

GLASSMATE[®]



POCO
GRAPHITE

Moving Technology Forward

POCO GLASSMATE® MATERIALS AND PRODUCTS

The GLASSMATE family of materials and products are especially engineered to meet the needs of the glass container industry. Many of POCO's glass handling solutions feature patented designs for a combination of graphite inserts and metal holders and supports. These patented designs were developed to offer quick mounting, quick release for fast changes and unique features to improve performance throughout the glass line. GLASSMATE parts are designed to fit existing equipment. Many parts are repairable for increased life of the part.

All GLASSMATE hot glass-handling materials have the heat resistance, strength, durability and non-absorption characteristics to perform under the most rigorous conditions without damaging the glassware. POCO's hot glass handling materials offer excellent performance combined with reduced mechanical damage for increased pack rates.

MANUFACTURING

All of POCO's materials and finished parts are produced at the North Texas manufacturing facility. Precision machining cells produce finished parts to customer specifications or standard industry finishes. POCO Design Specialists assist the customer to obtain the perfect fit for individual applications.

Typical Properties of POCO Grades

| | HT | GM | LT | SR | CXT |
|---|--------|--------|--------|--------|--------|
| AVERAGE PARTICLE SIZE | | | | | |
| μin | 197 | 197 | 197 | 394 | 787 |
| μm | 5 | 5 | 5 | 10 | 20 |
| APPARENT DENSITY | | | | | |
| g/cc | 1.74 | 1.74 | 1.77 | 1.80 | 1.70 |
| lb./in. ³ | 0.063 | 0.063 | 0.064 | 0.065 | 0.061 |
| COMPRESSIVE STRENGTH | | | | | |
| psi | 18,900 | 18,900 | 26,900 | 15,600 | 12,500 |
| MPa | 130 | 130 | 185 | 107 | 86 |
| FLEXURAL STRENGTH | | | | | |
| psi | 11,800 | 11,800 | 14,300 | 8,400 | 6,600 |
| MPa | 81 | 81 | 99 | 58 | 45 |
| HARDNESS | | | | | |
| Shore | 74 | 74 | 97 | 68 | 59 |
| COEFFICIENT OF THERMAL EXPANSION | | | | | |
| μin/in°F | 4.5 | 4.5 | 4.7 | 4.6 | 4.1 |
| μm/m°C | 8.1 | 8.1 | 8.5 | 8.3 | 7.4 |
| THERMAL CONDUCTIVITY* | | | | | |
| Btu-ft/h-ft ² -°F | 50 | 50 | 35 | 57 | 64 |
| W/m-K | 87 | 87 | 60 | 98 | 110 |
| ELECTRICAL RESISTIVITY | | | | | |
| μOhm-in. | 580 | 580 | 965 | 535 | 490 |
| μOhm-m | 14.7 | 14.7 | 24.5 | 13.6 | 12.4 |
| OXIDATION THRESHOLD† | | | | | |
| Standard Grade | | | | | |
| °F | 1125 | 842 | 878 | 860 | 869 |
| °C | 607 | 450 | 470 | 460 | 465 |

*Approximate values taken at room temperature; as temperature increases, thermal conductivity decreases.

†Oxidation threshold defined as temperature at which oxidation weight loss after 24 hrs. is approximately 1%.

GLASSMATE GRADES

POCO's graphites are high strength, isotropic materials with a uniform microstructure. POCO produces a full range of graphite grades designed for specific applications along the glass production line.

GM—This material has high strength and durability for applications with high wear. An exceptional insert material for precision thread pick up and long production runs.

SR—An economical material for short production runs. An ideal insert material for thick bead transfer applications.

HT—This high strength material has an oxidation inhibitor that raises the oxidation threshold. Service temperature can be raised to 600°C; graphites are subject to oxidation above 450°C.

LT—In very high wear situations, LT, with a hardness rating higher than GM material, will resist wear longer.

CXT—This is a very practical material for lehr stacker bar pads where exceptional hardness or high strength is unnecessary.

