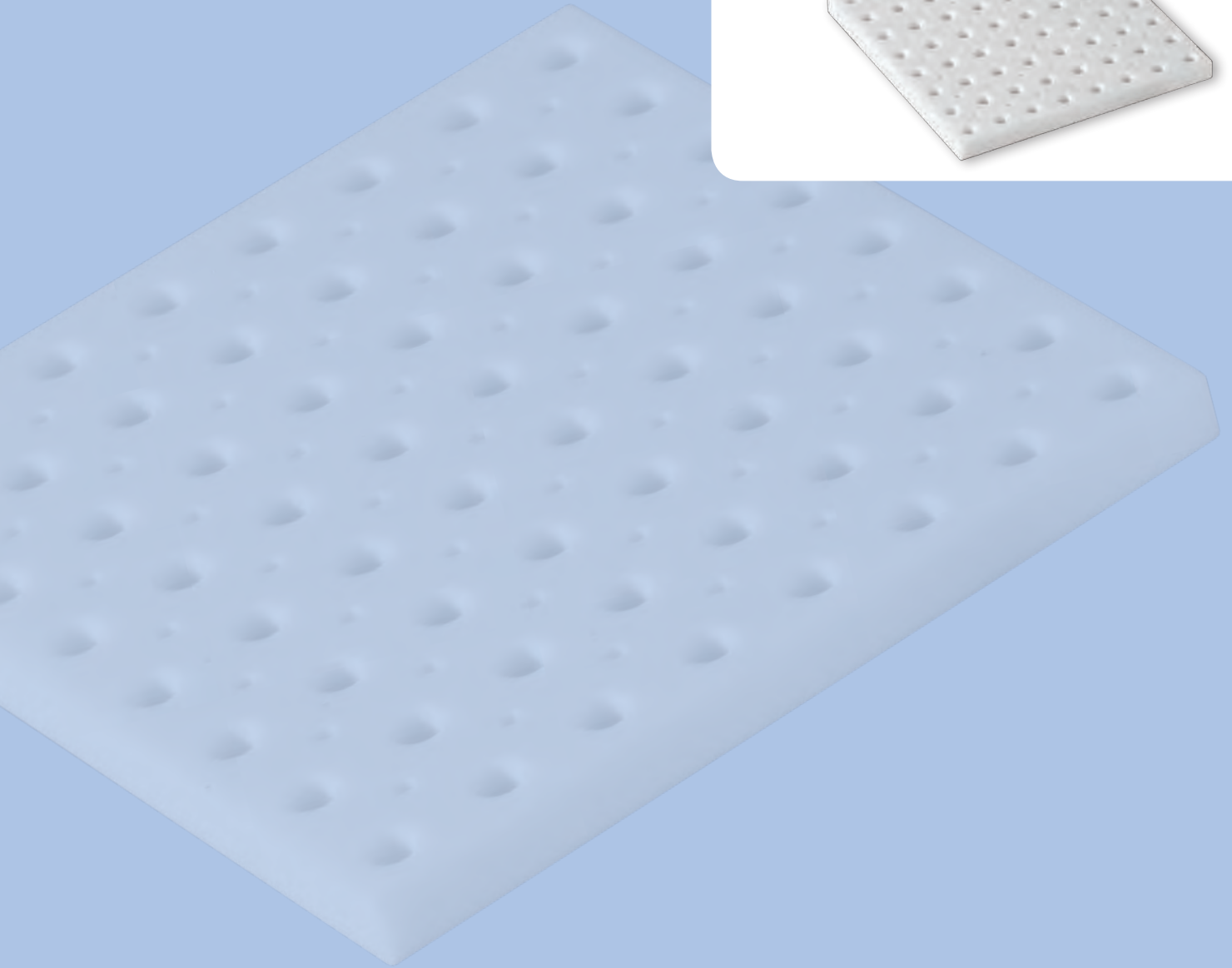


Precision Engineered Brazing Fixtures



MACOR Machining China Inc. Wesgo / Duramic

MACOR Machining China Inc. (MMCI) Wesgo/Duramic is a premium supplier of high purity engineered ceramic components. With over 60 years of experience, MMCUWesgo/Duramic excels in rapid turnaround of custom parts with a focus on prototypes as well as small to medium production volumes.

