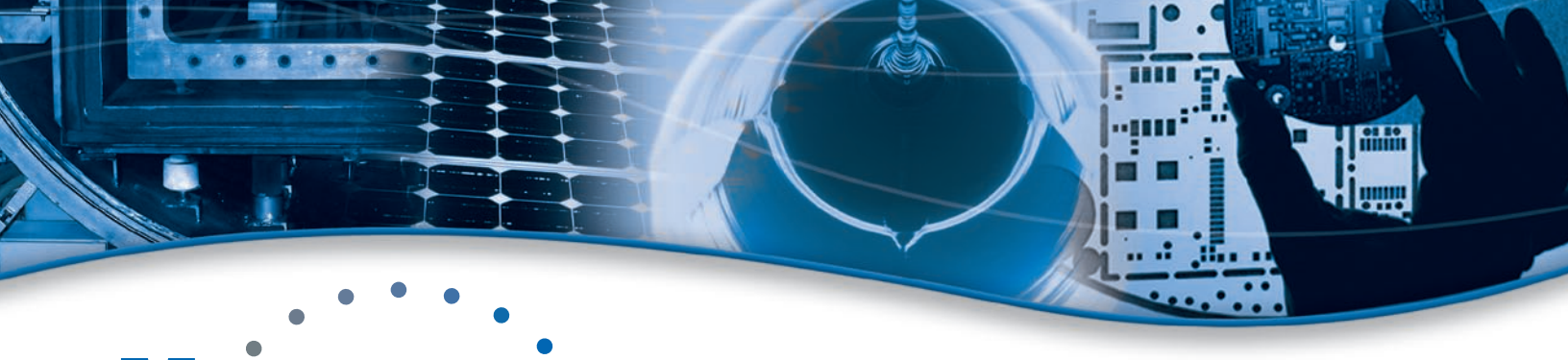


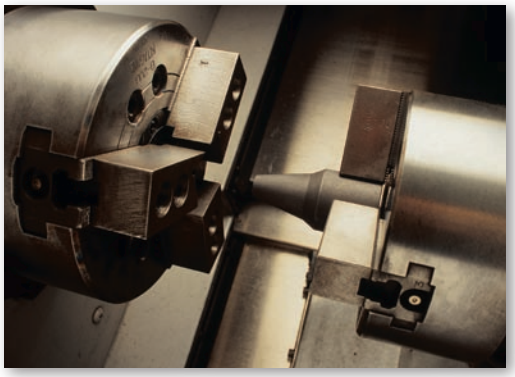
Morgan AM&T™

Value-Added Capabilities

Morgan AM&T works closely with our customers from design through delivery to provide high-value solutions for a wide variety of high temperature applications.

Application Engineering and Design

Morgan AM&T approaches each application with the customer in mind. Our application engineers apply their in-depth product knowledge to your most challenging high temp applications. We work to understand your application, and then choose from Morgan AM&T's internal graphite grades, graphite from the inventory of all major suppliers or even a customized solution to your unique high temperature need. The ultimate goal is to delight the customer with the ideal material solution for optimum process performance.

