FCF

POLYPENCO

Contents

Ferrous Stock

Stainless Steel 304

- The most widely used austenitic steel
- Good general corrosion resistance and non-magnetic
- Maintains it's ductility allowing ease of fabrication
- Stainless steel rod supplied to **BS970**
- Stainless steel sheet supplied to **BS1449** in softened and descaled condition with a protective vinyl coating on one side

Used extensively in the food, dairy, laundry and chemical industries.

Chemical Composition	%C (Max.)	%Min (Max.)	%P (Max.)	%S (Max.)	%Si (Max.)	%Ni	%Cr
	0.080	2.0	0.040	0.030	0.750	0 to 11	18 to 20

EMA1

3 Per Lot		Price Per Lot				
	Order Code	1+	5+	10+	50+	100+
Round Bar 1000mm Length						
Metric Ø mm						
6	**709-0390**					
8	**709-0407**					
10	**709-0419**					
12	**709-0420**					
16	**709-0432**					
20	**709-0444**					
25	**709-0456**					
30	**709-0468**					
40	H **709-0470**					
50	H **709-0481**					
Imperial Ø in.						
¼"	**709-0493**					
5/16"	**709-0500**					
⅜"	**709-0511**					
½"	**709-0523**					
⅝"	**709-0535**					
¾"	**709-0547**					
1"	**709-0559**					
1¼"	**709-0584**					
1½"	**709-0596**					
2"	H **709-0602**					
2 Per Lot						
Flat Bar 2000mm						
Length Size mm						
12 3	**709-0614**					
20 3	**709-0626**					
25 3	**709-0638**					
30 3	**709-0640**					
40 3	**709-0651**					
50 3	**709-0663**					
3 Per Lot						
Angle 2000mm Length						
Imperial Size In.						
1" 1" ⅛"	**709-0675**					
1½" 1½" ¼"	**709-0687**					
2" 2" ¼"	H **709-0699**					
4 Per Lot						
Sheet 1250 625						
Thickness						
0.9	**709-1394**					
1.2	H **709-1400**					
1.5	H **709-1412**					

All dimensions are approximate

H Heavy item, special delivery conditions apply

Stainless Steel 303

- Improved machinability over type 304
- Corrosion resistance is slightly inferior
- Non-Magnetic
- Supplied to **BS970**

Chemical Composition	%C (Max.)	%Min (max.)	%P (Max.)	%S	%Si (Max.)	%Ni	%Cr
	0.12	2.0	0.06	0.15 to 0.35	1.0	8 to 10	18 to 20

EMA2

3 Per Lot		Price Per Lot				
	Order Code	1+	5+	10+	50+	100+
Round Bar 1000mm Length						
Metric Ø mm						
6	**709-2192**					
8	**709-2209**					
10	**709-2210**					
12	**709-2222**					
16	**709-2234**					
20	**709-2246**					
25	**709-2258**					
30	**709-2260**					
40	H **709-2271**					
50	H **709-2295**					
Imperial Ø In.						
¼"	**709-2301**					
5/16"	**709-2313**					
⅜"	**709-2325**					
½"	**709-2337**					
⅝"	**709-2349**					
7"	**709-2350**					
1"	**709-2362**					
1¼"	**709-2374**					
1½"	H **709-2386**					
2"	H **709-2398**					

H Heavy item, special delivery conditions apply

Stainless Steel 316

- Higher corrosion resistance than type 304 due to the presence of molybdenum in its composition
- Often used in chloride containing environments
- Non-magnetic
- Stainless steel rod supplied to **BS970**
- Stainless steel sheet supplied to **BS1449** in softened and descaled condition with a protective vinyl coating on one side
- Stainless steel seamless tube supplied to **ASTM A269**

Typical applications include component parts for plant and machinery in the food, chemical, oil and gas industries.

Chemical Composition	%C (Max.)	%Mn (Max.)	%P (Max.)	%S	%Si (Max.)	%Ni	%Cr	%Mo
	0.08	2.0	0.04	0.03	0.75	11 to 14	16 to 18	2 to 3

EMA3

3 Per Lot		Price Per Lot				
	Order Code	1+	5+	10+	50+	100+
Round Bar 1000mm Length						
Metric Ø mm						
6	**709-2714**					
8	**709-2726**					
10	**709-2738**					
12	**709-2740**					
16	**709-2751**					
20	**709-2763**					
25	**709-2775**					
30	**709-2787**					
40	**709-2799**					
50	**709-2805**					
Imperial Ø mm						
¼"	**709-2817**					
5/16"	**709-2829**					
⅜"	**709-2830**					
½"	**709-2842**					
⅝"	**709-2854**					
¾"	**709-2866**					
1"	**709-2878**					
1¼"	**709-2880**					
1½"	**709-2891**					
2"	**709-2908**					
2 Per Lot						
Flat Bar 2000mm Length						
Size mm						
12 3	**709-2910**					
20 3	**709-2921**					
25 3	**709-2933**					
30 3	**709-2945**					
40 3	**709-2957**					
50 3	**709-2969**					
Angle						
2000mm Length						
Imperial Size In.						
1" 1" ⅛"	**709-2970**					
1½" 1½" 3/16"	**709-2982**					
2" 2" ¼"	H **709-2994**					

continued

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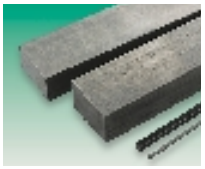
6 Per Lot Seamless Tube 1000mm Length Outside Ø in.	SWG	Order Code	Price Per Lot 1+	5+	10+	50+	100+
3/16"	18	709-3007					
1/4"	18	709-3019					
3/8"	18	709-3020					
1/2"	16	709-3032					
5/8"	16	709-3044					
3/4"	16	709-3056					
1"	16	709-3068					
14 Per Lot Sheet 1250 625 Thickness							
0.9		709-3070					
1.2		H 709-3081					
1.5		H 709-3093					

All dimensions are approximate

H Heavy item, special delivery conditions apply

Medium Carbon Steel

FCF



- Medium carbon keysteel
- Metric keysteel conforms to **BS 4235**
- Imperial keysteel conforms to **BS 46**
- All in 12" lengths

Each pack of assorted keysteel contains 35 pieces.

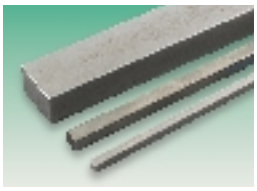
FAS1

	Size	Qty. per Pack	Order Code	Price Per Pack 1+	5+	10+	25+
Metric (mm)	2 2	5	701-0242				
	3 3	5	701-0254				
	4 4	5	701-0266				
	5 5	5	701-0278				
	6 6	5	701-0280				
	8 7	5	701-0291				
	8 8	5	701-0308				
	10 8	5	701-0310				
	10 10	5	701-0321				
	12 8	5	701-0333				
	12 10	2	701-0345				
	12 12	2	701-0357				
	14 9	2	701-0369				
	14 14	2	701-0370				
	16 10	2	701-0382				
	16 16	2	701-0394				
	18 11	2	701-0400				
	18 18	2	701-0412				
	20 12	2	701-0424				
	20 20	2	701-0436				
	22 14	1	701-0448				
	22 22	1	701-0450				
	25 14	1	701-0461				
	25 25	1	701-0473				
	28 16	1	701-0485				
	32 18	1	701-0497				
	36 20	1	701-0503				
	40 22	1	701-0515				
Metric Pack	4mm – 12mm	35	701-6244				
Imperial (in)	3/16 3/16	5	701-5940				
	1/4 1/4	5	701-5951				
	1/4 3/16	5	701-5963				
	5/16 1/4	5	701-5975				
	5/16 5/16	5	701-5987				
	3/8 1/4	5	701-5999				
	3/8 5/16	5	701-6001				
	3/8 3/8	5	701-6013				
	7/16 5/16	5	701-6025				
	7/16 7/16	5	701-6037				
	1/2 5/16	5	701-6049				
	1/2 3/8	2	701-6050				
	1/2 1/2	2	701-6062				
	5/8 7/16	2	701-6074				
	5/8 1/2	2	701-6086				
	5/8 5/8	2	701-6098				
	3/4 1/2	2	701-6104				
	3/4 3/4	2	701-6116				
	7/8 5/8	1	701-6128				
	7/8 7/8	1	701-6130				
	1 3/4	1	701-6141				
	1 1	1	701-6153				
	1 1/8 3/4	1	701-6165				
	1 1/8 1 1/8	1	701-6177				
	1 1/4 7/8	1	701-6189				
	1 1/4 1 1/4	1	701-6190				
	1 1/2 1	1	701-6207				
	3/16 1/2	35	701-6256				

All dimensions are approximate

Stainless Steel

FCF



- 316 grade stainless steel
- Metric and Imperial sizes available
- All in 12" lengths

FAS8

	Size	Order Code	Price Each 1+	5+	10+	25+	50+
Metric (mm)	4 4	701-7911					
	5 5	701-7923					
	6 6	701-7935					
	8 7	701-7947					
	10 8	701-7959					
	12 8	701-7960					
	14 9	701-7972					
	16 10	701-7984					
	18 11	701-7996					
	22 14	701-8009					
Imperial	1/4 1/4	701-8010					
	5/16 5/16	701-8022					
	3/8 3/8	701-8034					
	1/2 1/2	701-8046					
	5/8 5/8	701-8058					
	3/4 3/4	701-8060					

All dimensions are approximate

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Non-Ferrous Stock

Aluminium

- Aluminium and its alloys provide a highly versatile range of materials combining strength, lightness and corrosion resistance
- Aluminium section is HE9TF unless otherwide stated (all section supplied to **BS1474)**
- Aluminium sheet supplied with vinyl coated protection on one side, as either commercially pure or anodised silver aluminium

HE9TF is a general purpose alloy with reasonable strength. Used widely in applications where a good finish is required, it can be readily anodised.

