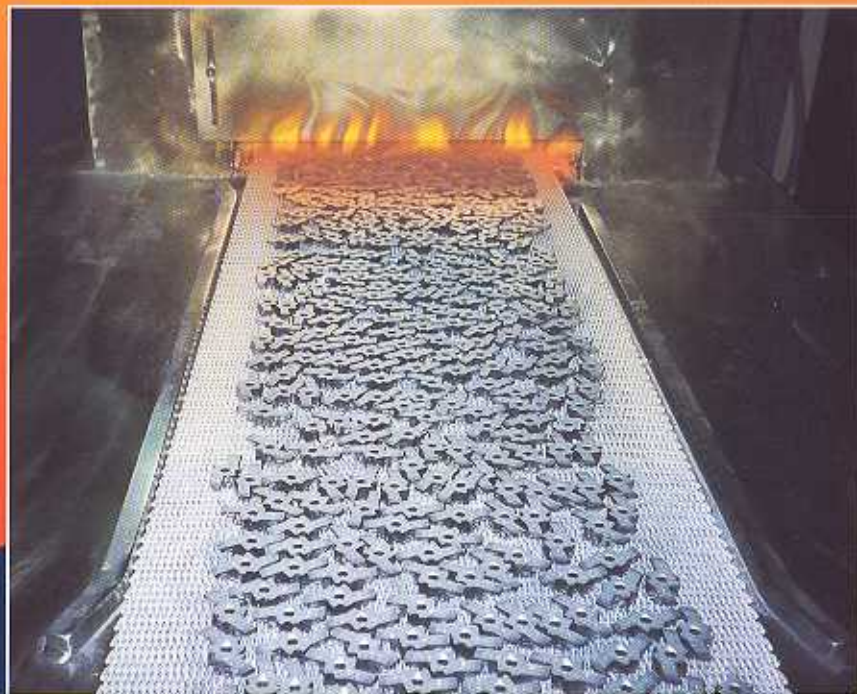


**CONTINUOUS  
BELT  
SINTERING  
FURNACES**

*For The  
Powder  
Metallurgy  
Industry*



*Quality  
In Process  
and Product*



**S I N T E R I T E F U R N A C E D I V I S I O N**

## Flexible Design, Reliable Operation

Sinterite engineers and manufactures furnaces specific to the powder metal industry. Sinterite designs are built to rigorous standards using advanced technologies and materials to provide years of reliable operation at process temperature extremes. Sinterite designs are modular and configurable to meet your specific sintering need. Your Sinterite furnace is backed by superior customer service.

### QUALITY CONSTRUCTION

A folded and compressed ceramic fiber blanket insulation is used to reduce shrinkage and gaps, providing economy, reliability and efficiency. Belt drive is sized to minimize stress and extend operating life. Heavy-duty steel construction provides a rigid shell to reduce flexing and provide support for components. Cooling sections are supported on free moving rollers to accommodate muffle growth, reducing stress and extending muffle life. Controls, instrumentation and components are selected from international suppliers to give you dependable operation and readily available replacement parts.

Quality is designed in. Sinterite furnaces are designed to comply with established environmental, safety, and construction standards including NFPA, ASTM, OSHA, NEC, and are certifiable to European CE specifications. Our commitment to you is quality backed by a system certified to ISO-9001 international standards.

### STANDARD FEATURES

- Ceramic fiber insulation for low heat storage and loss
- Strength at high temperatures with good insulating properties
- Silicon carbide muffle supports on heavy-duty alumina piers
- Closed-loop temperature control
- Proportional or on/off power control

### DESIGN CHOICES

- Silicon carbide or wire-wound heating elements
- Direct fired or radiant tubes
- Alloy or ceramic muffle specified and built for reliability

