

## Ceramite

### Technical Information

#### Introduction

The name "Ceramite" is another name of "Cermasite", "Ceramic Foundry Sand" and "Sunpearl" by users in a lot of countries. It's a new artificial foundry sand, which originally coming from China only. With better comprehensive property and price comparison, it is now regarded as the right substitute for chromite sand, zircon sand, quartz sand. It is well regarded as a revolution for new foundry sand.

The idea of Ceramite came from Japanese "CERABEADS". CERABEADS which is made from Kaolin, with lower  $Al_2O_3$  content. While our Ceramite is produced from bauxite, its refractoriness and service temperature are (about 50 degrees centigrade) higher than CERABEADS, however its production costs are much lower than CERABEADS because of the cheaper bauxite, electricity cost and labor cost in China. As group which are top 3 professional manufactory for Foundry and refractory, we are preparing to push it ahead in the world market!

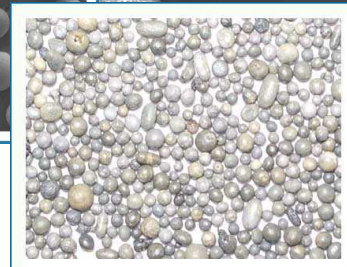
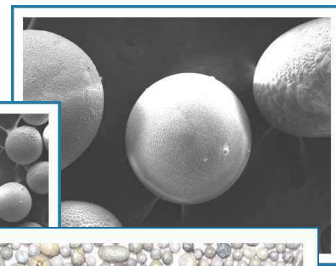
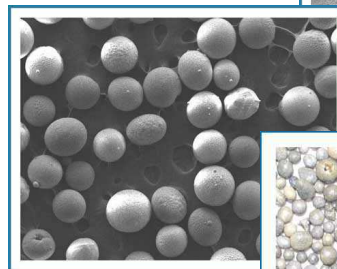
#### Production and foundry savings

The calcined bauxite is used as the raw material that is re-melted and blown into solid ball shape by high temperature spray. It has a highly smooth surface, good air permeability and excellent dispersibility. It can obviously reduce the binder addition for resin coated sand and self-hardening sand. It can greatly save the sand consumption because it can be reclaimed for many times and always in low breakage rate during crushing. Experience has demonstrated around 40-50 times versus 5-10 times for chromite based sands. Ceramite is used as single sand, no need mix with other sands. By your foundry sand reclaiming facilities, you can get it reclaimed many times. It is very common that our users in Japan can reclaim 40-50 times, some foundries can even reclaim up to 100 times. The mature application proves it is an ideal foundry sand for the casting of carbon steel and alloy steel (heat resistant steel, abrasion resistant steel, atmospheric corrosion steel, and other acid and basic steel category). It is widely used as core sand and facing sand.

#### Composition and sizing

The chemical compositions and physical properties as follows:

$Al_2O_3$ : 78 ~ 85%  
 $SiO_2$ : 8 ~ 12%  
 $Fe_2O_3$ : 5%Max  
 $TiO_2$ : 3.5%max  
Refractoriness: 1850 degrees centigrade  
Angle coefficient: 1.1max  
Thermal expansion (at 100 deg C): 0.15  
Thermal conductivity: 0.196 w/m.k  
Specific heat: 873 J/kg.  
Bulk density: 1.9 ~ 2.2 g/cm<sup>3</sup>



The particle sizes available are: AFS20, 30, 40, 50, 60, 70, 80, 100, 125, 140, 200, or 0.3-0.7mm, 0.4-0.9mm, 0.9-0.125mm, 1-2mm, 325meesh, etc.

From the experience of the producer, sizes of AFS20, 30, 40 and 50 are used for big castings, AFS60, 70 and 80 are for medium sizes, AFS100, 125, 140 and 200 are for small casting goods. Some foundries may need MM grades like the above for big castings as well. 325mesh can be used for foundry coatings to replace zircon sand.

## Product Specification Sheet

### Ceramsite (SAMPLE2-21)

Chart(1) Particle Size Distribution for Foundry Grade

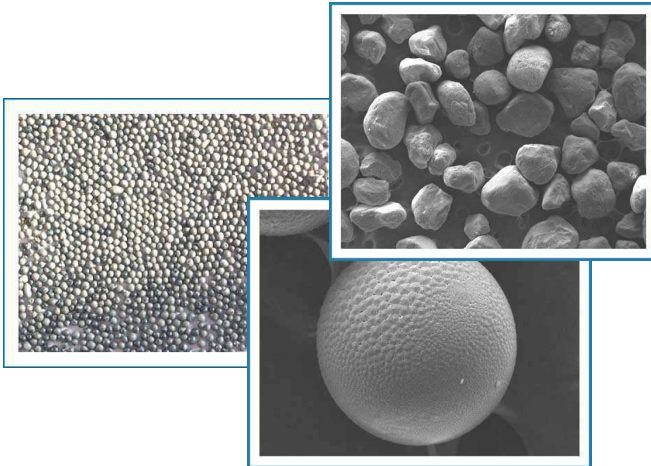
Mesh	um	# 25	# 30	# 40	# 50	# 60	# 75	# 100	# 125
14	1180	0~2	0~2						
18	850	0~10	0~10						
30	600	30~50	20~40	0~5	0~2				
36	425	30~50	40~60	30~50	10~30	0~10			
50	300	0~5	0~20	35~55	15~35	10~30	0~10		
70	212		0~5	0~20	20~40	25~45	5~25	0~3	0~2
100	150		0~2	0~10	0~20	15~35	25~45	10~25	0~20
140	106			0~5	0~10	0~20	20~40	40~60	45~65
200	75				0~2	0~5	0~10	10~20	20~40
281	63						0~5	0~10	0~20
Pan	Pan							0~5	0~5
AFS		20~30	25~35	35~45	45~55	55~65	75~85	105~115	125~135
GFN		30~50	35~55	55~75	75~95	95~115	130~150	190~210	225~245

