

CUSTOM CAPABILITIES

Custom Products

Injection-Molded Plastic

Caplugs can accommodate any need for a special design, shape or color. We have tooling readily available to produce over 2,000 special shapes that are not shown in our catalog. Any of these 2,000 custom molds are available for use as is or for modification. What's more, our experts can design a protective part specifically for your application.

Dip-Molded Vinyl

In addition to our extensive injection-molded capabilities, our recent acquisition of Polaris Plastics has significantly expanded our custom dip molding capabilities far beyond any others in the marketplace. Like injection-molded products, Caplugs can accommodate most needs for special design, shape and color of dip-molded products. Whatever your needs, Caplugs either has the tooling already available or can design the best product solution.



Injection-Molded Plastic

Custom Capabilities

	Injection-Molded Plastic	Dip-Molded Vinyl
Prototype Design & Samples	1 week	1 week
Production Tooling	4 to 6 weeks	2 weeks
Max. Diameter	9.5 inches (241.3 mm)	27 inches (686 mm)
Min. Diameter	.09 inches (2.29 mm)	.054 inches (1.372 mm)
Max. Length	5 inches (127 mm)	21 inches (533 mm)
Min. Length	.15 inches (3.81 mm)	.187 inches (4.750 mm)
Max. Wall Thickness	.09 inches (2.29 mm)	.125 inches (3.175 mm)
Min. Wall Thickness	.03 inches (0.76 mm)	.030 inches (0.762 mm)
Shapes	Round, tapered, threaded, rectangular, square, various odd shapes	round, oval, flanged, boots, rectangle, square, various odd shapes, multi-dip, bellows
Materials	low, medium and high density polyethylene, polypropylene, thermoplastic rubber, ethylene vinyl acetate, conductive and static dissipative polyethylene	vinyl, foam, matte, translucents, neons phosphorescent, rigid, soft, elastic, high temperature, medical grade, static dissipative, non-copper staining and high durometer
Tolerances	typically +/- .010 inch per inch	+/- .010 wall thickness +/- .010 minimum +/- .060 dip line
Standard Colors	red, black, yellow, translucent, white, green, brown, orange, blue and grey	white, black, brown, orange, red, green, grey, blue and yellow
Secondary Operations	punching, slicing, drilling, printing, assembly, special packaging, cutting, not stamping	punching, slitting, slicing, printing
Lot Traceability	Yes	Yes
Material Certification	Yes	Yes
Compliance to CGMP	Yes	Yes



Dip-Molded Vinyl



Extruded Sleeve-Web Netting

Extruded Sleeve-Web® Netting

Caplugs' unique, single-piece extruding process for Sleeve-Web permits extensive product variations in terms of web thickness and weight, strand spacing, sleeve diameter, stretchability, material and color. In addition, netting can be modified and/or further fabricated after extruding by cutting, slitting or sealing one end of the netting to create a bag.

Secondary Operations

We have a variety of options for modifying existing injection-molded plastic or dip-molded vinyl products to meet your needs. If you need us to punch holes in your product, cut slits in it, pad print on it, attach chains or tags to it, make some other modification, or even specially package it, we have that capability.

Our Secondary Operations Department has hundreds of possibilities to offer when developing your customized solutions.