CERTIFIED  
ISO 9001



## Standard Sintering Configuration

Sinterite Model	1	
Temperature control	3 zone	
	ft.	m
Overall Length (approx.)	46.5	14.1
Standard Furnace Sections <sup>1</sup>		
Delube and Preheat	5	2.4
High Heat (sintering)	10	4.8
Cooling	19.5	5.9
Optional Furnace Sections <sup>2</sup>		
ADS, Accelerated Delube	+14	+4.3
Flexcooler	-4	-1.2
Versacool	3	1.0

<sup>1</sup> Lengths of standard sections included in OAL

<sup>2</sup> Add to OAL for selected options

Furnace Type	Heat Zones Recommended Max		Be
	°F	°C	
Tempering and Delube	1800	980	allo
Conventional Sintering	2100	1150	allo
Elevated Temperature	2200	1200	allo
High Temperature	2400	1300	cera

\*Standard Belt Widths  
Alloy: 6, 12, 18, 24, 36 inch  
Ceramic: 12 inch

## FURNACE CONTROL AND SINTERLOG DATA MANAGEMENT

Sinterite furnaces use dedicated PID process controllers capable of stand-alone operation, continuous monitoring and control of furnace parameters. Instrumentation is capable of setting limits of operation and alarming on out of tolerance conditions. Controllers are selected for quality, reliability and availability from internationally recognized suppliers.

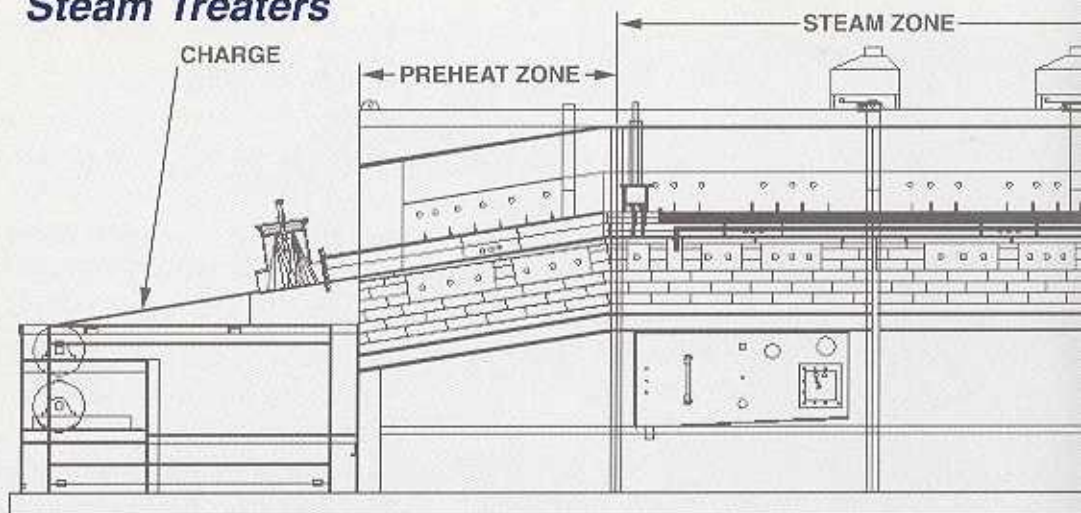
The optional PC-based Sinterlog system can be added to interface with basic control instrumentation providing centralized display and adjustment of all furnace operating conditions. This system provides memory for storage of process parameters, a touch screen display for quick access to furnace values and set points, as well as furnace status, alarm and fault screens for quick visual monitoring. Sinterlog also provides the ability to upload SPC data to a central manufacturing data collection system.

## Dimensions

Line	2		3		
	4 zone		5 zone		
m	ft.	m	ft.	m	
14.2	55.5	16.9	67.5	20.6	
2.4	10	4.8	12	5.7	
4.8	10	4.8	15	7.1	
5.9	23.5	7.2	27.5	8.4	
+4.3	+14	+4.3	+10	+3.0	
-1.3	-4	-1.3	-4	-1.3	
1.0	3	1.0	2	0.6	

Belt*	Muffle	Heat Source
alloy	alloy	electric/gas
alloy	alloy	electric/gas
alloy	ceramic	electric
ceramic	ceramic	electric

