GLASSMATE® Graphite

Hot glass handling materials and products

Entegris
POCO Materials

The GLASSMATE® family of materials and products are especially engineered to meet the needs of the glass container industry. Many of our glass-handling solutions feature patented designs for a combination of graphite inserts and metal holders and supports. These patented designs 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 and many are repairable, increasing part life.

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. Our hot glass handling materials offer excellent performance combined with reduced mechanical damage for increased pack rates.

MANUFACTURING

All our GLASSMATE materials and finished parts are produced at our North Texas manufacturing facility. Precision machining cells produce finished parts to customer specifications or industry-standard finishes. Our experienced design specialists assist the customer to obtain the perfect fit for individual applications.

Our quality system is certified to ISO 9001:2008 and AS9100:2009.

Decatur facility.

GLASSMATE GRADES

GLASSMATE graphites are high strength, isotropic materials with a uniform microstructure. Our range of graphite grades enhances both longevity and performance across applications along the glass production line, leading to increased machine uptime and reduced production costs. Our innovative design allows for effortless component changes without machine realignment saving time and money.

XL Graphite

An exceptionally strong and wear resistant 1 micron grade. Ideal material for highly detailed thread finishes and long run, high wear conditions.

HT Graphite

This high strength material has an oxidation inhibitor that raises the oxidation threshold. Service temperature can be raised to 600°C (1112°F); graphites are subject to oxidation above 450°C (842°F).

GM Graphite

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

LT Graphite

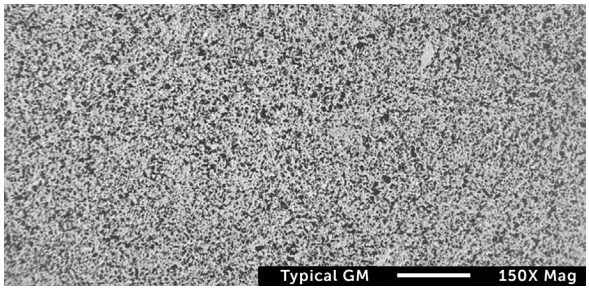
In very high wear situations, LT, with a hardness rating higher than GM material, will resist wear longer.

SR Graphite

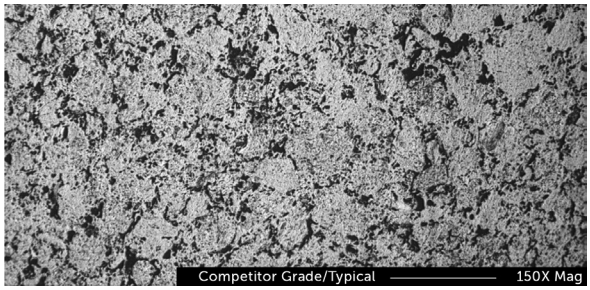
An economical material for short production runs. An ideal insert material for thick bead transfer applications.

CXTX Graphite

This is a very practical material for lehr stacker bar pads where exceptional hardness or high strength is not required.



5 micron GLASSMATE material



Competitor's 5 micron material

TYPICAL GRAPHITE GRADE MATERIAL PROPERTIES

PROPERTY	XL	HT	GM	LT	SR	CXTX
Compressive strength	162 MPa (23,500 psi)	136 MPa (19,700 psi)	130 MPa (18,800 psi)	155 MPa (22,500 psi)	108 MPa (15,600 psi)	110 MPa (15,900 psi)
Flexural strength	95 MPa (13,800 psi)	92 MPa (13,350 psi)	92 MPa (13,350 psi)	97 MPa (14,150 psi)	68 MPa (9,550 psi)	77 MPa (11,050 psi)
Shore hardness	88	74	74	96	66	71
Coefficient of thermal expansion	8.1 µm/m°C (4.5 µm/in°F)	8.1 µm/m°C (4.5 µm/in°F)	8.1 µm/m°C (4.5 µm/in°F)	8.5 µm/mm°C (4.7 µm/in°F)	8.3 µm/m°C (4.6 µm/in°F)	7.8 µm/m°C (4.2 µm/in°F)
Thermal conductivity*	77 W/(cm•K) (45 BTU•ft/ hr/ft²°F)	85 W/(cm•K) (50 BTU•ft/ hr/ft²°F)	85 W/(cm•K) (50 BTU•ft/ hr/ft²°F)	60 W/(cm•K) (35 BTU•ft/ hr/ft²°F)	57 W/(cm•K) (98 BTU•ft/ hr/ft²°F)	50 W/(cm•K) (85 BTU•ft/ hr/ft²°F)
Electrical resistivity	17.6 µΩ•m (695 µΩ•in)	14.7 µΩ•m (580 µΩ•in)	14.7 µΩ•m (580 µΩ•in)	24.5 µΩ•m (965 µΩ•in)	14.6 µΩ•m (575 µΩ•in)	17.6 µΩ•m (695 µΩ•in)
Oxidation threshold**	450°C (842°F)	607°C (1125°F)	450°C (842°F)	470°C (878°F)	460°C (860°F)	450°C (842°F)

**Approximate values taken at room temperature; as temperature increases, thermal conductivity decreases.*
***Oxidation threshold defined as temperature at which oxidation weight loss after 24 hours is approximately 1%.*

TAKE-OUT HOLDERS

Our uniquely designed take-out holders are easy to snap a new insert into, or change without machine realignment. Durable holders give long service life and will take all popular finishes up to 87 mm.