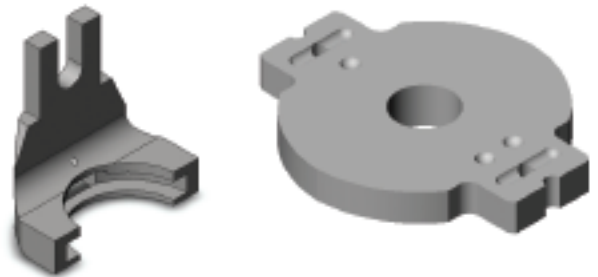
TAKE-OUT HOLDER FEATURES AND STYLES

POCO's unique design makes it easy to snap in a new insert or to change a holder without machine realignment. Durable holders give long service life and will take all popular finishes up to 87mm. Features include:

- Exact fit with accompanying GLASSMATE Take-out Inserts.
- Anti-rotational interlock design with inserts to assure positive finish alignment.
- Spring tension clip designed to hold inserts firmly in place.
- Insert slot design allows for quicker change outs of inserts.
- Pins align two halves of the holder during production.
- Shoulders on the holders ensure that both halves are square and of equal height.
- Repair kits are available

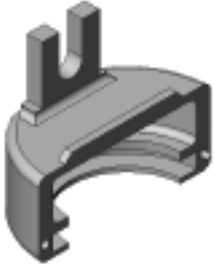
STYLES

Standard—Holders for use with POCO's patented circular inserts for precision pickup.

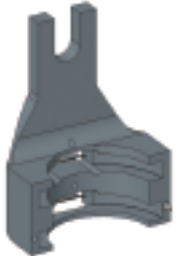


U.S. PATENT NUMBER: 34,953

Covered—Designed to prevent particle contamination of the ware and to reduce internal fused glass, covered holders should be used for contamination-sensitive product ware.



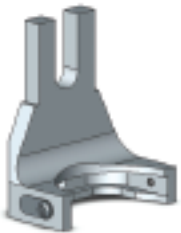
Double Stacked—These holders should be used for tall, narrow neck ware to reduce bottle swing, which helps prevent stuck ware and allows faster transfer from the mold to the dead plate.



Extended—Designed to allow bead transfer of ware with tall finishes are used with tamper-evident closures.

Modified—These holders allow increased visibility of the finish during precision set up process and are ideal for ware with very tight shoulder-to-bead dimensions.

Side Mount—These holders can be used with floating inserts that use the top of the mold for alignment and accepts standard rectangular inserts.



Lightweight—Designed for triple gob machines, the decreased shoulder of the holder allows more room between holders for machine set up. It features increased visibility and the reduced weight creates less wear on machine. The decreased shoulder, combined with additional metal removed at the back of holder, produces a lightweight holder that runs longer before adjustments of the machine are necessary.



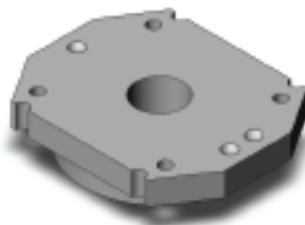
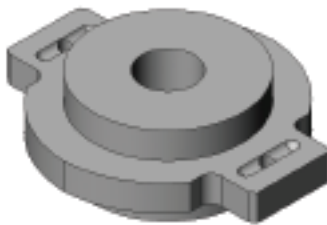
TAKE-OUT INSERTS

GLASSMATE inserts are available as semi-finished blanks or can be precision machined to a specified finish. Inserts to fit your existing holders and POCO style holders are available from several graphite grades, depending on the pickup application. High strength grades should be used for thread transfer, under thread transfer, fine bead transfer with minimum clearance, or for long production runs. Economical grades are available for short runs or thick bead transfer applications. For closed mold pickup, bossed inserts machined with threads or finish profiles provide better clearance between the top of the mold and the take-out holder.

POCO maintains a library of standard finishes. Designers on staff work from customer provided engineering drawings to provide functional parts for individual applications. POCO can produce inserts to meet your mold or bottle requirements.

STANDARD STYLES AND SIZES

| POCO | Top Mount | Side Mount |
|--------|-----------------|----------------|
| 2.0" | 1.720" x 2.250" | 1.720" x 2.130 |
| 2.5" | 1.720" x 2.125" | |
| 3.0" | 1.0" x 1.750" | |
| 3.625" | 1.720" x 2.250" | |
| 4.375" | | |



TYPICAL FINISHES

CROWN



THREAD



UNDERTHREAD



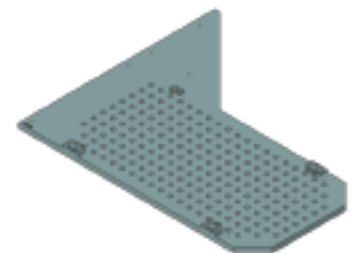
BEAD



MACHINE REPAIR PARTS

DEAD PLATE ASSEMBLIES

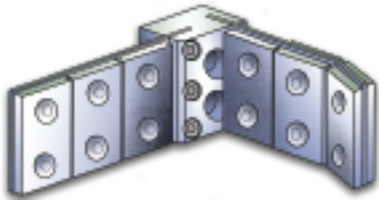
GLASSMATE Dead Plate Assemblies combine the strength of a metal support plate with the container compatible surface of a GLASSMATE Insert. Matching air holes allow an even flow of air for uniform glass cooling and smoother container transfer. Assemblies are easy to install and some designs allow the dead plate insert to be reversed for prolonged life.