HE30TF is a higher strength alloy offering good machinability as well as being suitable for stressed and structural applications.

Aluminium sheet is supplied either as alloy SICH4 (1050A) commercially pure aluminium, which is easily formed and joined with good corrosion resistance but low strength; or as Alloy 5005 which is anodised silver aluminium to **BS1470** formulated for decorative and architectural applications with a durable & attractive silver finish.

EMA4

5 Per Lot — **Price Per Lot**

Round Bar 1000mm Length ∅ in.	Grade	Order Code	1+	5+	10+	50+	100+
¼"	HE30TF	**709-4670**					
⅜"	HE30TF	**709-4681**					
½"	HE30TF	**709-4693**					
⅝"	HE30TF	**709-4772**					
¾"	HE30TF	**709-4784**					
1"	HE30TF	**709-4796**					
1¼"	HE30TF	**709-4802**					
1½"	HE30TF	**709-4814**					

5 Per Lot — **Price Per Lot**

Tube 1000mm Length Outside ∅ in.	SWG	Grade	Order Code	1+	5+	10+	50+	100+
½"	16	HE9TF	**709-4504**					
½"	10	HE9TF	**709-4516**					
¾"	10	HE9TF	**709-4528**					
1"	16	HE9TF	**709-4530**					
1"	10	HE9TF	**709-4541**					
1½"	10	HE9TF	**709-4553**					
2"	16	HE9TF	**709-4565**					

5 Per Lot — **Price Per Lot**

Angle 1000mm Length Size in.	Grade	Order Code	1+	5+	10+	50+	100+
½" ½" ⅛"	HE9TF	**709-4358**					
¾" ¾" ⅛"	HE9TF	**709-4360**					
1" 1" ⅛"	HE9TF	**709-4371**					
1½" 1½" ⅛"	HE9TF	**709-4383**					
2" 2" ⅛"	HE9TF	**709-4395**					

5 Per Lot — **Price Per Lot**

Channel 1000mm Length Size in.	Grade	Order Code	1+	5+	10+	50+	100+
½" ½" ⅛"	HE9TF	**709-4401**					
¾" ¾" ⅛"	HE9TF	**709-4413**					
1" 1" ⅛"	HE9TF	**709-4425**					
1½" 1½" ⅛"	HE9TF	**709-4437**					
2" 2" ⅛"	HE9TF	**709-4449**					

5 Per Lot — **Price Per Lot**

Box Section 1000mm Length Size in.	SWG	Grade	Order Code	1+	5+	10+	50+	100+
1" 1"	16	HE9TF	**709-4450**					
1" 1"	10	HE9TF	**709-4462**					
1½" 1½"	16	HE9TF	**709-4474**					
1½" 1½"	10	HE9TF	**709-4486**					
2" 2"	10	HE9TF	**709-4498**					

5 Per Lot — **Price Per Lot**

Flat Bar 1000mm Length Size in.	Grade	Order Code	1+	5+	10+	50+	100+
½" ⅛"	HE9TF	**709-4619**					
¾" ⅛"	HE9TF	**709-4620**					
1" ⅛"	HE9TF	**709-4632**					
1½" ⅛"	HE9TF	**709-4644**					
2" ⅛"	HE9TF	**709-4656**					
2" ¼"	HE9TF	**709-4668**					

5 Per lot — **Price Per Lot**

Sheet 1250 625 Thickness	Grade	Order Code	1+	5+	10+	50+	100+
1.2	SICH4	**709-4826**					
135	SICH4	**709-4838**					
2	SICH4	**709-4840**					
3	SICH4	**709-4851**					

4 Per Lot — **Price Per Lot**

Anodised Sheet 1250 625 Thickness	Grade	Order Code	1+	5+	10+	50+	100+
1.5mm	5005	**709-4863**					

All dimensions are approximate

Copper C101 & C106

- Choice of: Copper C101 to **BS2874** -'Electro'
- Copper C106 to **BS2871** -'Deox'

The term copper is used to cover commercially pure (99.9%) copper in all forms.

C101 - Electrolytic tough pitch, high conductivity copper, ETP or 'Electro' - is used for general engineering, electrical, automotive and cold formed applications. It exhibits high electrical/thermal conductivity and, with its high ductility and impact strength, can be a very useful material.

C106 - Phosphorus deoxidised, non-arsenical copper or 'Deox' - has been deoxidised with phosphorus in order to make it even easier to weld and braze. It also has improved drawing properties. This material is commonly used in the gas, refrigeration & building industries.

Typical Mechanical Properties	Condition	Tensile Strength N/mm2	Proof Stress 0.2% N/mm²	% Elongation	Hardness VPN
C101	Half Hard	280	220	10	95-105
C106	Annealed	220	45	45	45-60

EMA6

4 Per Lot — **Price Per Lot**

C101 Red 1000mm Length Metric ∅ mm	Order Code	1+	5+	10+	20+	50+	100+
3	**709-6951**						
6	**709-6963**						
12	**709-6975**						
15	**709-6987**						
20	**709-6999**						
25	**709-7001**						

4 Per Lot — **Price Per Lot**

C101 Red 1000mm Length Imperial ∅ in.	Order Code	1+	5+	10+	20+	50+	100+
¼"	**709-7013**						
½"	**709-7025**						
¾"	**709-7037**						
1"	**709-7049**						

6 Per Lot — **Price Per Lot**

C106 Tube 1000mm Length Outside ∅ in.	SWG	Order Code	1+	5+	10+	20+	50+	100+
¼"	16	**709-7141**						
½"	16	**709-7153**						
¾"	16	**709-7165**						
1"	16	**709-7177**						

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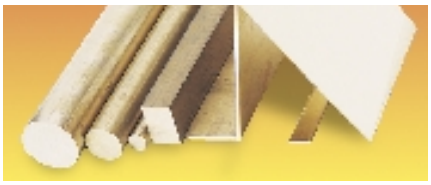
4 Per Lot C101 Flat Bar 1000mm Length Metric Size mm	Order Code	1+	5+	Price Per Lot 10+	20+	50+	100+
20 3	709-7050						
25 3	709-7062						
20 6	709-7074						
25 6	709-7086						
20 10	709-7098						
25 10	709-7104						

4 Per Lot C101 Flat Bar 1000mm Length Imperial Size in.	Order Code	1+	5+	Price Per Lot 10+	20+	50+	100+
½" ⅜"	709-7116						
¾" ⅜"	709-7128						
1" ⅜"	709-7130						

4 Per Lot C106 Sheet 24" 12" Thickness mm	Order Code	1+	5+	Price Per Lot 10+	20+	50+	100+
0.5	709-7189						
0.7	709-7190						
0.9	709-7207						

All dimensions are approximate

Brass CZ121 & CZ108



All brass rod and bar is made from the CZ 121 brass, known as 'free machining brass', an alloy containing roughly 57% copper and 40% zinc with the addition of 3-4% lead. It has excellent machinability combined with good corrosion resistance and conductivity. Ideal for high speed machined components in all general applications.

Brass Rod and Bar is supplied to **BS2874**.

The brass sheet is made from CZ 108 Brass, the most popular brass for general and electrical engineering purposes. Known as the 63/37 'common brass' (63% copper, 37% zinc), it has excellent strength, hardness, ductility and corrosion resistance.

Examples of Mechanical Properties	Tensile Strength N/mm²	Proof Stress 0.2% N/mm²	% Elongation	Hardness VPN
CZ 121	410	200	20	130-150
CZ 108	450	350	25	130-160

EMA5

3 Per Lot Rod 1000mm Length ∅ mm	Order Code	1+	5+	Price Per lot 10+	20+	50+	100+
3	709-6161						
6	709-6173						
10	709-6185						
12	709-6197						
15	709-6203						
25	709-6215						
40	709-6227						

3 Per Lot Rod 1000mm Length ∅ in.	Order Code	1+	5+	Price Per Lot 10+	20+	50+	100+
¼"	709-6239						
½"	709-6240						
¾"	709-6252						
1"	709-6264						

Fixed Prices

We aim to maintain all prices in this book for the lifetime of this issue.