## Steam Treaters



### Continuous Belt and Batch Type Steam Treatment Process

- Application of a black oxide layer to ferrous metals for increased hardness and toughness
- Improved corrosion resistance from microscopic porosity sealing and thin oxide film
- Flexible design allows for other thermal-processes with the same equipment
- Scale-free tempering and stress relief for ferrous metals from 650-1200°F (345-650°C)
- Applications — shock absorber pistons, compressor valve plates, pulleys, high-speed steel cutting tools, iron castings, and synthetic material curing

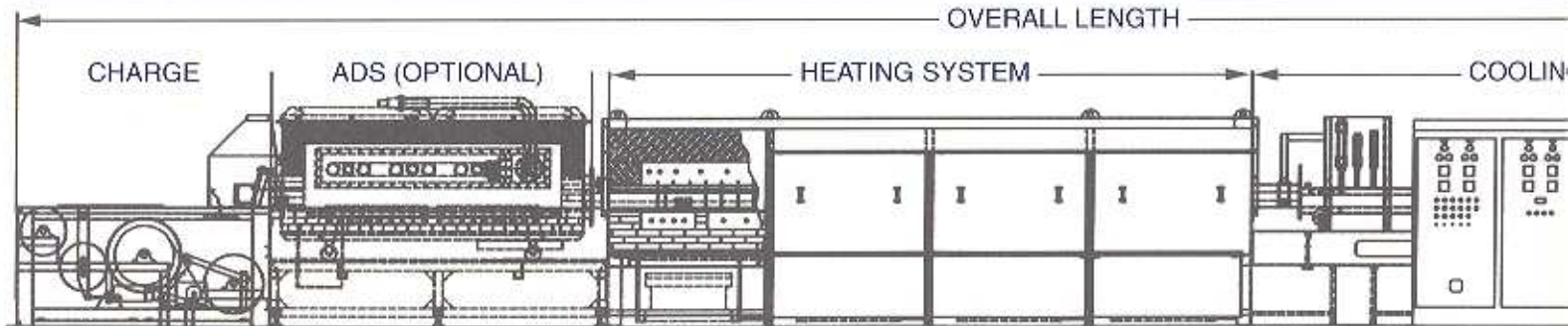
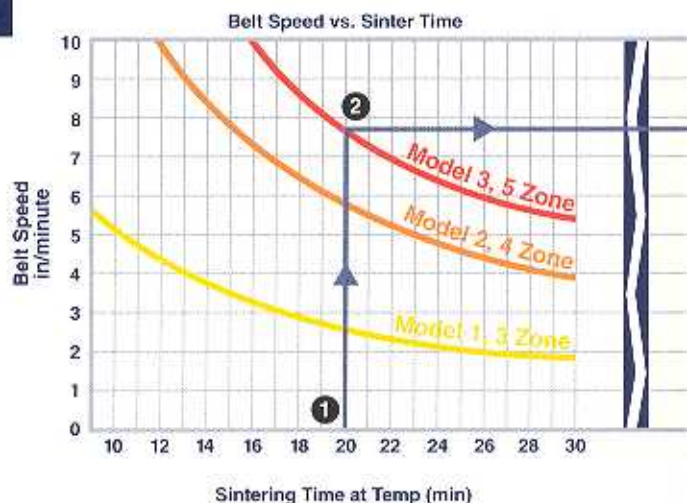
Furnace Model*	Speed in/m
1	1-1
2	1-1