Chart(2) Main Technical Data and Application:

Chemical Compositions:	
1.Normal Grade: Al <sub>2</sub> O <sub>3</sub> 70-82% Fe <sub>2</sub> O <sub>3</sub> ≤6% TiO <sub>2</sub> ≤5% SiO <sub>2</sub> 8-15%	
2.Low Iron Grade: Al <sub>2</sub> O <sub>3</sub> 70-82% Fe <sub>2</sub> O <sub>3</sub> ≤3% TiO <sub>2</sub> ≤5% SiO <sub>2</sub> 8-15%	
(Notes: For foundry grade, Al <sub>2</sub> O <sub>3</sub> contents can be fractionized as ≥70, ≥75, ≥80)	
Physical Properties:	
Granular Shape	Ball Type, Angle Factory ≤1.1
Particle Size	0.045-3mm(including all AFS sizes, powdered size of 200mesh& 325mesh, and big sizes of 0.3-0.7mm, 0.4-0.9mm, 0.7-1.2mm 0.9-1.2mm, 1-2mm, 2-3mm, etc.)
Bulk Density	1.95-2.05g/cm <sup>3</sup>
Refractoriness	≥ 1820°C(SK37)
Thermal Expansion Rate	0.15%(10minutes, heated at 1,000°C)
Packing	a. 1,000-1,250 kg into one jumbo bag, 20-25MT/20' FCL.
	b. 25kg in pp bag and 1,000kg-1,250 in one jumbo bag, 20-25MT/20' FCL.
	c. Other packing ways can follow the requirment of client.

## Application:

1. Foundry sand, substitute for chromite sand, cerabeads and other foundry sands.
2. The substitute of zircon sand, size-325mesh or 200mesh for foundry coating material.
3. The raw material for manufacturer of ceramic filter.
4. Ladle filler sand, partial substitute of chrome sand, size from 0.5-2mm;
5. As ceramic proppant for oilfield, size of 30/60, 40/70, etc.;
6. For sand blasting, sizes of 1.0mm, 1.2mm, 1.4mm, 1.7mm, 2.0mm&2.5mm
7. For precision casting the #30-#70 is efficient and serviceable.



**Photograph Of The Material**

1. Amount of Ceramite
2. Special Amplification For One Piece
3. The Raw Material

## Features and advantages include the following:

1. Round solid ball shape of particle.
2. High refractoriness and service temperature
3. Good air permeability and excellent dispersibility
4. Lower thermal expansion rate and thermal conductivity
5. Lower bulk density, lower true specific gravity and lower specific surface area
6. Standard particle sizes
7. Easily reclaimed by dry method
8. Lower breakage rate during dry crushing
9. Single application, no need to mix with other sands
10. Reduce pollution and less environmental impact and related dumping costs.

**Conclusion(key words):** Easily use, save foundry sand, save binder, protect environment improve casting quality, cost effective best substitute for other foundry sands, new type of foundry with all above the zircon chrome and silicor sand but no binder and better performance!

## **Addendum below with additional questions and answers.**

### **Some additional information and questions answered**

This product is substitute for chromite sand for both foundry sand and ladle filler sand in steel making. As you see in the technical details, it is produced from bauxite by EAF melting. It is in solid ball type. As a substitute for chromite sand, you need to note the following:

1. All its physical properties are better than chromite sand, except its service and refractoriness are 30 degrees lower than chromite sand, this is not important for foundry sand. This means they are all high grade refractories of same grade.
2. This product should be as single sand. All the mold sand should be ceramsite, no need mix with silica sand and others.
3. It can be reclaimed for many times. In Japan, most of our customers can reclaim it for about 50 times, while chromite sand can be only reclaimed for 5-10 times. You can imagine its reclaiming methods should be easier than chromite sand, because it is used singly, not like chromite sand, mixed with silica.
4. As it is in solid ball type, its size is very standard on or under screen sieve, not like other foundry sands, from crushed raw ores, granular sizes very sharp or even in needle shape. So, the size should be AFS10 bigger than other foundry sands. For example, if your customer-foundry uses chromite sand AFS60, we suggest they use our ceramsite from our existing customers.
5. Ceramsite can save binder additives as it has smooth surface and small specific surface area.
6. The pricing for ceramsite is higher than chromite sand due to very high melting cost of electricity.
7. Reclamation should be done in such a way as to not contaminate this product with other sands. This is essential for optimal benefits to be realized.

*As a new type of new foundry sand, we would like to offer the MSDS and more of detail information on it,  
await your inquiry, hope you have a wonderful day!*



*We are China Horton Our goal just have make the client satisfied with our products and service*