6 Per Lot Flat Bar 24" Length Cross Section in.	Order Code	1+	5+	Price Per Lot 10+	20+	50+	100+
½" ⅛"	709-6276						
¾" ⅛"	709-6288						
1" ⅛"	709-6290						
½" ¼"	709-6306						
¾" ½"	709-6318						
1" ¼"	709-6320						
½" ⅜"	709-6331						
¾" ⅜"	709-6343						
1" ⅛"	709-6355						
½" ½"	709-6367						
¾" ½"	709-6379						
1" ½"	709-6380						

4 Per Lot Sheet 24" 12" Thickness mm	Order Code	1+	5+	Price Per Lot 10+	20+	50+	100+
0.7	709-6392						
0.9	709-6409						
1.2	709-6410						
1.6	709-6422						

All dimensions are approximate

Phosphor Bronze

- Good corrosion resistance
- High fatigue strength
- Supplied to **BS 1400**

Nominal Chemical Composition	% CU	% Pb
	95	5

Typical Mechanical Properties

Condition	Tensile Strength N/mm²	0.2% Proof Stress N/mm²	% Elongation	Hardness VPN
Half Hard	650	560	3	210-240

These products will have an additional machining allowance of 1/32" on both outside and internal diameters where apllicable

Deservedly popular for its strength and hardness, gained by the addition of phosphorous to a tin bronze. PB1 is a high quality alloy continuously cast by only the best foundries. It is used for machining components such as heavily loaded bushes and thrust washers used against hardened shafts, under conditions where lubrication is generally good.

EMA36

Outside Ø x Inside ∅ in.	Order Code	1+	5+	Price Each 10+	20+	50+	100+
1" ¾"	718-2302						
1½" ¾"	718-2314						
1¾" ¾"	718-2326						
1½" 1"	718-2338						
1¾" 1¼"	718-2340						
2" 1"	718-2351						
2" 1½"	718-2363						
2½" 1½"	718-2375						
3" 1"	718-2387						
3" 1½"	718-2399						
4" 1"	718-2405						
3" 2½"	718-2417						
5" 3"	718-2429						

Round Bar 13" Length ∅ in.	Order Code	1+	5+	Price Each 10+	20+	50+	100+
⅝"	718-2430						
¾"	718-2442						
⅞"	718-2454						
1"	718-2466						
1¼"	718-2478						
1½"	718-2480						
2"	718-2491						
2½"	718-2508						
3"	718-2510						
4"	718-2521						

continued

Non-Ferrous Stock — continued

Leaded Gunmetal

Leaded Gunmetal SAE660 is a general purpose bearing alloy containing tin, lead and Zinc giving a good all round balance of properties of strength, hardness, machinability and abrasion resistance which makes it ideal for the fabrication of bearings and bushes.

Nominal Chemical Composition	% CU	% Pb	%Sn	% Zn
	83	7	7	3

Typical Mechanical Properties	Condition	Tensile Strength N/mm²	0.2% Proof Stress N/mm²	% Elongation	Hardness VPN
	Continuously Cast	340	155	18	68-90

EMA8

Round Bar — Price Each

13" Length ∅ in.	Order Code	1+	5+	10+	20+	50+	100+
⅝"	**709-7505**						
⅞"	**709-7517**						
1"	**709-7529**						
1¼"	**709-7530**						
1⅜"	**709-7542**						
1½"	**709-7554**						
1⅝"	**709-7566**						
2"	**709-7578**						
2½"	**709-7580**						
3"	**709-7591**						
4"	**709-7608**						

Cored Tube — Price Each

13" length Outside ∅ Inside ∅ in.	Order Code	1+	5+	10+	20+	50+	100+
1" ¾"	**719-0992**						
1½" ¾"	**719-1005**						
1½" 1"	**719-1017**						
2" 1"	**719-1029**						
2½" 1"	**719-0955**						
3" 2"	**719-0967**						
4" 1"	**719-0979**						
4" 2"	**719-0980**						

All dimensions are approximate

Nickel Aluminium Bronze

- High mechanical strength
- Excellent resistance to corrosion, abrasion and shock loading

Nickel Aluminium Bronze DGS 1043 is an alloy of copper and aluminium with significant additions of both iron and nickel.

Applications include engine components, high temperature applications, valves and pumps.

Nominal Chemical Composition	% Cu	% Fe	% Al	% Mn	% Ni
	80	5	10	0.25	5

Typical Mechanical Properties	Condition	Tensile Strength N/mm²	0.2% Prood Stress N/mm²	% Elongation	Hardness VPN
	Drawn	750	430	15	210-300

EMA9

Round Bar — Price Each

1000mm Length ∅ in.	Order Code	1+	5+	10+	20+	50+	100+
½"	**709-7645**						
¾"	**709-7657**						
⅞"	**709-7669**						
1"	**709-7670**						
1¼"	**709-7682**						
1½"	**709-7694**						
1⅝"	**709-7700**						
1¾"	**709-7712**						
1⅞"	**709-7724**						
2"	**709-7736**						
2¼"	**709-7748**						

All dimensions are approximate

Ceramics

Cut-to-Size Ceramics

If you have a requirement for ceramic materials, but would like different sizes/dimensions to those listed in the Engineering Materials section of the Mechanical and Workplace Catalogue, call our Value Added Services team on 0113 2799589. We will obtain an accurate price and delivery time for you and confirm all details to you by fax.

Our standard Sale or Return does not apply on this service. CUS033

Macor

Machinable Glass Ceramic

- Machinable with ordinary metalworking tools
- Allows fast turnaround, no post-firing required
- Holds tight tolerances
- Withstands temperatures up to 1000°C
- No outgassing and zero porosity
- Ideal prototyping material

Macor® machinable glass ceramic can be machined into complicated shapes and precision parts with ordinary metalworking tools, avoiding the need for expensive diamon tooling. Its coefficient of thermal expansion readily matches most metals and sealing glasses. With a maximum operating temperature of 1000°C and a maximum continuous operating temperature of 800°C, it is ideal for high temperature applications. It is non-wetting, exhibits zero porosity and unlike ductile material will not deform.

Machining tolerances are suprisingly tight, (up to 0.013mm) and it can be machined to a surface finish of less than 0.5µ m and polished to a smoothness of 0.013µ m.

Configurations are limited only by the available equipment and the experience of the machinist.

Macor® can be joined or sealed, both to itself and to other materials, in a number of different ways; metallised parts may be soldered, epoxy provides a strong joint and sealing glass creates a vaccum tight seal.

Macor® is an excellent choice when the performance of a technical ceramic (high working temperature, electrical resistivity, zero porosity) the application requires the ready fabrication of a complicated shape, lower costs and reduced time between design and application.

Mechanical Properties	
Density	2.52 g/cm³
Porosity	0%
Youngs Modulus, 25°C	66.9 GPa
Poissons Ratio	0.29
Shear Modules, 25°C	25.5 GPa
Hardness, Knoop 100g	250
Rockwell A	48
Moduls of Rupture, 25°C (Flexural strength)	94 MPa
Compressive Strength	345 MPa
Fracture Toughness	1.53 Mpa $m^{0.5}$

Thermal Properties	
Ceffecient of Expansion	
-200 to 25°C	74 x 10^{-7}/°C
25 to 300°C	93 x 10^{-7}/°C
25 to 600°C	114 x 10^{-7}/°C
25 to 800°C	126 x 10^{-7}/°C
Specific Heat, 25°C	0.79 KJ/kg°C
Thermal Conductivity, 25°C	1.46 W/m°C
Thermal Diffusivity, 25°C	7.3 x 10^{-7} m²/s
Continuous Operating Temperature	800°C
Maximum No Load Temp.	1000°C

Electrical Properties	
Dielectric Constant, 25°C	
1 kHz	6.03
8.5 GHz	5.67
Loss Tangent, 25°C	
1 kHz	4.7 x 10^{-3}
8.5 kHz	7.1 x 10^{-3}
Dielectric Strength, ac or dc (at 0.254 thickness, 25°C)	40 KV/mm
dc Volume Resistivity, 25°C	>1016

Chemical Properties Solution	pH	Time	Temperature	Weight Loss (mg/cm²) Gravimetric
5% HC I(hydrochloric Acid)	0.1	24 hrs	95°C	100
0.002 N N HNO3 (Nitric Acis)	2.8	24 hrs	95°C	0.6
0.1 n NaHCO3 (Sodium Bicarbonate)	8.4	24 hrs	95°C	0.3
0.02 N NacCCo3 (Sodium Carbonate)	10.9	6 hrs	95°C	0.1
5% NaOH (Sodium Hydroxide)	13.2	6 hrs	95°C	10
Resistance to water over time				
H_2O	7.6	1 Day	95°C	0.01
(not freshened daily)	7.6	3 Days	95°C	0.07
	7.6	7 Days	95°C	9.4
H_2O	7.6	3 Days	95°C	0.06
(freshened Daily)	7.6	6 Days	95°C	0.11

EMA28

Bar 100mm Length Width x Height mm	Order Code	Price Each 1+	5+	10+	20+	50+
10 x 10	715-6170					
15 x 15	715-6182					
20 x 20	715-6194					
25 x 25	715-6200					
Rod 100mm Length ∅ mm						
10	715-6212					
15	715-6224					
20	715-6236					
25	715-6248					
Sheet Dimensions mm						
50 x 50 x 5	715-6250					
50 x 50 x 10	715-6261					
100 x 100 x 5	715-6273					
100 x 100 x 10	715-6285					

All dimensions are approximate

Shapal – M Soft

- Excellent machinability combined with high mechanical strength
- Excellent sealing ability to vaccum
- High thermal conductivity with a low thermal expansion
- High ability in heat resistance
- Excellent electrical insulation
- Low dielectric loss
- Ultra high purity

SHAPAL-M soft is a machinable ceramic with high mechanical strength and thermal conductivity. It is made on the basis of the world's first translucent aluminium nitride ceramic.