Secondary Operations

MATERIAL DATA CHART

Properties*	Aluminum	Polyethylene		Polypropylene Impact (rubber-modified)	Ethylene Vinyl Acetate	Flextemp Thermoplastic Rubber	Silicone Rubber	Vinyl	
		Low Density	High Density					Standard	High-temp
MECHANICAL CHARACTERISTICS									
Specific gravity (density)	2.73	0.910-0.925	0.941-0.965	0.890-0.91	.920-.950	.940-.960	1.18	1.2	1.2
Tensile strength, p.s.i.	31-42	600-2300	3100-5500	2800-4400	1440-2500	2400-3100	200-1500	2300	2100
Elongation, %	20% min.	90.0-800.0	20.0-1000.0	350.0->500.0	550-900	500-620	700	400	270
Compressive strength, p.s.i.	11	-	2700-3600	4000-6500	-	-	-	-	-
Tear strength (ASTM D624)	-	-	-	-	-	-	200pli	185 pli	270 pli
Impact strength, ft. lb./in. of notch (1/2x1/2 in. notched bar, izod test)	No break	No break	0.5-20.0	1.0-15.0 @ 73°F	No break	-	-	-	-
Hardness, Rockwell	-	D41-D46 (Shore) R10	D60-70 (Shore)	R50-R85	D17-45 (Shore)	-	A25-80 (Shore)	A65-85 (Shore)	A90-100
ELECTRICAL CHARACTERISTICS									
Volume resistivity, ohm/cm 3 (50% RH and 23°C.)	-	>10 ¹⁵	>10 ¹⁶	>10 ¹³	>10 ¹³	-	-	-	-
Dielectric constant, 60 cyc.	-	2.25-2.35	2.30-2.35	2.3	2.50-3.16	-	-	-	-
Dissipation (power)factor, 60 cyc.	-	<0.0005	<0.0005	>0.0003	>0.0030	-	-	-	-
SERVICE TEMPERATURES									
Continuous °C/°F	343/650	66/150	74/165	121/250	60/140	132/275	232/450	93/200	149/250
Intermittent °C/°F	343/650	79/175	102/215			149/300	316/600	177/350	246/475
Brittleness °C/°F	-70/-94	<-70/<-94	-18/0	<-70/<-94	<-68/<-90	0	-32/-90	-	-
RESISTANCE CHARACTERISTICS									
Water absorp., 24 hr., 1/8" thick,%	0.0	<0.015	<0.01	<0.01	.05-.13	<.10	-	-	-
Burning rate (flammability), in./min.	-	Very slow	Very slow (1.04)	Slow (1.00-1.04)	-	Slow	Very	Slow	Slow
Effect of sunlight	-	Unprotected material crazes rapidly. Requires black for complete protection.			-	-	Very Resistant	Good Resistance	Good Resistance
Effect of weak acids	Varies	Resistant	Very	Completely Resistant	Resistant Resistant	Very	Poor Resistant	Very	Very Resistant
Effect of strong acids	Varies	Attacked	Attacked oxidizing acids	Resistant slowly by oxidizing acids	Resistant by oxidizing acids	-	Poor	Resistant	Resistant
Effect of weak alkalis	Cleaning Agent	Resistant	Very Resistant	Completely Resistant	Resistant	Very Resistant	Poor	Very Resistant	Very Resistant
Effect of strong alkalis	Etches	Resistant	Very	Very Resistant	Resistant Resistant	Very	Poor Resistant	Resistant	Resistant
Effect of organic solvents	None	Resistant (below 60°C)	Resistant (below 80°C)	Attacked by hydrocarbons and chlorinated hydrocarbons	Resistant	Swells in contact with hydrocarbons and chlorinated hydrocarbons	Moderate	Good resistance to alcohols, aliphatic hydrocarbons and oils	Good resistance to alcohols, aliphatic hydrocarbons and oils
Machine qualities	Fair	Good	Excellent	Good	Fair	Fair	Poor	Poor	Poor
Clarity (Natural Material)	-	Translucent to opaque	Translucent	Trans.-opaque	Opaque	Clear to	Clear to Opaque	- Opaque	-
Abrasion resistance	Low	-	-	-	-	-	Low	Very Good	Very Good

Call factory for special materials.

*Property specifications of Caplugs are subject to change without notification.

DIMENSIONAL TOLERANCES

Caplugs are designed in accord with functional dimensions and will perform to dimensions listed in this catalog. In view of the flexibility and stretch of most of the materials used in Caplugs, it is recommended that the following tolerances be used for checking purposes, especially by those unfamiliar with measuring this material.

Tolerances for Inch dimensions given to three decimal places.

±.010" per each inch of length. Minimum is ±.010" where dimension is less than one inch.

Examples:

Tolerance for .750" dimension is ±.010"

Reason: Although .750"x ±.010" = ±.0075", ±.010" is the minimum.