Features

- Exact fit with accompanying GLASSMATE graphite take-out inserts
- Anti-rotational interlock design with inserts assures positive finish alignment
- Spring tension clip holds inserts firmly in place
- Insert slot design allows quicker insert changeouts
- 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

HOLDER STYLES

Standard

For use with GLASSMATE circular inserts, our standard holders ensure precision pickup.

Covered

Our covered holders are designed to prevent particle contamination of the ware and to reduce internal fused glass. Covered holders should be used for contamination-sensitive product ware.

Interior Spring (ILS-1)

Our ILS-1 holder design has an interior locking system (ILS) that significantly reduces foreign object debris. The holder design eliminates screws that can vibrate out or become damaged when in production, preventing premature insert loss. The internal spring holder is adjustable to accommodate fixed or floating requirements and has self-aligning shoulders for easy accurate placement.

Double Stacked

These holders are perfect for use with 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

Extended holders are designed to allow bead transfer of ware with tall finishes and 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 setup. It features increased visibility and the reduced weight creates less wear on the machine. The decreased shoulder, combined with additional metal removed at the back of holder, produces a lightweight holder that runs longer before machine adjustments are necessary.

Dual Function (PR-2)

This holder can be used with either a fixed or floating insert. This holder allows the user to change from a fixed holder to a fixed/floating holder while using existing inventory of round inserts. Benefits include three-point contact with insert for better hold, reduced tooling, and increased pickup flexibility.

TAKE-OUT INSERTS

GLASSMATE take-out inserts are available as semi-finished blanks or can be precision machined to a specified finish. Depending on the pickup application, we offer take-out inserts in several graphite grades to fit your existing holders or our GLASSMATE graphite holders. 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.

We maintain a library of standard finishes and can produce inserts to meet your unique mold or bottle requirements. Our experienced designers work from customer provided engineering drawings to provide functional parts for individual applications.

Blanks

Our hot glass handling materials have high strength, durability, and excellent thermal properties that reduce mechanical damage.

Blanks are ready to be machined with desired finish.

Finished Inserts

Our experienced designers can assist with insert drawings to be precision machined into insert pairs. Customers should supply a bottle drawing or neck ring drawing for custom inserts.

Our quality system is certified to ISO 9001:2008 and AS9100:2009.

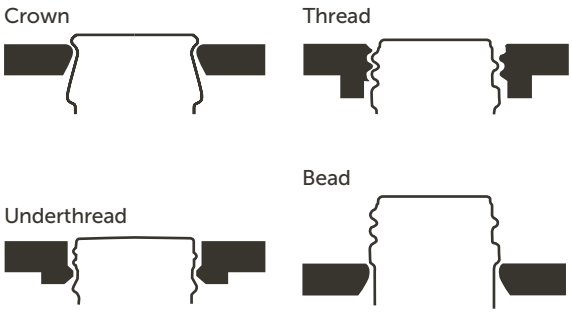
MOLD TOP INSERTS

Entegris POCO Materials Graphite Mold Top Inserts are made from GLASSMATE-HT, a unique high strength 5-micron graphite impregnated with oxidation inhibitors.

Benefits:

- Extends life of mold
- No checks under finish
- Higher yields leading to higher pack rates

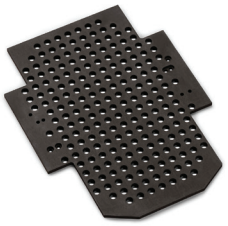
TYPICAL FINISHES



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 even airflow, which provides uniform glass cooling and smoother container transfer. Assemblies are easy to install and some designs allow the dead plate insert to be reversed, prolonging life.



Sweep-out Assemblies

Our extended sweep-out assemblies are designed for use with taller glass containers. The reversible sweep-out blades are lined with long-lasting GLASSMATE graphite and are available in a variety of sizes, in both angle and straight blade configurations, to meet your application needs.

Lehr Stacker Bars

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

Machined stacker pads are available to fit your current stacker bar configuration.

Specialty Items

We create a variety of special items for specific IS machines and customer applications. Many parts are designed to eliminate water-cooling and increase machine speeds.

- Gob flippers
- Mold top inserts
- Transfer wheel pads
- T-back or dovetail, 3" or 5"
- Transfer plates
- Gob funnel
- V-spacer
- Drop guides

LIMITED WARRANTY

Entegris' products are subject to the Entegris, Inc. General Limited Warranty. To view and print this information, visit entegris.com and select the Legal & Trademark Notices link in the footer. Entegris does not warrant any failure in the case of customers using unapproved foreign components.

FOR MORE INFORMATION

Please call your Regional Customer Service Representative or Distributor today to learn what our GLASSMATE® products can do for you. Visit poco.entegris.com/contact-us for the location nearest you.

TERMS AND CONDITIONS OF SALE

All purchases are subject to Poco Graphite's Terms and Conditions of Sale. To view and print this information, visit poco.entegris.com/terms-and-conditions.

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