\*Standard Belt Width

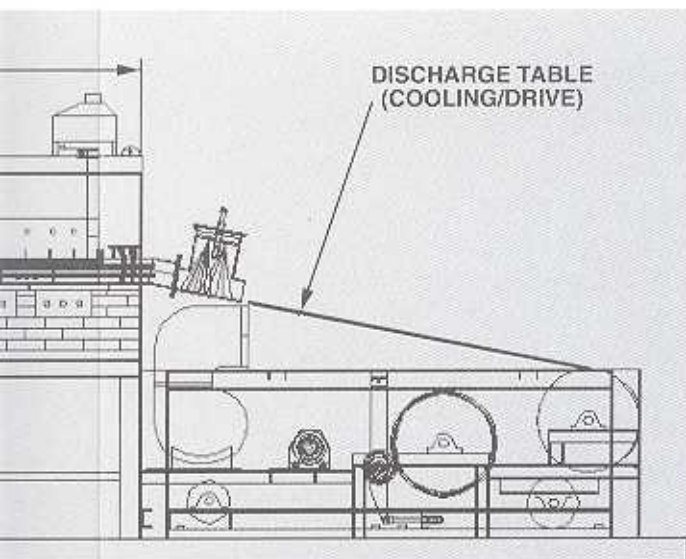
### Furnace Capacity Chart

- 1 Select sintering time at temperature based on desired properties.
- 2 Determine speed of the belt based on selected furnace model.
- 3 Follow belt speed to right and choose from available belt widths.
- 4 Read estimated production rate from the horizontal scale.

\* Production rate is based on a uniform 15 lbs./ft<sup>2</sup> belt load.  
Note: Values are representative.  
Results may vary based upon specific conditions.



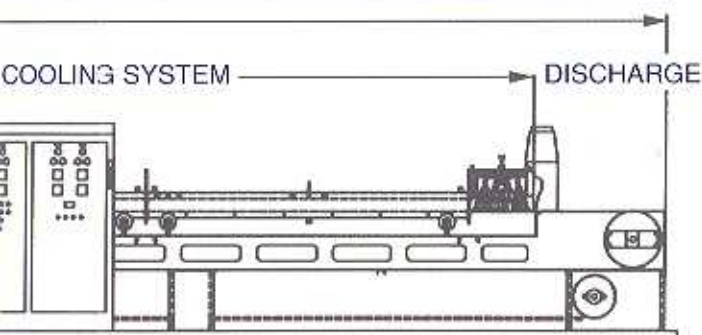
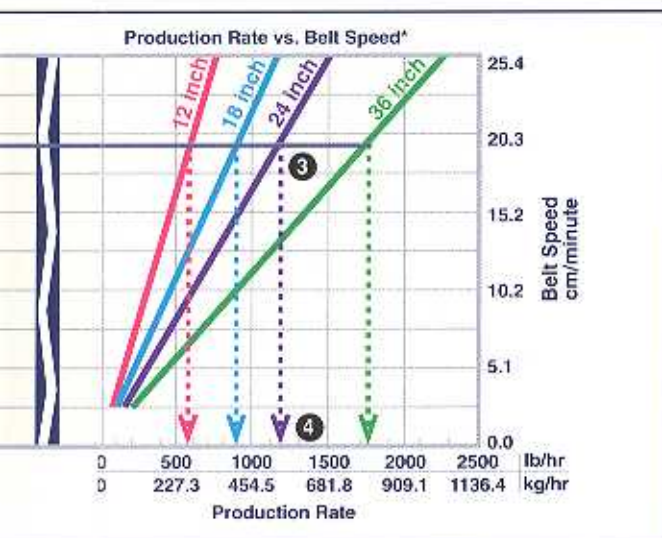
Note: Contact Sinterite for alternate configurations.



Multi-zone 12"-24"(150-600mm) belt widths

Conveyor Limits				Heating Chamber			
Face	Belt Speed Range		Belt Loading		Steam Time (minutes)		Control Zones
Level*	in/min	m/hr	lb/ft <sup>2</sup>	kg/m <sup>2</sup>	Min.	Max.	
	1-10	1.5-15	24	117	12	120	3
	1-10	1.5-15	24	117	18	180	4

Standard Belt Widths: 12, 18, 24 inches



Typical sintering furnace configuration

## APPLICATIONS SPECIALISTS

Sinterite application specialists understand sintering and will provide the right solution to achieve your process. Our technical staff will work with you to configure a furnace that will satisfy your needs. Additional throughput can often be achieved by adding an ADS (Accelerated Delube System) for faster, more complete burnoff of lubricants. Flexible or variable rate cooling sections increase cooling capacity while providing a range of control to accommodate varying loads and sintered properties. Sinterite's modular designs adapt easily to other continuous thermal and heat treat processes.