SHAPEL-M soft has a broad range of uses as a structural material as well as many other applications including vacuum parts, electronic components where electrical insulation and heat dissipation is required, or low dielectric constant and dissipation factor are required, crucibles for vacuum deposition, specific refractory parts etc.

SHAPEL-M soft is available in a trial pack containing assorted parts.

Mechanical Properties	
Density	2.9 g/cm^3
Porosity	0%
Bending Strength	30 kg/mm^2
Compressive Strength	120 kg/mm^2
Modulus of Elasticity	1.9 x 10^4
Poissons Ratio	0.31
Vickers Hardness	390 kg/mm^2

Thermal Properties	
Thermal Expansion Coefficient	
25 to 400°C	4.4 x 10^{-6}/°C
25 to 600°C	4.8 x 10^{-6}/°C
25 to 800°C	5.1 x 10^{-6}/°C
Thermal Conductivity	90 W/mK
Max. Operating Temperature	
in Air	1000°C
in Nonoxidising Atmosphere	1900°C
Thermal Shock Resistance ΔT (water quench)	400°C

Electrical Properties	
Colume Resistivity	10^{12}Ωcm
Dissipation Factor	0.001
Dielectric Constant	7.1
Dielectric Strength	40 kV/mm

Chemical Properties	
Resistance to Acid (10% HCl, 24hrs, 25°C)	0.2 mg/cm^2 wt. loss
Resistance to Base (10% NaOH, 24hrs, 25°C)	60 mg/cm^2 wt. loss

EMA9

Rod 100mm Length ∅ mm	Order Code	Price Each 1+	5+	10+	20+	50+
10	715-6534					
15	715-6546					
20	715-6558					
25	715-6560					
Dimensions mm						
40 x 40 x 2	715-6571					
100 x 100 x 5	715-6583					
SHAPEL-M Trial Pack	715-6595					

All dimensions are approximate

Plastic Stock

Nylon 66 – ERTALON® 66SA

POLYPENCO

- Tough and resilient
- Good wear resistance
- Good electrical insulator
- Natural white colour
- Continuous working temperature 80°C (Max. 160°C)
- Good chemical resistance (pH5-11)
- Lightweight (1/6 vs steel)
- Good flexural fatigue resistance

Nylon 66 is a highly versatile engineering plastic due to its excellent combination of the above properties. Applications include: gears, bearings, rollers, wheels, cams, nuts, valve seats, pulleys, gaskets, electrical insulators.

Specific gravity	1.14 - 1.15	Melt point	260°C
Water absorption	7-9% Max.	Thermal conductivity	0.24 W/K
Tensile strength	62-83 N/mm^2	Flammability	Self extinguishing
Flexural strength	86-97 N/mm^2	Volume resistivity	>10^{12}Ωm
Shear strength	66 N/mm^2	Dielectric strength	< 2 kV/mm

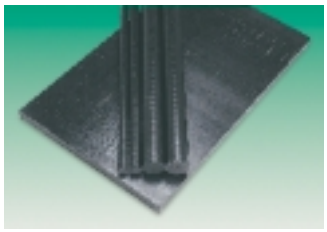
EMA14

Rod 1 Metre Length Diameter	Quantity Per Lot	Order Code	Price Per Lot 1+	5+	20+
6	5	520-287			
10	5	520-299			
15	3	520-305			
20	2	520-317			
25	2	520-329			
30	2	520-330			
36	1	520-342			
40	1	520-354			
45	1	520-366			
50	1	520-378			
56	1	520-380			
60	1	520-391			
65	1	520-408			
70	1	520-410			
75	1	520-421			
Sheet					
8 x 500 x 305	2	520-433			
12 x 500 x 305	1	520-445			
16 x 500 x 305	1	520-457			
20 x 500 x 305	1	520-469			
25 x 500 x 305	1	520-470			
30 x 500 x 305	1	520-482			
40 x 500 x 305	1	520-494			
50 x 500 x 305	1	520-500			

All dimensions are approximate

Nylon 66 – ERTALON®

POLYPENCO



- High strength stiffness
- Excellent creep resistance
- Good dimensional stability
- Black colour
- Continuous working temperature 120°C (max. 145°C)
- Good chemical resistance (pH5-11)
- Good hydrolysis resistance
- Excellent electrical insulator
- The additional of 30% glass fibre produces an outstanding composite material which is ideal for demanding compression/load bearing applications. Applications: as for ERTALON® 66SA but at higher loads

Specific gravity	1.35	Thermal conductivity	0.24 W/K.m
Water absorption	5.5% Max.	Flammability	UL94-HB
Tensile strength (23°C dry)	190 N/mm^2	Volume resistivity	1013Ωcm
Flexural strength (23°C)	270 N/mm^2	Dielectric strength	45 kV/mm
Hardness (Rockwell)	M100	Surface resistivity	1012 Ohm
Melt point	255°C		

EMA15

Rod 1 Metre Length Diameter	Quantity Per Lot	Order Code	Price Per Lot 1+	5+	20+
10	5	520-512			
15	3	520-524			
20	2	520-536			
25	2	520-548			
30	2	520-550			
40	1	520-561			
50	1	520-573			
70	1	520-585			
Sheet Size					
10x500x305	1	520-597			
15x500x305	1	717-1249			
20x500x305	1	520-603			
25x500x305	1	520-615			
30x500x305	1	717-1250			
40x500x305	1	717-1262			
50x500x305	1	717-1274			

All dimesions are approximate

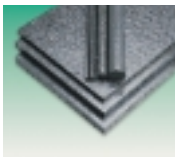
continued

Plastic Stock — continued

Nylon 66 – NYLATRON® GS

MoS2

POLYPENCO



- High stifness and strength
- Self-lubricating
- Excellent wear resistance
- Dark grey colour
- Continuous working temperature 100°C (Max. 145°C)
- Good chemical resistance (pH-5-11)
- Greater load bearing capability
- Excellent dynamic bearing material

Based on Nylon 66, this material is enhanced with molybdenum disulphide (MoS2) filler to produce a low friction, self-lubricating material with superior poperties over unfilled Nylon 66. Applications: as for ERTALON® 62A and 66GF-30

Specific gravity	1.14-1.18	Hardness (Shore D)	80-90
Water absorption (saturation at 23°C)	6-8%	Linear thermal expansion coefficient	6.3 x 10^{-5} K^{-1}
Tensile strength (23°C)	69//96 N/mm²	Minimum service temperature	-40°C
Tensile modulus	3130/4160 N/mm²	Melting point	+260°C
Elongation	5-150%	Thermal conductivity	0.30 W/K.m
Flexural strength (23°C)	110-130 N/mm²	Flammability	Self-extinguishing
Flexural modulus	2758-3448 N/mm²	Coefficient of friction	0.15-0.35

Figures shown above are generally reliable within the latitude of the test, (without warranty)

EMA16

Rod 1 Metre Length Diameter	Qty Per Lot	Order Code	Price Per Lot 1+	5+	20+
8	5	**520-627**			
12	3	**520-639**			
16	3	**520-640**			
20	2	**520-652**			
25	2	**520-664**			
30	1	**520-676**			
35	1	**520-688**			
40	1	**520-690**			
45	1	**520-706**			
50	1	**520-718**			
Sheet Size					
8 x 500 x 305	2	**520-720**			
12 x 500 x 305	1	**520-731**			
16 x 500 x 305	1	**520-743**			
20 x 500 x 305	1	**520-755**			
25 x 500 x 305	1	**520-767**			
30 x 500 x 305	1	**520-779**			
40 x 500 x 305	1	**520-780**			

All dimensions are approximate

Natural Cast Nylon 6

- Good abrasion and wear resistance
- Good mechanical, tensile, compressive and impact strength
- Good chemical resistance
- Lightweight
- Good electrical insulator

Natural cast nylon 6 is renowned as a classic bearing material with excellent wear and abrasion resistance for a vast range of mechanical components. The high compressive strength, hardness and low coefficient of friction result in a very versatile material suitable for virtually any plain bearing application.

Applications include: Bearings, bushes, gears, rollers, wear pads, pulleys and cams.