Products are manufactured from a range of materials specifically designed for challenging applications. For braze fixtures these include alumina, aluminum silicate (M120F) and silicon carbide converted graphite (SCG). These materials provide robust, inert, and thermally stable solutions for even the most demanding braze process.

MACOR Machining China Inc.

Morgan Technical Ceramics (MTC) is a business within the Morgan Ceramics Division of The Morgan Crucible Company plc. MTC Wesgo/Duramic is a trading name of Morgan Technical Ceramics. MTC designs and manufactures products for demanding applications in a variety of markets using a comprehensive range of advanced ceramic, glass, precious metal, piezoelectric and dielectric materials.

We utilize core competences of applications engineering and superior materials technology, together with state of the art, fully integrated manufacturing processes.

Our sales and technical support network provides assistance in product design and development through to prototyping and production. Our quality systems ensure adherence to specifications and full traceability.



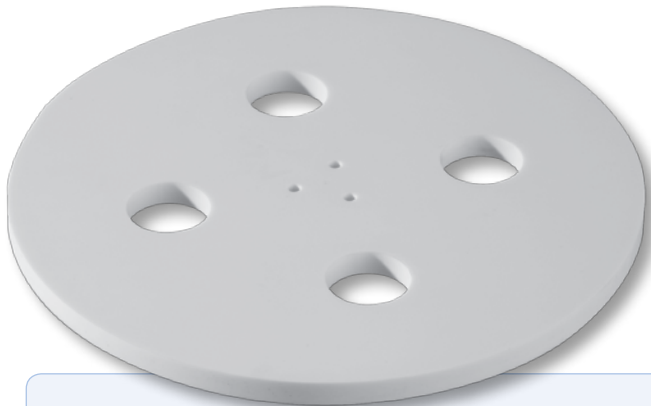
Material Applications

Products commonly made using MTC Wesgo/Duramic braze fixtures include x-ray components, medical components, heat treating components, fluid dispensing valves, and electrical insulators. Even demanding applications such as semiconductor processing, solar cell manufacturing, glass-to metal sealing, and chemical vapor deposition processes utilize MTC Wesgo/Duramic braze fixtures.

High Temperature Applications

Alumina

Custom machined alumina fixtures are used to isolate and insulate metal components during high temperature brazing. Alumina has proven to be a viable option for brazing medical and laser industry components, high electrical field devices, and magnetic resonance imaging (MRI) equipment as the design and configuration of alumina fixtures are highly flexible.



Key Features

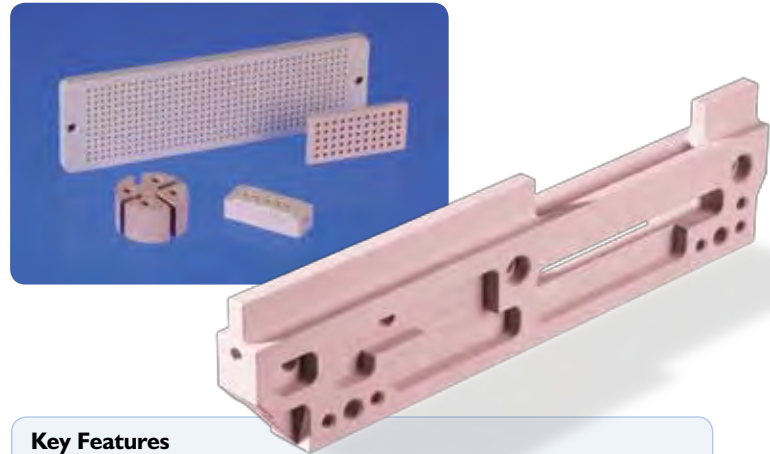
- Thermal expansion matches the alumina insulator used in the braze component
- Dimensional stability at temperatures above 1600°C
- Long service life
- No material degradation in a wet reducing atmosphere
- No outgassing during vacuum braze applications
- Precision ground to demanding dimensional tolerances
- Cost effective solution when compared to other common braze fixture solutions