## OTHER THERMAL APPLICATIONS

### Powder Metal Processes

- Delubrication furnaces
- Versacool, variable rate cooling, and in-line sinter hardening
- Accelerated delubrication system
- Steam treating furnaces
- Vacuum impregnators
- Automated load/unload systems
- Infiltration
- Elevated temperature sintering

### General Heat Treating

- Brazing
- Tempering
- Annealing
- Carburizing
- Atmosphere generators



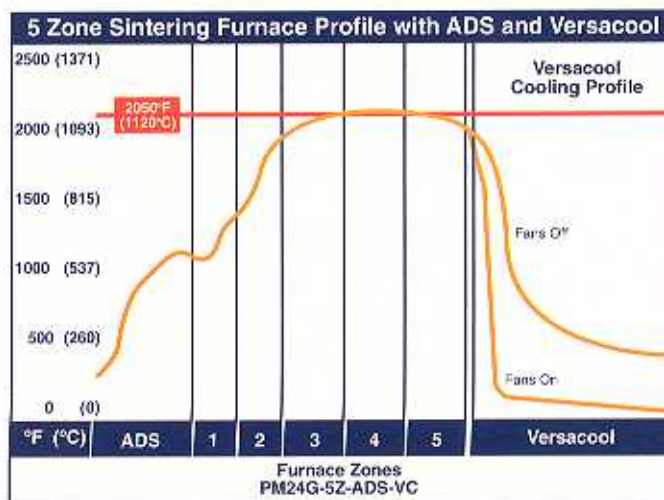
## VERSACOOOL

### Variable Rate Cooling and In-line Sinter Hardening

The Versacool system makes it possible to sinter, harden and cool conventionally in the same unit. Versacool combines convective, radiant, and conductive heat transfer to allow an **initial cooling rate of up to 8°F/second (4°C/second)**.

This versatile cooling system accepts mesh belts to 24 inches (600 mm) in width and features a removable, water-jacketed muffle and atmosphere-tight, steel external enclosure.

Versacool can be installed on a new furnace or retrofitted to almost any existing furnace.

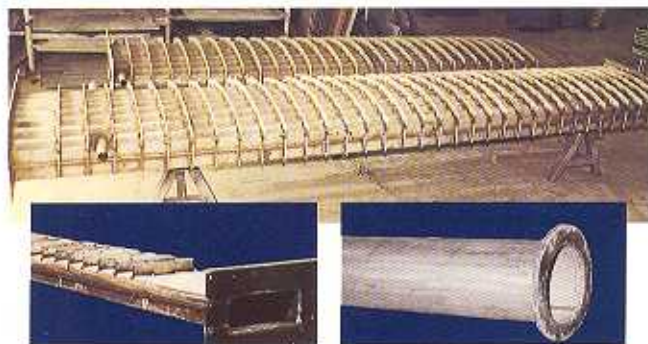


## ACCESSORY SYSTEMS

Sinterite provides accessory systems such as atmosphere generators, ammonia dissociators, endogenerators, recirculating water coolers, automated load/unload systems, and oil impregnators to complete your total factory solution.

## MUFFLES & RETORTS

A ready inventory of alloy steels and a staff of highly trained and dedicated fabricators make fast, reliable fabrication of replacement muffles and retorts possible.