Specific gravity	1.13-1.14
Water absorption (Saturation)	<7 %
Tensile strength 23°C	740-920 kg/cm²
Flexural strength 23°C	1050-1100 kg/cm²
Modulus of elasticity 23°C	24-31000 kg/cm²
Hardness (Shore D) 23°C	80-85
Coefficient of friction	0.40
General service temp. short term	-40 to +130°C
General service temp. long term	-40 to +110°C
Melting point	+220 to +225°C
Flammability	Self extinguishing
Dielectric strength short term	>20 kV/mm
Volume resistivity	>1012Ωcm
Grade colour	Cream/White

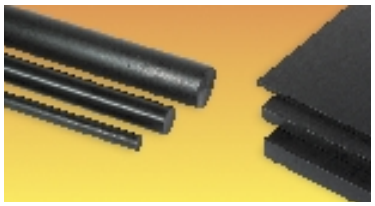
Figures shown above are generally reliable within the latitude of the test, (without warrinty)

EMA17

Rod ∅ mm	Length mm	Order Code	Price Each 1+	5+	10+	20+	50+	100+
65	1000	**715-1690**						
70	1000	**715-1706**						
75	1000	**715-1718**						
80	1000	**715-1720**						
85	1000	**715-1731**						
90	1000	**715-1743**						
95	1000	**715-1755**						
100	1000	**715-1767**						
110	500	**715-1779**						
120	500	**715-1780**						
130	500	**715-1792**						
140	500	**715-1809**						
150	500	**715-1810**						
Sheet Thickness	Size mm							
8.0	500 x 500	**715-1822**						
10.0	500 x 500	**715-1834**						
12.7	500 x 500	**715-1846**						
15.0	500 x 500	**715-1858**						
20.0	500 x 500	**715-1860**						
25.4	500 x 500	**715-1871**						
30.0	500 x 500	**715-1883**						
35.0	500 x 500	**715-1895**						
40.0	500 x 500	**715-1901**						
45.0	500 x 500	**715-1913**						
50.8	500 x 500	**715-1925**						

All dimensions are approximate

Oil-Filled Cast Nylon 6 — NYLACAST



- Self lubricating
- Exceptional abrasion and wear resistance
- Very low coeffiecient of friction
- Good tensile and impact strength
- Good chemical resistance
- Improved resistance to water absorption
- Lightweight

The addition of an oil lubricant into the polymerised matrix of cast nylon 6 greatly increases the resistance to abrasion and wear and thus substantially increasing any bearings lift. Uniform distribution of the lubricant lowers the coefficient of friction, allowing the material to operate under higher loads and at higher speeds than other engineering plastics.

Applications include: Bearings, bushes, gears, rollers, wear pads, wear strips, sprockets, scrolls and chain guides.

Specific gravity	1.13-1.14
Water absorption (Saturation)	<4%
Tensile strength 23°C	720-900 kg/cm²
Flexural strength 23°C	770-1270 kg/cm²
Modulus of elasticity 23°C	21-28000 kg/cm²
Hardness (Shore D) 23°C	80-85
Coefficient of friction	0.13-0.14
General service temp. short term	-40 to +145°C
General service temp. long term	-40 to +125°C
Melting point	+220 to +225°C
Flammability	Self extinguishing
Internal lubricant	Liquid compound
Volume resistivity	>10d¹²Ωcm
Grade colour	Black

Figures shown above are generally reliable within the latitude of the tests, (without warranty)

EMA25

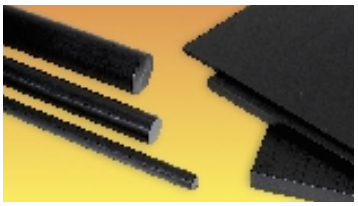
Rod ∅ mm	Length	Order Code	Price Each 1+	5+	10+	20+	50+	100+
25.4	1000	**715-4501**						
30.0	1000	**715-4513**						
40.0	1000	**715-4525**						
50.8	1000	**715-4537**						
60.0	1000	**715-4549**						
70.0	1000	**715-4550**						
80.0	1000	**715-4562**						
90.0	1000	**715-4574**						
100.0	1000	**715-4586**						
110.0	500	**715-4598**						
120.0	500	**715-4604**						
130.0	500	**715-4616**						
140.0	500	**715-4628**						
150.0	500	**715-4630**						

continued

Sheet Thickness	Size	Order Code	Price Each 1+	5+	10+	20+	50+	100+
8.0	500 x 500	**715-4641**						
10.0	500 x 500	**715-4653**						
12.7	500 x 500	**715-4665**						
15.0	500 x 500	**715-4677**						
20.0	500 x 500	**715-4689**						
25.4	500 x 500	**715-4690**						
30.0	500 x 500	**715-4458**						
35.0	500 x 500	**715-4460**						
40.0	500 x 500	**715-4471**						
45.0	500 x 500	**715-4483**						
50.8	500 x 500	**715-4495**						

All dimensions are approximate

MoS_2 Filled Cast Nylon — NYLACAST



- Self lubricating
- Excellent abrasion and wear resistance
- Good tensile and impact strength
- High mechanical strength
- Good chemical resistance
- Lightweight
- Anti-friction properties

This is a grade of cast nylon in which the rate of crystallisation is improved by the addition of molybdenum disulphide. The superficial hardness increases and simultaneously the anti-friction properties are enchanced. Combined with the self lubricating qualities gained from th MoS_2 additive, this has a significant improvement on the wear resistance of the product. The resistance to heat and the maximum long term service temperature is also improved over the basic grade.

Applications include: Bearings, bushes, gears, rollers, wear pads and cams.

Specific gravity	1.14
Water absorption (Saturation)	<6%
Tensile strength 23°C	740-920 kg/cm^2
Flexural strength 23°C	1050-1100 kg/cm^2
Modulus of elasticity 23°C	23-30000 kg/cm^2
Hardness (Shore D) 23°C	80-85
Coefficient of friction	0.30-0.35
General service temp. short term	-40 to +140°C
General service temp. long term	-40 to +120°C
Melting point	220 to 225°C
Flammability	Self extinguishing
Dielectric strength short term	>12 kV/mm
Volume resistivity	>10^{12}Ωcm
Grade Colour	Black

Figures shown above are generally reliable within the latitude of the tests (without warranty)

EMA26

Rod ∅ mm	Length	Order Code	Price Each 1+	5+	10+	20+	50+	100+
65	1000	**715-5529**						
70	1000	**715-5530**						
75	1000	**715-5542**						
80	1000	**715-5554**						
85	1000	**715-5566**						
90	1000	**715-5578**						
95	1000	**715-5347**						
100	1000	**715-5359**						
110	500	**715-5360**						
120	500	**715-5372**						
130	500	**715-5384**						
140	500	**715-5396**						
150	500	**715-5402**						
Sheet Thickness								
8.0	500 x 500	**715-5414**						
10.0	500 x 500	**715-5426**						
12.7	500 x 500	**715-5438**						
15.0	500 x 500	**715-5440**						
20.0	500 x 500	**715-5451**						
25.4	500 x 500	**715-5463**						
30.0	500 x 500	**715-5475**						
35.0	500 x 500	**715-5487**						
40.0	500 x 500	**715-5499**						
45.0	500 x 500	**715-5505**						
50.8	500 x 500	**715-5517**						

All dimensions are approximate

Acetal Copolymer Natural

POLYPENCO

- High rigidity
- Good impact resistance
- Low moisture absorption
- Continuous working temperature 100°C (Max. 140°C)
- Good chemical resistance (pH5-11)
- Excellent dimensional stability
- Ideal for close tolerance parts
- Natural white colour

This proven engineering material has a good combination of all round properties, distinguished by its low moisture absorption and excellent machinability.

Applications include: pump housing, impellers, gears, bearings, valves, valve seats, domestic applications, electrical components.

Specific gravity	1.41	Shear strength	53 N/mm^2
Water absorption	0.22% in 24 hrs	Hardness (Rockwell R)	120
Tensile strength	62 N/mm^2	Melt point	165°C
Tensile modulus	2795 N/mm^2	Max. service temperature (5000 hrs)	115°C
Elongation	60%	Min. service temperature	-50°C
Flexural strength	90 N/mm^2	Linear thermal expansion coefficient	12.5 x 10^{-5} K^{-1}
Flexural modulus	2585 N/mm^2	Flammability	Slow burning

EMA18

∅ mm	Qty Per Pack	Order Code	Price Per Pack 1+	5+	20+
Rod 1 Metre length					
6	5	**520-986**			
10	5	**520-998**			
15	3	**521-000**			
20	2	**521-012**			
25	2	**521-024**			.
30	1	**716-8391**			
36	1	**716-8408**			
40	1	**716-8410**			
45	1	**716-8421**			
50	1	**716-8433**			
56	1	**716-8445**			
60	1	**716-8457**			.
65	1	**716-8469**			
Sheet Size					
8 x 500 x 305	2	**521-036**			
10 x 500 x 305	1	**521-048**			
16 x 500 x 305	1	**521-050**			
25 x 500 x 305	1	**521-061**			
20 x 500 x 305	1	**716-8500**			
30 x 500 x 305	1	**716-8512**			
35 x 500 x 305	1	**716-8524**			
40 x 500 x 305	1	**716-8536**			

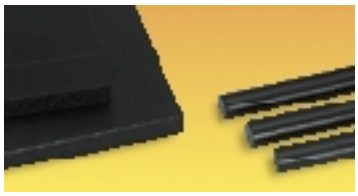
All dimensions are approximate

continued

Plastic Stock — continued

Acetal Copolymer Black

POLYPENCO



- High rigidity
- Good impact resistance
- Low moisture absorption
- Continuous working temperature 100°C (Max. 140°C)
- Good chemical resistance (pH5-11)
- Excellent dimensional stability
- Ideal for close tolerance parts
- Black

Black Acetal Copolymer is superior to the natual equivalent in environments where exposure to ultra-violet light is a consideration.