Tolerance for 1.000" is ±.010".

Reason: 1.000"x ±.010" = ±.010".

Tolerance for 1.500" dimension is ±.015".

Reason: 1.500" x ±.010" = ±.015".

Tolerances for Inch dimensions given to two decimal places.

±.020" per each inch of length. Minimum is ±.020" where dimension is less than one inch.

Examples:

Tolerance for .750" dimension is ±.020".

Reason: Although .750" x ±.020" = ±.015", ±.020" is the minimum.

Tolerance for 1.00" dimension is ±.020".

Reason: 1.00"x ±.020" = ±.020".

Tolerance for 1.50" is ±.030".

Reason: 1.50"x ±.020" = ±.030".

Tolerances for Metric dimensions given to two decimal places.

±.25mm per each 25.4mm of length (.01 mm per mm). Minimum is ±.25mm where dimension is less than 25.4mm.

Examples:

Tolerance for 19.00mm dimension is ±.25mm.

Reason: Although 19.00mm x ±.01 is ±.19mm, .25mm is the minimum.

Tolerance for 25.4mm is ±.25mm.

Reason: 25.4mm x ±.01mm = ±.25mm.

Tolerance for 38.1mm is ±.38mm.

Reason: 38.1mm x ±.01mm = ±.38mm.

Tolerances for Metric dimensions given to one decimal place.

±.5mm per each 25.4mm of length (.02 mm per mm). Minimum is ±.5 where dimension is less than 25.4mm.

Examples:

Tolerance for 19.0mm dimension is ±.5mm.

Reason: Although 19.0mm x ±.02mm = ±.38mm, ±.5mm is the minimum.

Tolerance for 25.4mm dimension is ±.5mm.

Reason: 25.4mm x ±.02mm = ±.5mm.

Tolerance for 38.1mm dimension is ±.76mm.

Reason: 38.1mm x ±.02mm = ±.76mm.

Caplugs are subject to design improvement through dimensional changes without notification.

MATERIAL SELECTION BY TEMPERATURE

Service Temperatures for Stock Caplugs

(appropriate Caplugs series shown in parentheses)

650°F 343°C	.....	Aluminum (ASC, AFO, ASP, ADP)
600°F 316°C	.....	Silicone Rubber (SFC, SPP, SRC, SRP)
500°F 260°C	.....	Masking Tape (MDK, MTK, MTS)
475°F 246°C	.....	HiTemp Vinyl (most vinyl series available in HiTemp vinyl)
400°F 204°C	.....	Paper (PTC, PTP, PSC) Masking Tape (MDG, MTB, MTG)
350°F 177°C	.....	Vinyl (AN, DR, EGL-12, EZ, MS, TP, VAC, VAS, VC, VCF, VF, VFC, VFE, VHC, VHF, VHG, VHR, VIF, VMF, VNG, VOR, VRF, VRR, VSC, VSE, VSR, VTP, VVC)
300°F 149°C	.....	FlexTemp (GRO, T)
250°F 121°C	.....	Polypropylene (BSP, P-48C, RP, RPO-M, TES)
215°F 102°C	.....	High Density Polyethylene (EGL-11, MSP, P, PDO, RPO)
175°F 79°C	.....	Low Density Polyethylene*
140°F 60°C	.....	Ethylene Vinyl Acetate (DCC, BPF-5mm, BPF-6mm, BPF 1/4)

*(BP, BPF, CBC, CBW, CCF, CD, CEC, CEG, CEP, COF, CPT, CSW, DP, EC, EGL-22, EMC, EP, FC, FCO, FCR, FF, FP, GC, HC, HSF, J, JS, K, L, MJ, MJS, PC, PD, PDE, PDF, PDI, PIP, PIP-Tab, PM, RC, RCL, RER, RH, RJ, SC, SEC, SEP, SF, SFP, SH, SQR, STP, SW, T, UTP, W, WW, WWX)

Each Caplugs product is manufactured from a unique group of materials with different properties and characteristics. If your product protection application will be exposed to extreme high temperatures or corrosive environments during processing or finishing operations, you must select a Caplugs product made of the proper material to withstand those conditions. For instance, when masking parts during paint baking, shot blasting, powder coating or plating processes, you should always use a Caplugs product made of high temperature-resistant materials.

