shore D)	81	85	80	-	76	Scale D

## Electrical Properties

Volume resistivity	10 <sup>13</sup>	-	-	10 <sup>3</sup>	10 <sup>9</sup> – 10 <sup>12</sup>	Ohm cm
Surface resistivity	10 <sup>13</sup>	-	-	10 <sup>3</sup>	10 <sup>9</sup> – 10 <sup>11</sup>	Ohm
Dielectric constant, 50 Hz	3.8	-	3.7	-	-	-
Dielectric dissipation factor, 50 Hz	0.002	-	0.002	-	-	-
Dielectric strength	40	-	33	-	-	Kv/mm
Comparative tracking index (CTI) – solution	600	-	600	-	-	-

## Thermal Properties

Melting Temperature	165	165	165	165	165	°C
Heat deflection temperature - method A, 1.8 MPa	110	160	98	89		°C
Coefficient of thermal expansion (Avg between 20 - 60°C)	110	30	120	130	170	10 <sup>-6</sup> .K <sup>-1</sup>
Specific thermal capacity at 100 °C	1.50	-	-	-	-	kJ/(kg - K)
Thermal conductivity at 20 °C	0.31	-	-	0.31	-	W/(m - K)
Service temperature - long term	-50 to +100	-20 to +100	-50 to +100	-20 to +100	-50 to +85	°C
- short term	+140	+140	+140	+140	+140	

## Chemical resistance

Acid resistance	+	+/0		+/0	+
Alkali resistance	+	+		+	+
Hydrocarbon resistance	+	+		+	+
Chlorinated hydrocarbon resistance	0	0		0	0
Aromatic resistance	+	+		+	+
Ketone resistance	+	+		+	+
Resistance to hot water	+	+		+	+

Key:    + = YES    0 = LIMITED    - = NO

## Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

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