This proven engineering material has a good combination of all round properties, distinguished by its low absorption and excellent machinability.

Applications include: pump housing, impellers, gears, bearings, valves, valve seats, domestic applications, electrical components.

Specific gravity	1.41	Shear strength	53 N/mm²
Water absorption	0.22% in 24 hrs	Hardness (Rockwell R)	120
Tensile strength	62 N/mm²	Melt point	165°C
Tensile modulus	2795 N/mm²	Max. service temperature (5000 hrs)	115°C
Elongation	60%	Min. service temperature	-50°C
Flexural strength	90 N/mm²	Linear thermal expansion coefficient	12.5 x 10^{-5} K^{-1}
Flexural modulus	2585 N/mm²	Flammability	Slow burning

EMA30

∅ mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	10+	20+	50+	100+
Rod 1000mm Length								
6	5	**717-1470**						
10	5	**717-1481**						
15	3	**717-1493**						
20	2	**717-1500**						
25	2	**717-1511**						
30	1	**717-1523**						
36	1	**717-1535**						
40	1	**717-1547**						
45	1	**717-1559**						
50	1	**717-1560**						
56	1	**717-1572**						
60	1	**717-1584**						
65	1	**717-1596**						
Sheet 500 x 305mm								
Thickness								
8	2	**717-1602**						
10	1	**717-1614**						
15	1	**717-1626**						
20	1	**717-1651**						
25	1	**717-1663**						
30	1	**717-1341**						
35	1	**717-1353**						
40	1	**717-1365**						

All dimensions are approximate

Acetal Homopolymer Natural

POLYPENCO

- High rigidity
- Good impact resistance
- Low moisture absorption
- Continuous working temperature 90°C (Max. 150°C)
- Good chemical resistance
- Excellent dimensional stability
- Ideal for close tolerance parts
- Suitable for food contact

Similar properties to that of Acetal Copolymer, except with marginally superior mechanical properties and better wear resistance. Slightly lower maximum continuous operating temperature and less resistance to hot water. Applications include: Similar applications to acetal copolymer but requiring marginally superior mechanical properties and wear resistance.

Specific gravity	1.43	Hardness (Rockwell M)	90
Water absorption	0.85%	Melt point	175°C
Tensil strength	80 N/mm²	Max. service temperature (5000hrs)	95°C
Tensile modulus	3300 N/mm²	Min. service temperature	-50°C
Flexural strength	98 N/mm²	Linear thermal expansion coefficient	11.0 x 10^{-5} K^{-1}
Flexural modulus	2620 N/mm²	Flammability	Slow burning
Elongation	30%	Volume resistivity	10^{14}Ωcm

EMA31

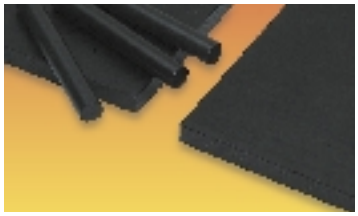
∅ mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	10+	20+	50+	100+
Rod 1000mm Length								
6	5	**717-1810**						
10	5	**717-1821**						
15	3	**717-1833**						
20	2	**717-1845**						
25	2	**717-1857**						
30	1	**717-1948**						
36	1	**717-1950**						
40	1	**717-1961**						
45	1	**717-2060**						
50	1	**717-2072**						
55	1	**717-2084**						
60	1	**717-2096**						
65	1	**717-2102**						
Sheet 500 x 305mm								
10	1	**717-2114**						
16	1	**717-2126**						
20	1	**717-2138**						
25	1	**717-2151**						
30	1	**717-2163**						
35	1	**717-2175**						
40	1	**717-2187**						

All dimensions are approximate

Acetal Homopolymer Black

POLYPENCO

Price Reduced



- High rigidity
- Good impact resistance
- Low moisture absorption
- Continuous working temperature 90°C (Max. 150°C)
- Good chemical resistance
- Excellent dimensional stability
- Ideal for close tolerance parts
- Suitable for food contact

Black Acetal Homopolymer is superior to the natural equivalent in environments where exposure to ultra-violet light is a consideration.

Similar properties to that of Acetal Copolymer, except with marginally superior mechanical properties and better wear resistance, slightly lower maximum continuous operating temperature and less resistance to hot water. Applications include: Similar applications to acetal copolymer but requiring marginally superior mechanical properties and wear resistance.

Specific gravity	1.43	Hardness (Rockwell M)	90
Water absorption	0.85%	Melt point	175°C
Tensile strength	80 N/mm²	Max. service temperature (5000hrs)	95°C
Tensile modulus	3300 N/mm²	Min. service temperature	-50°C
Flexural strength	98 N/mm²	Linear thermal expansion coefficient	11.0 x 10-5 K^{-1}
Flexural modulus	2620 N/mm²	Flammability	Slow burning
Elongation	30%	Volume resistivity	10^{14}Ωcm

EMA32

∅ mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	10+	20+	50+	100+
Rod 1 Metre Length								
10	5	**717-3696**						
16	3	**717-3702**						
20	2	**717-3714**						
25	2	**717-3726**						
30	1	**717-3738**						
40	1	**717-3740**						
45	1	**717-3751**						
50	1	**717-3763**						
60	1	**717-3775**						
65	1	**717-3787**						
Sheet 500mm x 305mm								
Thickness								
10		**717-3799**						
16		**717-3805**						
20		**717-3817**						
25		**717-3829**						
30		**717-3842**						
40		**717-3854**						

All dimensions are approximate

Acrylic

- Excellent surface quality
- Hygenic
- Consistent mechanical properties
- Low density
- Good abrasion resistance

An acrylic sheet is a most useful material in the workshop because its properties make it very suitable for a wide range of different purposes, from precision engineering components to domestic and commercial products. Some of the many applications are: signs, glazing, safety screens, roofing, lighting fittings, medical and research apparatus, furniture and craft work.

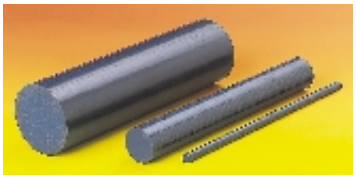
EMA43

Sheet	Order Code	Price Each 1+	5+	10+	20+	50+
1010 670 3mm	**320-2458**					
1010 670 4mm	**320-2460**					
1010 670 5mm	**320-2471**					
1010 670 6mm	**320-2483**					

Techtron HPV

Lubricated Polyphenylene

POLYPENCO



- High stiffness/strength
- Continuous working temperature of 200°C (max 250°C)
- Low coefficient of friction
- Hydrolysis resistance
- Excellent abrasion resistance
- Radiation resistance
- Excellent chemical resistance

Techtron HPV has a valuable combination of properties including wear resistance, load bearing capability and dimensional stability even when exposed to chemicals and high temperature environments.

Applications include: bearings, ball valves, seals, pump and compressor components.

Colour	Blue	Rockwell hardness	M84
Specific gravity	1.43	Thermal conductivity	0.3W/K.m
Water absorption saturation in water	0.09%	Linear thermal expansion coefficient	5-8K^{-1} x 10^{-5}
Tensile strength	75 N/mm^2	Volume resistivity	10Ω.cm
Tensile modulus	2200 N/mm^2	Dielectric strength	24kV/mm
% Elongation	5		

EMA39

∅ mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	10+	20+	50+
Rod 300mm Length							
10	2	**722-0728**					
16	2	**722-0730**					
20	1	**722-0741**					
25	1	**722-0753**					
40	1	**722-0765**					
50	1	**722-0777**					
80	1	**722-0789**					

Eralyte TX

Bearing Grade PETP & Solid Lubricant

POLYPENCO

- High mechanical strength, stiffness and hardness
- Continuous working temperature of 100°C (max 160°C)
- Very good creep resistance
- Low coefficient of friction
- Low moisture absorption
- Very good dimensional stability
- Excellent wear resistance

The material has a good combination of properties, distinguished by its low moisture absorption, excellent machinability and its improved bearing performance.

Applications include: bearings, thrust washers, slideways, gears, rollers, pump components etc.