The illustration above depicts the intermittent temperature resistance characteristics of the entire list of Caplugs materials. For complete service temperature information and other physical properties of Caplugs materials, consult the Material Data Chart on page 10. And, of course, take advantage of our free samples to test a part in your specific application before ordering.

Most Caplugs materials are produced in a standard color, which is noted on the product information page for each specific series. As some materials are available in different colors, please see page 13 for Standard Color Options.

Note: Most vinyl products are also available in HiTemp, Medical Grade and Static Dissipative Vinyl. Most Low Density Polyethylene products are also available in FlexTemp material. For any special material requests, please consult the factory for further information.



MILITARY & NAS SPECIFICATIONS

Specs

Series/Page

MIL-C-52078	CD (76-77), P (106-107), PD (110-111), RP (114-115), SC (28-29), T (18-21, 80-83)
MIL-C-5501/1	ASP (112-113), PD (110-111)
MIL-C-5501/2	ADP (112-113)
MIL-C-5501/3	ASC (76-77)
MIL-C-5501/3R	CD (76-77)
MIL-C-5501/5	P (106-107)
MIL-C-5501/7	T (18-21, 80-83)
MIL-C-5501/8	K (92-93)
MIL-C-5501/9	SC (28-29)
MIL-C-5501/10	RP (114-115)
MIL-C-5501/11	CD (76-77)
MS-25177	EP (88-89)
MS-25178	EC (26-27)
MS-90376-R	EC (26-27)
MS-90376-RB	CEC (38-39)
MS-90376-RF	SEC (38-39)
MS-90376-Y	EP (88-89)
MS-90376-YB	CEP (96-97)
MS-90376-YF	SEP (96-97)
NAS-813	EC (26-27)
NAS-814	CD (76-77)
NAS-815	PD (110-111)
NAS-816	WW (22-23, 84-85)
NAS-817	ASC (76-77)
NAS-818	ASP (112-113)
NAS-820	EP (88-89)
NAS-831	EC (26-27)
NAS-831B	SEC (38-39)
NAS-831C	CEC (38-39)
NAS-832	CD (76-77)
NAS-833	PD (110-111)
NAS-834	T (18-21, 80-83)
NAS-835	ASC (76-77)
NAS-836	ASP (112-113)
NAS-837	EP (88-89)
NAS-837B	SEP (96-97)
NAS-837C	CEP (96-97)
NAS-838	RP (114-115)
NAS-840	P-38B (106-107)
NAS-842	ADP (112-113)
NAS-843	K (92-93)
NAS-844	SC (28-29)

COLOR OPTIONS

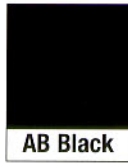
Standard Option Materials/Colors

LPE

Low Density Polyethylene



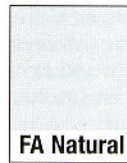
HB Red



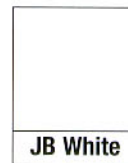
AB Black



KB Yellow



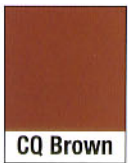
FA Natural
(translucent)



JB White



EK Green



CQ Brown



GC Orange



BB Blue



BC Blue



DI Grey

HPE

High Density Polyethylene



HB Red



AB Black



FA Natural
(translucent)

PPR

Polypropylene

EVA

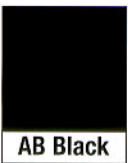
Ethylene Vinyl Acetate

FLX

Flex Temp (Thermoplastic Rubber)



HB Red



AB Black



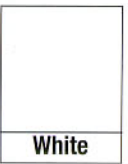
FA Natural



EK Green

VNL

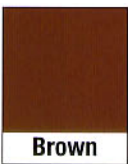
Vinyl



White



Black



Brown



Orange



Red



Green



Grey



Blue



Yellow

*Colors shown are not exact. Please request a color sample from the factory for verification.