Materials for Low Temperature Applications

Aluminum Silicate (M120F)

Excellent thermal shock resistance makes M120F ideal for applications requiring fast thermal cycling. Fortunately, M120F's ease of machinability makes it a cost effective solution for intricate shapes and tight dimensional tolerance requirements. M120F is utilized in glass sealing, semiconductor chip brazing, and soldering operations.



Key Features

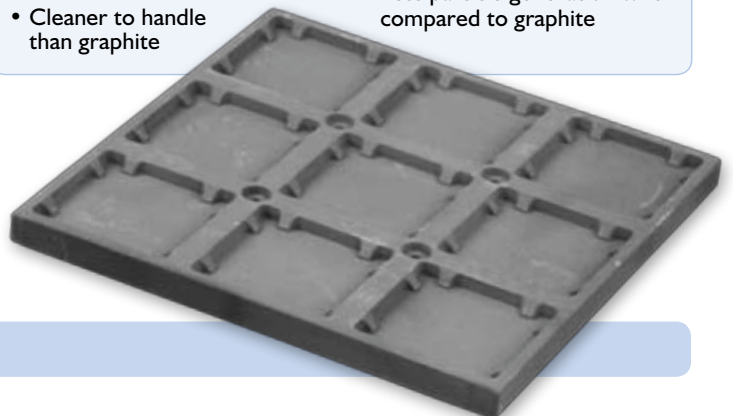
- Hard, durable ceramic material
- Excellent chemical, oxidation, and wear resistance
- Superior thermal shock resistance
- Good mechanical strength
- Maximum operating temperature of 1150°C
- Maximum cross-section less than 3/8" thick

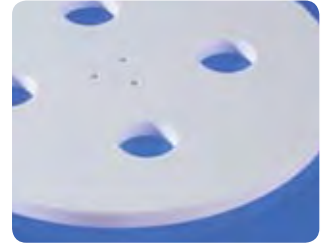
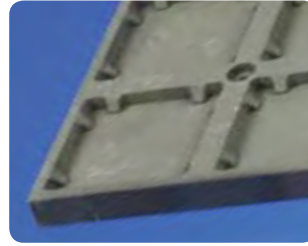
Silicon Carbide Converted Graphite (SCG)

Graphite is machined and eventually processed in a custom designed furnace. Graphite surfaces then react with gasses inside the furnace to form a uniform layer of silicon carbide that measures less than 0.005". Applications for this type of fixture include glass sealing and memory chip processing.

Key Features

- Improved hardness over regular graphite
- Good wear and abrasion resistance
- Resistant to acids, salts, and most molten metals
- Cleaner to handle than graphite
- Maximum operating temperature of 400°C in an oxidizing atmosphere and 1800°C in a reducing atmosphere
- Less particle generation when compared to graphite





Engineering Support

MTC Wesgo/Duramic's engineering staff combines world class expertise and manufacturing capabilities to offer competitive custom solutions for even the most complex applications. Our engineering staff offers customers a strong understanding of geometric dimensioning

and tolerancing (GDT) as well as specific application requirements. Whether your application is for medical implants, vacuum power tubes, or delicate x-ray devices, we provide our customers with the best engineered devices on the market.

MTC Wesgo/Duramic offers the following advantages

- **Intricate fixture designs**
- **Ability to hold tight tolerances**
- **Variety of material options for low temperature and high temperature applications**
- **Prototyping service available**
- **Fully-integrated ceramic manufacturing capabilities**
- **Application engineering resources**
- **Custom manufacturing**
- **Rapid turnaround**

MTC Wesgo/Duramic is an ISO 9001:2008 certified facility