Colour	Light grey	Hardness Shore D	94
Specific gravity	1.44	Thermal conductivity Linear thermal	0.29W/K.m
Water absorption saturation in water	0.47%	Linear thermal expansion coeficient	6.5-8.5K^{-1} x 10^{-5}
Tensile strength	78 N/mm^2	Volume resistivity	>10^{17}Ω.cm
% Elongation	8	Dielectric strnegth	>21kV/mm

EMA40

Rod ∅	Length mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	10+	20+	50+
10	1000	5	**722-0790**					
16	1000	2	**722-0807**					
20	1000	2	**722-0819**					
25	1000	1	**722-0820**					
40	1000	1	**722-0832**					
50	1000	1	**722-0844**					
80	500	1	**722-0856**					

Polythylene – CESTILENE® HD1000

POLYPENCO

- Very high impact resistance
- Good abrasive wear resistance
- Suitable for food contact
- Natural translucent white colour
- Continuous working temperature 60°C (Max. 80°C)
- Low temperature capability, -250°C
- Excellent chemical and UV/weathering resistance

A physiologically inert material with an outstanding combination of properties for indoor and outdoor aggresive environments.

Applications include: chute linings, chain guides, underwater bearings, hopper linings, impact plates, pulleys, textiles machinery, gaskets, pump components, guide rails.

Specific gravity	0.93	Hardness (Shore D)	62
Water absorption	Non-absorbent	Melt point	130°C
Tensile strength	40 N/mm^2	Max. service temperature (5000hrs)	60°C
Tensile modulus	552 N/mm^2	Min. service temperature	-260°C
Elongation	>50%	Linear thermal expansion coefficient	20 x 10^{-5} K^{-1}
Flexural modulus	517 N/mm^2	Thermal conductivity	0.42 W/k.m
Shear strengthy	24 N/mm^2	Flammability	Slow burning

EMA19

Rod 1 Metre Length ∅ mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	20+
20	3	**521-152**			
30	2	**521-164**			
40	1	**521-176**			
Sheet Size					
3 x 960 x 470	3	**521-188**			
4 x 960 x 470	2	**521-190**			
8 x 960 x 470	1	**521-206**			
10 x 1000 x 500	1	**521-218**			
15 x 1000 x 500	1	**521-220**			

All dimensions are approximate

Polypropylene

POLYPENCO

- High flexural fatigue resisitance
- Good impact strength
- Resists steam cleaning
- Natural white colour
- Excellent electrical properties
- Continuous working temperature 80°C (Max. 100°C)
- Excellent chemical resistance (pH4-11)
- Limited UV resistance
- Natural white colour

Specific gravity	0.91	Relative permitivity at 1kHz	2.25
Flexural modulus of elasticity	1150 N/mm^2	Volume resistivity	10^{15}Ω.cm
Tensile strength at yield	27 N/mm^2	Surface resistivity	1011 to 1015Ω
Elongation at yield	15%		

EMA21

Rod 1 Metre Length ∅ mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	20+
20	3	**521-309**			
30	2	**521-310**			
40	1	**521-322**			
Sheet Size					
3 x 995 x 495	3	**521-334**			
4.5 x 995 x 495	2	**521-346**			
6 x 995 x 495	2	**521-358**			
9 x 995 x 495	1	**521-360**			
10 x 995 x 495	1	**521-371**			
15 x 995 x 495	1	**521-383**			

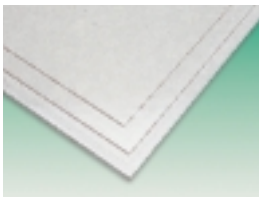
All dimensions are approximate

continued

Plastic Stock — continued

Polycarbonate – AXXIS® PC-111

POLYPENCO



- Good mechanical strength
- Exceptional impact strength
- Excellent flame retardance
- Clear, high optical quality
- Good thermal and noise barrier
- Continuous working temperature 80°C (Max. 100°C)
- Very good UV/weathering resistance

Polycarbonate sheet is a virtually unbreakable, flexible material of optical quality which can be fabricated into a wide variety of clear components.

Applications include: flat and curved glazing, machine guards, riot shields, door viewing panels, light covers.

Density	1.2	Melt point	230°C
Tensile strength at break	>60 N/mm²	Thermal conductivity	0.21 W/K.m
Elongation at break	80%	Flammability	UL94V-2
Tensile modulus	2300 N/mm²	Coefficient of linear thermal expansion	6.5 $K^{-1}.10^{-5}$
Nall indentation hardness	110 N/mm²	Volume resisitivity	$-10^{16}\Omega$/cm
Impact Strength	No break	Dielectric strength	25 kV/mm

EMA23

Sheet Size	Order Code	Price Each 1+	5+	20+
3 x 1250 x 610	**521-395**			
4 x 1250 x 610	**521-401**			
5 x 1250 x 610	**521-413**			
6 x 1250 x 610	**521-425**			

Ertalyte® Natural (white) PETP

- High mechanical strength
- Good creep resistance
- Excellent wear resistance
- Good dimensional stability
- Physiologically inert
- Low coefficient of friction

Specific Gravity:	1.39
Water Absorption:	0.25% at saturation in air of 23°C/50% RH
Tensile Strength:	90 N/mm²
Elongation at Break:	15%
Hardness:	M96 Rockwell Hardness
Thermal Conductivity:	0.29 W/(k.m)
Linear Thermal Expansion Coefficient:	60 10^{-6}M/(M.k)
Volume Resistivity:	10^{17} OHM.CM
Dielectric Strength:	22 kV/mm

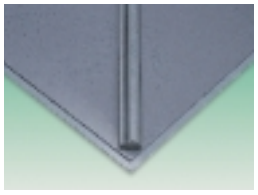
EMA41

Rod ∅ mm	Length mm	Order Code	Price Each 1+	5+	10+	20+	50+
10	1000	**320-2495**					
12	1000	**320-2501**					
16	1000	**320-2513**					
20	1000	**320-2525**					
25	1000	**320-2537**					
30	1000	**320-2549**					
36	1000	**320-2550**					
40	1000	**320-2562**					
45	1000	**320-2574**					
50	1000	**320-2586**					
56	1000	**320-2598**					
60	1000	**320-2604**					
65	1000	**320-2616**					
70	1000	**320-2628**					

Sheet	Order Code	Price Each 1+	5+	10+	20+	50+
500 305 10mm	**320-2641**					
500 305 12mm	**320-2653**					
500 305 15mm	**320-2665**					
500 305 20mm	**320-2677**					
500 305 25mm	**320-2689**					
500 305 30mm	**320-2690**					
500 305 40mm	**320-2707**					

PVC

POLYPENCO



- Reasonable mechanical properties
- Limited impact strength
- Low moisture absorption
- Light grey colour
- Easily fabricated
- Continuous working temperature 50°C (Max. 80°C)
- Good UV/weather resistance
- Good chemical resistance (pH3-12)

A long established plastic with quite good mechanical properties, generally chosen when chemical resistance is required at low cost.

Applications include: mainly static applications for prototyping, models, electrical insulation, chemical valves and pumps

Density	1.38	Impact Strength	No break
Tensile strength at break	50 N/mm²	Thermal conductivity	0.16 W/K.m
Elongation at break	>5%	Coefficient of linear thermal expansion	8$K^{-1}10^{-5}$
Tensile modulus	2400-3000 N/mm²	Volume resistivity	$-10^{15}\Omega$cm
Ball indentation hardness	95-100 N/mm²	Dielectric strength	-30 kV/mm

EMA20

∅ mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	20+
Rod 1 Metre Length					
6	5	**521-231**			
10	5	**521-243**			
15	3	**521-255**			
20	2	**521-267**			
25	2	**521-279**			
Sheet Size					
3 x 1000 x 500	5	**521-280**			
4.5 x 1000 x 500	3	**521-292**			

All dimensions are approximate

Foam PVC

- Lightweight
- Hygenic
- Good mechanical performance
- Good thermal insulation
- Self extinguishing
- Rot proof
- Easily fabricated

Specific gravity	Various	Heat Distortion		
Water Absorption	0.19%	Temp	A:	57.75°C
Tensile Strength	19.37 MPa		B:	68.4°C
Flexural Strength	0.903GPa			

EMA42

Sheet	Order Code	Price Each 1+	5+	10+	20+	50+
1220 600 3mm	**320-2719**					
1220 600 4mm	**320-2720**					
1220 600 5mm	**320-2732**					
1220 600 6mm	**320-2744**					

PTFE

Polytetrafluoroethylene

POLYPENCO

- Excellent chemical resistance (pH 0-14)
- Very low coefficient of friction
- Wide operating range (-260°C to 250°C)
- Superb electrical/dielectric performance
- Tough/flexible
- Non-stick surface
- Natural white colour

This material provides the ultimate in chemical resistance, ability to withstand extremes of operating temperature, very low friction and superb electrical performance.

Applications include: gaskets, chute linings, insulators, valve seats, 'O' rings.

