

Sintering



Toll Sintering—thermal processing of P/M & MIM parts

High temperature sintering (2300°F-2800°F) achieves optimum mechanical, electrical and magnetic properties. With correct particle size distribution, sintered parts can approach full density.

Batch toll sintering performed in vacuum furnaces results in the best possible “near net shape.” This means little or no machining to finish parts.

Through proprietary control of the processing, Solar is able to maintain the sintering temperatures within a window of 5°F.

P/M materials processed include:

- Iron
- Iron silicon
- Iron phosphorus
- Stainless steels
 - 300 series
 - 400 series
 - 17-4 PH
- Titanium
- Tungsten

MIM material processed:

- Titanium
- Stainless steels
 - 300 series
 - 400 series
 - 17-4 PH
- Selected ceramics



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The technological and processing advancements of powdered metal (P/M) and metal injection molded (MIM) part applications have increased the demand for sintered parts. Solar Atmospheres, specializing in high temperature toll sintering is a reliable partner to meet the demand.

From laboratory cycle development to production runs, Solar's sintering department is designed to respond.

In-house metallurgists will work with you to achieve part specifications and production goals.

Solar's high temperature (2300°F-2800°F) vacuum sintering better accommodates physical and magnetic properties not usually found in other sintering methods.

As a toll sintering house, Solar Atmospheres accepts pre-sintered, debound parts, or out-the-press/green injection molded parts.

Experience

Solar has invested years of research and development for high temperature sintering. Attainment of parts with specified material properties and over 99% density is evidence of the value of vacuum sintering and Solar's experience.

Solar Atmospheres specializes in vacuum processing. Therefore, the sintering department has an in-depth technical understanding of the vacuum furnace. With this technical knowledge as a foundation, Solar offers state-of-the-art sintering cycle development.

Cycles include sintering atmospheres utilizing:

- Vacuum
- Hydrogen
- Argon
- Nitrogen
- Air
- Mixed gases

Solar's knowledge and experience will assure the best possible net shape quality of your P/M or MIM part.

Capabilities

A proprietary type S (platinum) thermocouple location arrangement enables temperature monitoring within a 5°F window.

Dedicated furnaces make it possible to commit to quality sintered parts with quick response and turnaround.

Sintering furnaces include one R&D laboratory and two production furnaces.

- 6" diameter x 16" deep (top loading)
- 36" diameter x 48" deep (horizontal)
- 48" diameter x 72" deep (horizontal)

Specialized graphite/ceramic fixturing and setter materials.

P/M and MIM part loads up to 5,000 lbs.

Testing Capabilities

- Microhardness testing with photographic capability 40X magnification.
- Fluid density measurement equipment. (specific gravity)
- Other metallurgical testing as required.

