

POLYPENCO® Q200.5

MACHINING Q200.5 STOCK SHAPES

MACHINING INFORMATION FOR SUCCESSFUL FABRICATION OF POLYMER CORPORATION Q200.5

Polypenco Q200.5 is a rigid, transparent insulating material made by chemical cross-linking. Q200.5's rigidity and ability to resist deformation under load is extremely important where assembled insulators must withstand compression without yielding and loosening over long periods of time. Q200.5 is far superior to PTFE in radiation resistance, and is one of the best dielectric materials available. Q200.5 can be easily machined on standard metalworking equipment.

When Machining Q200.5 Stock Shapes, Remember . . .

- Thermal expansion is up to 10 times greater with plastics than metals
- Plastics lose heat much slower than metals
- Plastics operating temperatures are much lower than metals
- Plastics are much more elastic than metals

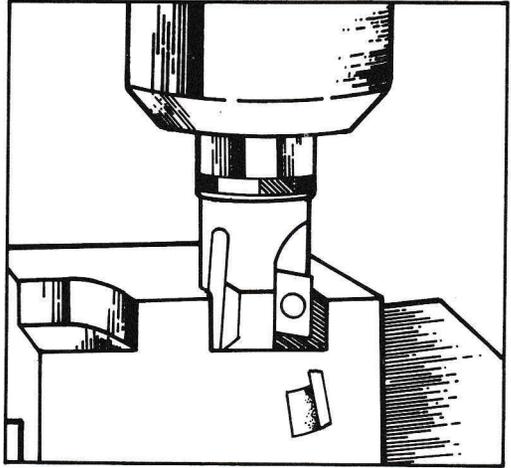
Because of these differences, you may wish to experiment with tool materials, tool angles, speeds, and feeds to obtain optimum results.

OTHER MACHINING TIPS

- Positive tool geometries with ground peripheries are recommended
- Carbide grade tooling with polished top surfaces should be used
- Use adequate chip clearances to prevent clogging
- Properly support the material to prevent it from springing away from the cutting tool

COOLANTS

- Coolants are not required, but may be used for optimum finishes or close tolerances
- If coolants are used, an air or air-water spray mist is recommended
- Pressurized air or vacuum is commonly used for chip removal and as a light coolant



TURNING

Depth Of Cut	Speed. Feet/Min	Feed. In./Rev
.150 in deep cut	200-300	.005-.010
.025 in deep cut	350-400	.002-.005

When machining plastics, positive geometries with ground peripheries are recommended. Ground peripheries and polished top surfaces generally reduce build-up on the insert and improve surface finish. A fine grained C-2 carbide is generally recommended for these operations.

DRILLING

Nominal Hole Diameter	Feed, Inches/Rev
1/16"	.003-.007
1/8"	.004-.008
1/4"	.005-.010
1/2"	.008-.012
3/4"	.008-.012
1"	.010-.015
1 1/2"	.015-.020
2" or larger	.015-.020

High-Speed Steel (M10, M7, M1)
Speed, Ft./Min 150-200

Important Note: Large Diameter Holes

A slow spiral (low helix) drill or general purpose drill ground to a point angle of 118° with a lip clearance of 9° to 15° is recommended. In both instances, the lip rake should be ground off (i.e. dubbed off) and the web thinned.

Drill a small (max 1/2" diameter) hole at a speed of 600 to 1,000 rpm using a positive feed of approximately .005" per revolution. Avoid hand feeding the drill because "grab" can occur and stress or cracks may develop. A secondary drilling at a speed of 400 to 500 rpm is required to expand the hole to 1" diameter.

POLYPENCO

END MILLING — SLOTTING

High Speed Steel (M2, M7)	Depth of Cut	Speed, Ft./Min	Feed, In./Tooth
1/4"	.250	270-450	.002
1/2"	.250	270-450	.003
3/4"	.250	270-450	.005
1", 2"	.250	270-450	.008
1/4"	.050	300-500	.001
1/2"	.050	300-500	.002
3/4"	.050	300-500	.004

- High spindle speeds and fast table travel are possible with adequate holding fixtures

FACE MILLING (C-2 Carbide Tool)

Depth of Cut	Speed Ft./Min	Feed In./Tooth
.150	1300-1500	.020
.060	1500-2000	.005

- Either high positive or high shear geometry cutter bodies are recommended

SAWING

Material Thickness	Tooth Form	Pitch Teeth/In.	Band Speeds Ft./Min
< 1/2"	Precision	8-10	4000
1/2"-1"	Precision	6	3500
1"-3"	Buttress	3	3000
3"	Buttress	3	2500

- Band sawing is versatile for straight, continuous curve, or irregular cuts
- Table saws can be used for thicker sections
- Rip and combination blades with a 0° tooth rake and a 3-10° tooth set are most common
- Hollow ground circular saw blades without set give smooth cuts up to 3/4"
- Blades with a set are sometimes used to reduce frictional heat
- Tungsten carbide type blades wear well and produce a good finish



2120 Fairmont Avenue
P.O. Box 14235
Reading, PA 19612-4235

Telephone:
(800) 366-0300
(215) 320-6600
Fax: (800) 366-0301

In Canada:
495 Laird Road
Guelph, Ontario N1G 3M1
(519) 837-1500
Fax: (800) 265-7329