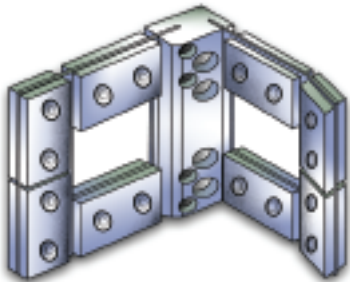
U.S. PATENT NUMBER: 4,966,619

SWEEP-OUT ASSEMBLIES

Sweep-out blades are available in a variety of sizes in both angled and straight blades. These reversible blades are lined with long lasting GLASSMATE. Universal mounting blocks can be specified from heavy-duty stainless steel or lightweight aluminum to reduce the weight on electronically timed equipment.



POCO's extended sweep-out assemblies are designed for use with taller glass containers. The open design prevents build-up of air current as the assembly moves tall bottles.

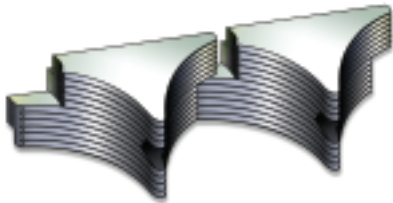


U.S. PATENT NUMBER: 5,324,340

LEHR STACKER BARS

POCO's complete Lehr Stacker Bars are available to meet all your container-handling needs in open, semi-closed, or closed lehr applications. POCO's pocketed design of interlocking pads, coupled with steel mounting channels, create a bar that resists warping and is extremely durable.

POCO's machined stacker pads are available to fit your current stacker bar configuration.

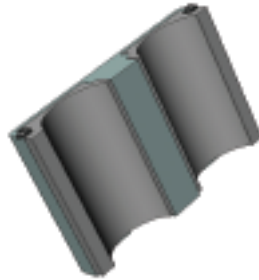


U.S. PATENT NUMBER: 5,741,343

SPECIALTY ITEMS

POCO creates a variety of special items for specific IS machines and customer applications. Many parts are designed to eliminate water-cooling and increase machine speeds. TiC coated graphite Drop Guides have been developed to replace the Gob Funnel on some machines.

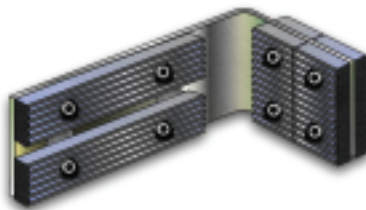
Gob Flippers



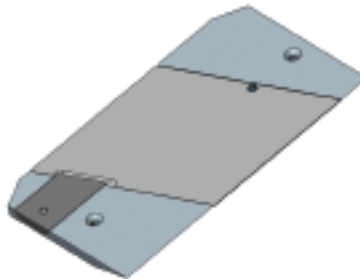
Mould Top Inserts



Transfer Wheel Pad



Transfer Plates



Gob Funnel



STANDARD PLATES AND RODS

- Bulk Plates - Size .250" x 4" x 6" GF
- Bulk Plates - Size .125" x 6" x 12" GF
- Bulk Plates - Size .250" x 6" x 12" GF
- Bulk Plates - Size .500" x 6" x 12" GF
- Bulk Plates - Size .700" x 6" x 12" GF
- Bulk Plates - Size .250" x 8" x 12" GF
- Bulk Plates - Size .375" x 8" x 12" GF
- Bulk Plates - Size .250" x 8" x 18" GF
- Bulk Plates - Size .250" x 8" x 24" GF
- Bulk Plates - Size .375" x 8" x 24" GF
- Bulk Plates - Size .500" x 8" x 24" GF
- Rods - Size .500" dia. x 6" long
- Rods - Size .375" dia. x 12" long
- Rods - Size .500" dia. x 12" long
- Rods - Size 1.000" dia. x 12" long

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