

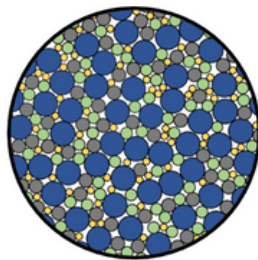
# Fe-Based Metallic Glass

## Fe-based Metallic Glass Powders for Additive Manufacturing 53/20 $\mu\text{m}$ , Gas Atomized Designed for HS-LMD

### DESCRIPTION

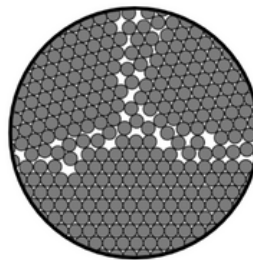
Fe-Based Metallic Glass powder is a gas atomized powder engineered for Additive Manufacturing (AM). This material is characterized to deliver exceptional hardness of up to 1200 HV and enhanced corrosion resistance. The tailored composition combined with the rapid cooling rates offered by the HS-LMD process, creates amorphous phases that results in its unique performance features.

This material is well-suited for applications in industries such as marine, oil & gas, where both strength and corrosion resistance are important.



**Metallic Glass**

Disordered atomic structure



**Most Alloys**

Ordered atomic structure

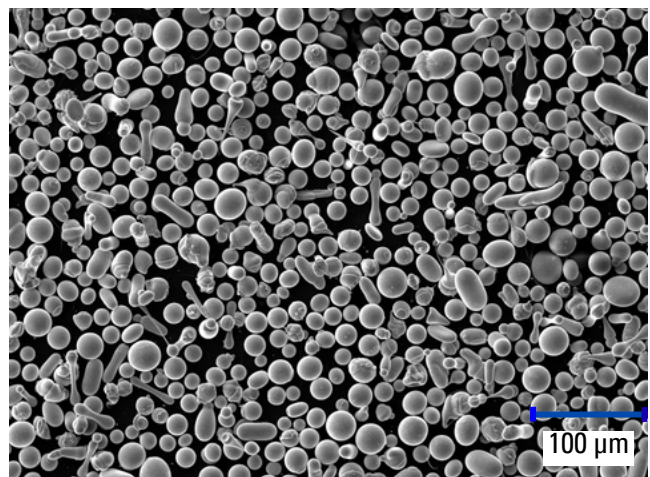
### KEY PROPERTIES

- Amorphous phase
- Extreme high hardness
- Excellent corrosion resistance
- Extreme high strength

### APPLICATIONS

- Deep-sea structural components
- Corrosion resistant machine cutting tools
- Marine valve components
- Mining and drilling components

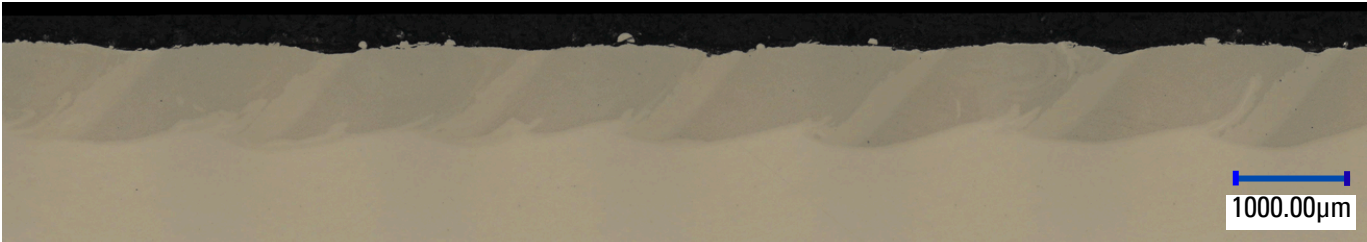
### SEM IMAGE



## POWDER PROPERTIES (ISO 4490, ISO 3923-1)

| Particle Size Distribution (µm) | Hall Flow (s/50g) | Apparent Density (g/cm3) |
|---------------------------------|-------------------|--------------------------|
| 20 - 53                         | 12.7              | 4.62                     |

## MICROGRAPHS



## PHYSICAL PROPERTIES (ISO 3369)

| Average Defect Percentage (%) |
|-------------------------------|
| < 0.10                        |

## MELTING POINT

| Celsius (°C) | Fahrenheit (°F) |
|--------------|-----------------|
| 1100 - 1300  | 2012 - 2372     |

## MECHANICAL PROPERTIES (ISO 6507-1, ISO 6508-1, ASTM G99)

| Hardness HV0.3 |
|----------------|
| 1200           |

\*Consult our experts at Makino AM for more information about selected matrix materials

## PROCESS INFORMATION:

The properties reported in this Technical DataSheet are applicable to Makino AM powders tested and distributed by Makino and processed on Makino LMD machine utilizing parameters in accordance with relevant operating guidelines (inclusive of setup conditions and maintenance). The properties are obtained by following recommended protocols. Further information regarding the methods used by Makino can be provided upon inquiry.

## DISCLAIMER:

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## CONTACT US:

Our Safety Datasheet (SDS) is available upon request. For more information or support please contact Makino at [sales-am@makino.com.sg](mailto:sales-am@makino.com.sg) or visit [www.makino.com.sg](http://www.makino.com.sg)