Specific gravity	2.2 to 2.3	Max. service temperature (20000hrs)	260°C
Water absorption	0.02%	Min. service temperature	-260°C
Tensile strength	12 to 24 N/mm²	Linear thermal expansion coefficient	10-12 x 10^{-5} K^{-1}
Tensile modulus	340 to 638 N/mm²	Thermal conductivity	0.26 W/K.m
Flexural strength	97 to 99 N/mm²	Volume resistivity	>$10^{18}\Omega$.cm
Hardness (Shore D)	50 to 60	Dielectric strength	> kV/mm
Melt point	327°C		

ema33

∅ mm	Qty Per Lot	Order Code	Price Per Lot 1+	5+	10+	20+	50+	100+
Rod 1000mm Length								
6	5	**717-4433**						
10	5	**717-4445**						
15	3	**717-4457**						
20	2	**717-4469**						
25	2	**717-4470**						
32	2	**717-4482**						
36	1	**717-4494**						
40	1	**717-4500**						
45	1	**717-4524**						
50	1	**717-4536**						
65	1	**717-4548**						
Rod 500mm Length								
25	1	**717-4550**						
32	1	**717-4585**						
40	1	**717-4597**						
45	1	**717-4603**						
50	1	**717-4615**						
65	1	**717-4627**						
Rod 300mm Length								
70	1	**717-4639**						
77	1	**717-4640**						
83	1	**717-4652**						
90	1	**717-4664**						
96	1	**717-4676**						
102	1	**717-4688**						
110	1	**717-4690**						
120	1	**717-4706**						
130	1	**717-4718**						
Sheet 610 x 305mm								
Thickness								
1.5	3	**717-4720**						
3	2	**717-4731**						
6	1	**717-4743**						
10	1	**717-4755**						
15	1	**717-4767**						
20	1	**717-4779**						
25	1	**717-4718**						
Sheet 305 x 305mm								
6	1	**717-4792**						
8	1	**717-4809**						
10	1	**717-4810**						
12	1	**717-4871**						
15	1	**717-4883**						
20	1	**717-4895**						
25	1	**717-4901**						

All dimensions are approximate

PETG

PETG sheets have high impact strength even at temperatures below zero. This allows punching, die cutting, shearing, cold bending riveting tc. as well; as conventional fabricating techniques.

PETG sheets have a light transmission at up to 90% combined with high surface gloss and optical quality.

PETG sheets are food compatible complying with FDA regulations. Applications vary but machine guards, point of sale items, food displays and containers, signs, shop fitting items.

- Excellent thermoformability
- High clarity
- Good impact resistance
- Food compatible
- Sterilisable with ETO or Gamma-Rays

Specific Gravity:	1.27	Deformation Temp	
Tensile Strength 23°C:	50 N/mm²	A: 1.81N/mm²:	63°C
Tensile Modules:	2050 N/mm²	B: 0.45N/mm²:	70°C
Coefficient of expansion:	5 1 0⁻⁵ K⁻¹	Specific Heat 30°C:	1170J/kg.k
		Specific Resistance:	10¹⁵ Ohm.cm

EMA44

Sheet	Order Code	Price Each 1+	5+	10+	20+	50+
1250 600 3mm	**320-2756**					
1250 600 4mm	**320-2768**					
1250 600 5mm	**320-2770**					
1250 600 6mm	**320-2781**					

ABS

Acrylonitrile Butadiene Styrene

POLYPENCO

- High impact strength
- Good electrical insulator
- Natural white
- Easily formed
- Reasonable chemical resistance

ABS is a tough and rigid thermoplastic exhibiting high impact resistance and which can be thermally formed easily. It also has good electrical properties and reasonable chemical resistance to acids and alkalis.

Specific gravity	1.06
Tensile strength	37 N/mm²
Flexural strength	65 N/mm²
Flexural modulus	1800 N/mm²
Impact strength Izod Notched	290
Hardness (Rockwell R)	85
Linear thermal expansion coefficient	9.5 K⁻¹ x 10⁻⁵

EMA34

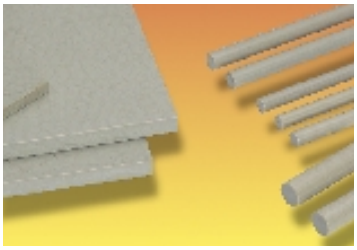
Thickness mm	Order Code	Price Each 1+	5+	10+	20+	50+	100+
Sheet 610mm x 1220mm							
1.5	**717-5541**						
3.0	**717-5553**						
4.5	**717-5565**						
6.0	**717-5577**						

All dimesnions are approximate

PEEK

Polyethertherketone

POLYPENCO



- Excellent chemical resistance
- Wide operating range (-60°C to 250°C)
- Superb electrical/dielectric performance
- Good radiation resistance (>1000 Mrads)
- High stiffness/strength
- Good abrasion resistance
- Hydrolysis resistance
- Non-flammable

A high performance engineering thermoplastic with excellent chemical, electrical and mechanical properties. PEEK is tough, abrasion resistant material that retains good tensile and flexural properties at temperatures in excess of 250°C.

% Elongation 15 Dielectric strength 23.6kV/mm, flexural strength 244N/mm.

Specific gravity	1.32	Melt point	340°C
Water absorption	0.45	Max. service temperature (20000hrs)	250°C
Tensile strength	110 N/mm²	Min. service temperature	-60°C
Tensile modulus	4200 N/mm²	Linear thermal expansion coefficient	5 x 10⁻⁵ K⁻¹
Flexural strength	170 N/mm²	Thermal conductivity	0.25 W/K.m
Flexural modulus	3660 N/mm²	Volume Resistivity	4-9 x 10¹⁶
Elongation	20%	Dielectric strength	24 kV/mm
Hardness (Rockwell M)	105		

EMA35

∅ mm	Order Code	Price Each 1+	5+	10+	20+	50+	100+
Rod 300mm Length							
10	**717-5589**						
16	**717-5590**						
20	**717-5607**						
25	**717-5772**						
30	**717-5796**						
35	**717-5802**						
40	**717-5838**						
45	**717-5840**						
50	**717-5851**						
60	**717-5863**						
Plate 245mm x 305mm							
Thickness mm							
8	**717-5875**						
10	**717-5887**						
12	**717-5899**						
16	**717-5905**						
20	**717-5917**						
Strip 45mm x 500mm							
8	**717-5929**						
10	**717-5978**						
12	**717-5980**						
16	**717-5991**						
20	**717-6004**						

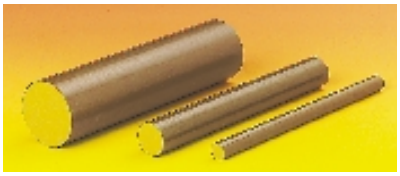
All dimensions are approximate

continued

Plastic Stock — continued

Torlon 4203
Electrical Grade

POLYPENCO



- High stiffness/strength
- Wide operating temperature range – 190°C to 260°C
- Good dimensional stability
- Excellent chemical resistance
- Excellent creep resistance
- Good radiation resistance
- Good electrical/dielectric performance

Torlon resins have exceptional physical and chemical properties, that can withstand continuous exposure to temperatures between 230°C and 260°C.

Applications include: Connectors, switches, relays, thrust washers, valve seats, piston rings, mechanical linkages, bushings, electrical and thermal insulators.

Colour	Dark Brown	Rockwell Hardness	E86
Specific gravity	1.4	Linear thermal expansion coefficient	$3.06K^{-1} \times 10^{-5}$
Tensile strength	192 N/mm^2	Volume resistivity	$2 \times 10^{16} \Omega.cm$
% Elongation	15	Dielectric strength	23.6kV/mm
Flexural strength	244 N/mm^2		

EMA37

∅ mm	Order Code	Price Each 1+	5+	10+	20+	50+
Rod 200mm Lengths						
½”	**722-0601**					
¾”	**722-0613**					
1”	**722-0625**					
1¼”	**722-0637**					
1½”	**722-0649**					
2”	**722-0650**					

Torlon 4301
Bearing Grade

POLYPENCO

- High stiffness/strength
- Wide operating temperature range – 190°C to 260°C
- Low coefficient of friction
- Excellent chemical resistance
- Good wear resistance
- Good radiation resistance
- Good dimensional stability

Torlon resins have exceptional physical and chemical properties, that can withstand contiuous exposure to temperatures between 230°C and 260°C.

Applications include: Bearings, thrust washers, wear pads, strips, piston rings, seals,vanes and valve seats.

Colour	Green/Black	Rockwell hardness	E72
Specific gravity	1.45	Linear thermal expansion coefficient	$2.52K^{-1}$ 1 0^{-5}
Tensile strength	164 N/mm^2	expansion coefficient	$2.52K^{-1}$ 1 0^{-5}
% Elongation	7	Thermal conductivity	054W/K.m
Flexural strength	219 N/mm^2		

EMA38

∅ mm	Order Code	Price Each 1+	5+	10+	20+	50+
Rod 200mm Lengths						
½”	**722-0662**					
¾”	**722-0674**					
1”	**722-0686**					
1¼”	**722-0698**					
1½”	**722-0704**					
2”	**722-0716**					

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