## ADS

### (Accelerated Delube System)

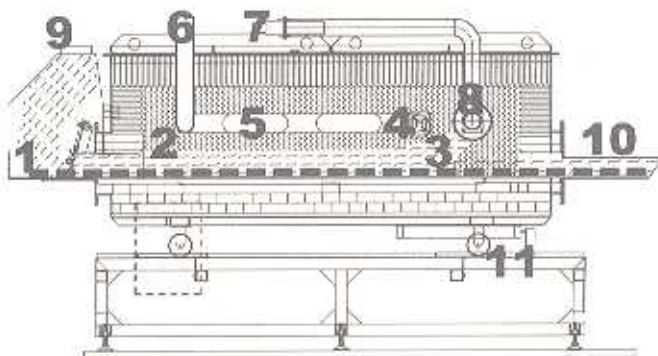
#### For Rapid Removal of Powder Metal Lubricants

Our state-of-the-art Accelerated Delube System combines effects of heat and atmosphere to remove lubricant efficiently from powder metal parts, especially larger parts and those under high-density compaction. The ADS heats parts by gas-fired, radiant and convective energy, while gas flow sweeps combustion products to the front of the furnace. The rapid rise in temperature promotes complete burn-off and increases the temperature of the part entering subsequent muffled sections of the furnace. Separate flow control maintains air-to-gas ratios from 9:1 (reducing) to 11:1 (oxidizing).

The ADS uses natural gas, propane, or butane. Include a Sinterite ADS on your new furnace or retrofit to your existing furnace.



Top View - Lid Removed



ADS cross-section

- 1 Product on Mesh Belt
- 2 Radiant Heat and Exothermic Gas
- 3 Exothermic Gas Injection
- 4 Tube-Firing Burner
- 5 Radiant Tube
- 6 Radiant Tube Exhaust
- 7 Variable Air: Gas Tube-Firing Burner
- 8 Exothermic Gas Distributor
- 9 Atmosphere Gas Exhaust
- 10 Furnace Entrance (Sintering Zones)
- 11 Muffle Expansion Assist

310 State Road  
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 Phone (814) 834-2200  
 Fax (814) 834-9335  
 Technical Service Line  
 (814) 594-3587  
 www.gasbarre.com  
 e-mail:  
 furnace\_sales@gasbarre.com



**Fabrication Services**

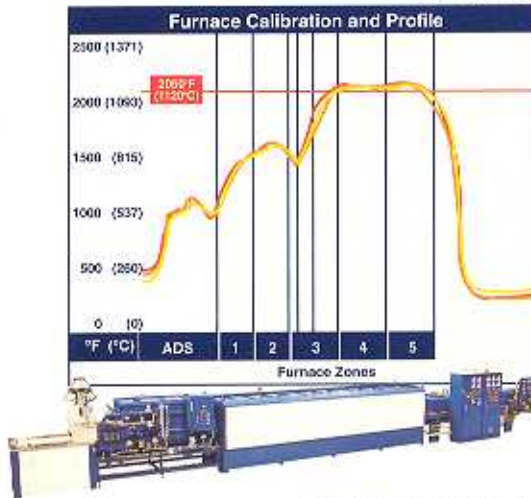
Our in-house fabrication capability provides quick response on replacement muffles and cooling chambers for most furnaces, as well as your other fabricated metal needs. Capabilities include metal cutting CNC patterns, bending, rolling, and welding, plus overhead crane capacity to 10 tons.

**Customer Service**

We stand behind our products with a customer service group ready, when called, to provide worldwide after-sale support.

Furnace services include:

- Equipment installation
- Start-up supervision
- Preventive maintenance program
- Calibration & furnace profiling
- Equipment evaluations
- Retrofits
- In-house and field rebuilds
- Furnace repair
- Replacement components
- Replacement sub-assemblies



**Your Assurance of Quality and Service**

Sinterite Furnace Division has delivered innovative solutions for powder metal sintering and thermal processes since 1978. We continue to invest in engineered improvements to keep pace with the advances in powder metal materials and processing. Recent developments provide significant advances in range of adjustment for in-line sinter hardening and rapid elimination of lubricant from highly densified and/or large powder metal parts. Total Quality Management techniques and a dedication to continuous improvement have led to the certification of Sinterite's quality system to ISO-9001 international standards.

Sinterite stands behind all of our products with superior engineering, technical assistance, rugged and reliable construction, sales and customer service. Contact your sales representative to learn more about Sinterite products and services.

