

# Custom Engineered Carborundum Hexoloy® Unground Products

The following information is intended to assist the buyer in specifying unground tubes and blanks which will be engineered and manufactured to the buyer's specifications. These custom products are available in both Hexoloy® SA and Hexoloy® SP Alpha Sintered Silicon Carbide.

**Carborundum Hexoloy® SA Silicon Carbide** is a pressureless sintered silicon carbide. It is a fine grain binderless silicon carbide which is extremely hard, light weight and low in porosity. Hexoloy® SA is highly resistant to corrosion, erosion, sliding wear, high temperature and thermal shock.

**Carborundum Hexoloy® SP Silicon Carbide** improves upon the exceptional properties of Hexoloy® SA through the addition of spherical pores to a pressureless sintered silicon carbide matrix. These pores are discrete, non-inter-connected and dispersed in a controlled manner throughout the body of the material. The spherical pores act as fluid reservoirs, promoting the retention of a fluid film at sliding component interfaces. This allows Hexoloy® SP to out perform conventional reaction bonded and sintered silicon carbides in a wide range of service conditions.

## Tubes:

Available in customer specified sizes up to an 18-inch diameter, tubes are generally supplied in 12- inch lengths. Typical tolerance capabilities are listed in the following table. For tubes over a 16-inch diameter please contact our Customer Service Department for capabilities.

Nominal O.D.	O.D.Tol	I.D.Tol	Roundness	Warp
< 2.250	+/- 0.012	+/- 0.012	0.020	.005 in./in.
2.251 - 3.000	+/- 0.015	+/- 0.015	0.030	.005 in./in.
3.001 - 4.300	+/- 0.020	+/- 0.020	0.040	.005 in./in.
4.301 - 5.250	+/- 0.025	+/- 0.025	0.050	.005 in./in.
5.251 - 6.000	+/- 0.030	+/- 0.030	0.060	.005 in./in.
6.001 - 7.000	+/- 0.035	+/- 0.035	0.080	.007 in./in.
7.001 - 12.000	+/- 0.5%	+/- 0.5%	0.120	.010 in./in.
12.001 - 16.000	+/- 0.5%	+/- 0.5%	0.160	.013 in./in.
>16.000	-----	-----	-----	-----

## Low Volume Machined Blanks:

Machined blanks are available in customer specified diameters and thickness, with a maximum outside diameter of 18 inches. An outside shoulder diameter and/or inside counterbore may also be specified. Typical tolerance capabilities are shown below. Please contact our Customer Service Department for capabilities over 16-inch diameter.

Nominal OD	OD Tol	ID Tol	THK Tol	//	⊥ & O	Warp
<2.250	+/- 0.008	+/- 0.008	+/- 0.008	0.008	0.010	.005 in./in.
2.251 - 3.000	+/- 0.012	+/- 0.012	+/- 0.012	0.012	0.012	.005 in./in.
3.001 - 4.300	+/- 0.015	+/- 0.015	+/- 0.015	0.015	0.015	.005 in./in.
4.301 - 5.250	+/- 0.020	+/- 0.020	+/- 0.015	0.015	0.020	.005 in./in.
5.251 - 6.000	+/- 0.030	+/- 0.030	+/- 0.015	0.015	0.020	.005 in./in.
6.001 - 7.000	+/- 0.035	+/- 0.035	+/- 0.015	0.015	0.020	.005 in./in.
7.001 -12.000	+/- 0.5%	+/- 0.5%	+/- 0.020	0.025	0.030	.005 in./in.
12.001 -16.000	+/- 0.5%	+/- 0.5%	+/- 0.030	0.035	0.040	.005 in./in.
>16.000	-----	-----	-----	-----	-----	-----

## High Volume Pressed Blanks:

Dry pressed blanks are available in customer specified diameters and thickness up to a 5.125-inch diameter. Machined shoulders and/or counterbores may also be added. A minimum length to wall thickness ratio of 4 to 1 must be maintained on dry pressed parts. A minimum order quantity of 1000 pieces will apply to all pressed blank orders. Please contact our Customer Service Department if smaller quantities are required. The purchase of customer specified dry pressed blanks may require tooling which is subject to a non-recurring charge as described below. Typical tolerance capabilities are as follows.

Nominal OD	OD Tol	ID Tol	THK Tol	//	⊥ & O	Warp
<.750	+/- 0.004	+/- 0.004	+/- 0.004	0.004	0.004	.005 in./in.
.750 - 1.250	+/- 0.005	+/- 0.005	+/- 0.005	0.005	0.005	.005 in./in.
1.251 - 1.750	+/- 0.006	+/- 0.006	+/- 0.006	0.006	0.006	.005 in./in.
1.751 - 2.250	+/- 0.007	+/- 0.007	+/- 0.007	0.007	0.007	.005 in./in.
2.251 - 2.750	+/- 0.008	+/- 0.008	+/- 0.008	0.008	0.008	.005 in./in.
2.751 - 3.250	+/- 0.010	+/- 0.010	+/- 0.010	0.010	0.010	.005 in./in.
3.251 - 3.750	+/- 0.012	+/- 0.012	+/- 0.012	0.012	0.012	.005 in./in.
3.751 - 4.250	+/- 0.013	+/- 0.013	+/- 0.013	0.013	0.013	.005 in./in.
4.251 - 4.750	+/- 0.014	+/- 0.014	+/- 0.014	0.014	0.014	.005 in./in.
4.751 - 5.125	+/- 0.016	+/- 0.016	+/- 0.016	0.016	0.016	.005 in./in.

## Special Features:

Special features such as blind or through holes, blind notches and slots may be machined into both machined and pressed blanks. Typical tolerance capabilities are listed below. Please consult with our Customer Service Department for capabilities and design constraints applicable to your specific configuration. The manufacture of certain machined features may require a one time tooling charge as described below.

Nominal OD of Blank	Feature Pitch Diameter Tol	Feature Depth Tol	Feature Size Tol	Feature Position Tol
< 3.000	+/- 0.010	+/- 0.010	+/- 0.010	+/- 1°
3.000 - 5.000	+/- 0.015	+/- 0.010	+/- 0.010	+/- 1°
5.001 - 6.000	+/- 0.025	+/- 0.010	+/- 0.010	+/- 1°
6.001 - 16.000	+/- 0.5%	+/- 0.020	+/- 0.010	+/- 1.5°
> 16.000	-----	-----	-----	-----

## Tooling:

Costs for specialized tooling required to manufacture custom specified parts are assessed as a non-recurring service charge which does not constitute the purchase of tooling or engineering data. All such items shall remain the property of and in the custody of Saint-Gobain Ceramics – Structural Ceramics. Tooling will be reserved for the buyers exclusive use and will be retained for three years after its last use.