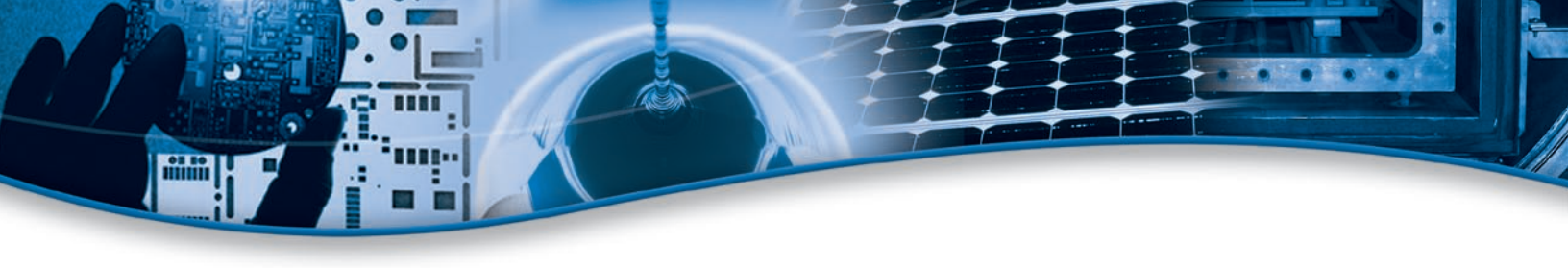


Machining

Our modern facilities are equipped to machine all types of graphite shapes and sizes up to 24" x 72" cross section and 45" in diameter. We have the latest multi-axis, multi-spindle CNC machines for both turning and milling. CNC programs are developed by our experienced staff of engineers and loaded directly into the equipment by our electronic fail safe system which guards against data corruption. Tolerances as close as +/- 0.0002" and surface finishes of 4 rms can be achieved on most applications. Highly skilled machinists with many years of graphite-related experience are organized into work cells, producing product around the clock to insure that critical deliveries are met.

Purification

Morgan AM&T offers two purification processes to meet the demands of modern, high-tech processes. Our **standard purification process** offers typical purity levels of less than 5 ppm total metallics through the use of a computer-controlled halogen process. Our industry leading **Morgan Advanced Purification (MAP)** process yields total metallic content that is typically below GDMS detection limits. Toll purification services of third party material can be provided.



Graphite Enhancements

Morgan AM&T's proprietary graphite enhancement techniques make our finished products the finest in the industry. Our Glassy Carbon Impregnation process is used to penetrate the graphite and form a bond that prevents dusting, eliminates out-gassing, decreases porosity and enhances product life. State-of-the-art, Glassy Carbon Coating techniques are also available to form a pure carbon-bonded layer which uniformly seals the surface micro pores of the graphite. This coating, impervious to chemical absorption, reduces electrostatic discharge and provides uniform heat transfer while retaining the physical properties of the original substrate.

MAP Process GDMS Results

Element	Concentration [ppm wt]
Li	< 0.01
Be	< 0.01
B	0.015
Na	< 0.05
Mg	< 0.05
Al	< 0.05
P	< 0.10
S	< 0.05
K	< 0.05
Ca	< 0.05
Ti	< 0.01
V	< 0.01
Cr	< 0.10
Mn	< 0.01
Fe	< 0.01
Co	< 0.01
Ni	< 0.01
Cu	< 0.05
Zn	< 0.05
Pd	< 0.05
Ag	< 0.05
Cd	< 0.05
In	< 0.05
W	< 0.05
Au	< 0.10
Hg	< 0.10
Zr	< 0.05
Mo	< 0.05

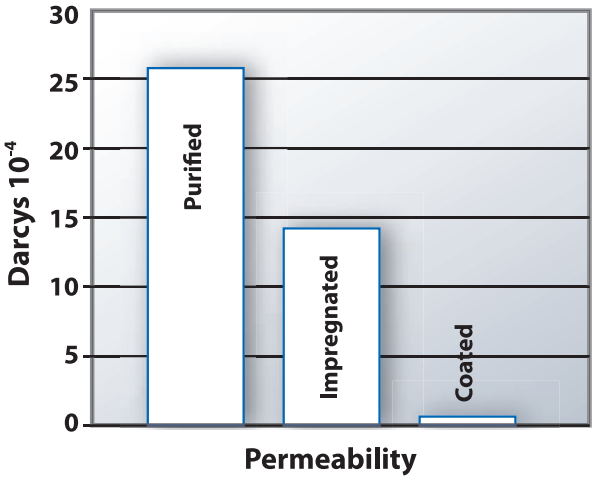
Glassy Carbon Impregnation

- Substrate densification
- Elimination of surface particulate generation
- Improved wear and erosion resistance
- Extended product life
- Excellent substrate preparation for further processing

Glassy Carbon Coating

- Available in both matte and high-gloss finishes
- Elimination of surface particulate generation
- Sealed surface porosity
- Substantially decreased permeability
- Excellent release characteristics (high-gloss)
- May be tailored to suit non-graphite substrates

Glassy Carbon Effect on Substrate Permeability



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