

濕式噴漿材

本公司針對各種工業窯爐之嚴苛維護條件需求，我們特別與日本黑崎播磨公司技術合作，開發最新的耐火材料技術－濕式噴漿材。

1. 特性：
 - a. 極低之反彈噴附損失量
 - b. 無粉塵
 - c. 極佳之耐用性可媲美澆鑄材使用
 - d. 無須模具、節省工時
2. 適用窯爐：
 - a. 高爐流道
 - b. 魚雷車
 - c. 盛鋼桶
 - d. 水泥窯
 - e. 焚化爐

Product Specification

Properties	Brand	SPNG-TMZ	SPNG-TS1	SPNG-ASC60	SPNG-ASC70	SPNG-LD1
Bulk Density (g/cm ³) 1450 °C x 3hrs		≥2.85	≥2.80	≥2.75	≥2.85	≥2.70 (1500°C)
Apparent Porosity (%) 1450 °C x 3hrs		≤20	≤20	≤23	≤23	≤25 (1500°C)
Modulus of rupture (kg/cm ²) 1450 °C x 3hrs		≥50	≥50	≥100	≥50	≥150 (1500°C)
Cold Crushing Strength (kg/cm ²) 1450 °C x 3hrs		≥350	≥300	≥500	≥300	≥500 (1500°C)
Chemical Composition(%)						
Al ₂ O ₃		≥65	≥52	≥64	≥72	≥80
MgO		≥5	---	---	---	≥5
SiC + C		≥10	≥30	≥12.5	≥15	---
Application		Trough metal zone	Trough slag zone	Torpedo car	Torpedo car	Steel ladle

Wet-Gunning Refractories

Sunward accordingly the maintains feature from various of industrial, we cooperate Japan Krosaki Harima Corporation and develop the new technique: Wet Gunning products

1. Feature
 - a. Low loss from the re-bound
 - b. No powder pollution
 - c. Good durable, compare favorably to the castable
 - d. Short working days, no mold request during the producing
2. Suitable Equipments
 - a. Trough of blast furnace
 - b. Torpedo car
 - c. Ladle furnace
 - d. Cement Kiln
 - e. Incinerator



Product Specification

Properties	Brand	SPNG-A45	SPNG-A55	SPNG-A75	SPNG-SC50	SPNG-SC80
Bulk Density (g/cm ³)1450°Cx3hrs		≥2.20	≥2.30	≥2.50	≥2.30	≥2.40
Apparent Porosity (%)1450°Cx3hrs		≤20	≤21	≤25	≤24	≤22
Modulus of rupture (kg/cm ²)1450°Cx3hrs		≥125	≥175	≥120	≥170	≥250
Cold Crushing Strength (kg/cm ²)1450°Cx3hrs		≥700	≥900	≥750	≥750	≥800
Chemical Composition(%)						
Al ₂ O ₃		≥45	≥55	≥75	≥22	≥5
SiC		----	----	----	≥50	≥80
Application		Incinerator / Cement-Kiln			Incinerator	

氣硬性耐火泥

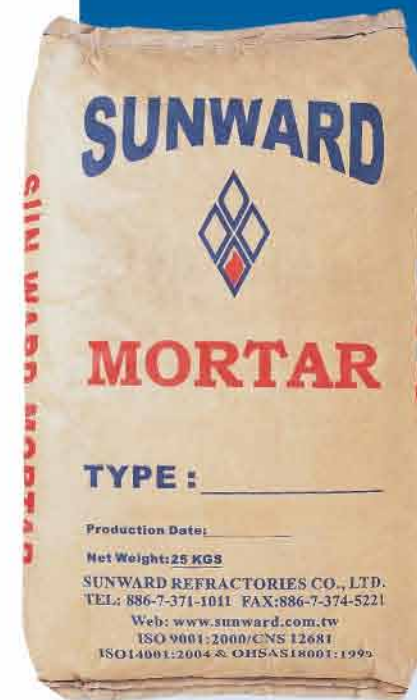
Air-Set Mortar

本公司針對各種耐火磚，提供各種適用之耐火泥，以完整爐襯提高耐火磚使用之壽命具有：

1. 高連結強度。
2. 具良好的作業性。

Sunward offers a variety of high quality air-set mortar. Each type of mortar is designed to maximize the life time of particular type of bricks. The advantages of Sunward's airset mortars are:

1. High bonding strength.
2. Easy laying.



Product Specification

Brand	AM-32	AM-33	AM-34	AM-35	AM-36	AM-37	AM-38	AM-39	AM-40	Insulation
Properties	AM-32	AM-33	AM-34	AM-35	AM-36	AM-37	AM-38	AM-39	AM-40	Insulation
Refractoriness(SK)	32	33	34	35	36	37	38	39	40	----
GrainSize(%)										
+0.5mm	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤3
-0.074mm	≥60	≥60	≥60	≥60	≥60	≥60	≥60	≥65	≥65	≥70
Bonding Strength(kg/cm ²)										
1500°Cx3hrs	----	----	----	----	----	≥30	≥30	≥30	≥30	----
1400°Cx3hrs	≥20	≥20	≥20	≥20	≥20	----	----	----	----	----
Chemical Composition(%)										
Al ₂ O ₃	≥32	≥35	≥45	≥55	≥65	≥70	≥75	≥80	≥90	≥60

熱硬性耐火泥

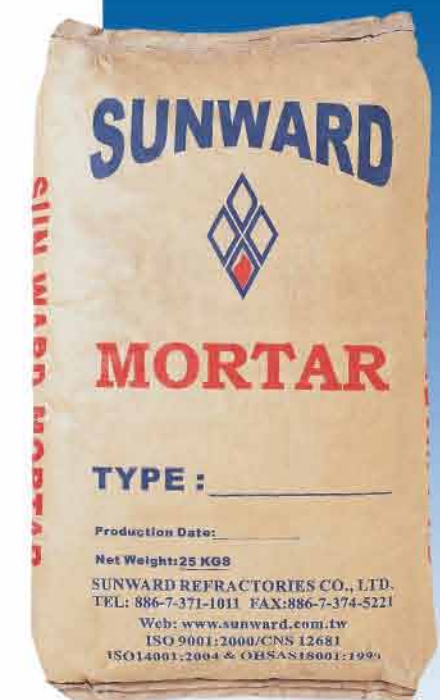
Heat-Set Mortar

本公司針對各種耐火磚，提供各種適用之耐火泥，以完整爐襯提高耐火磚使用之壽命具有：

1. 高連結強度。
2. 具良好的作業性。

Sunward provides a variety of high quality heat-set mortar. Each mortar type of is designed to maximize the life time of particular type of bricks. The advantages of Sunward's heatset mortar are:

1. High bonding strength.
2. Easy laying.



Product Specification

Brand	HM-32	HM-34	HM-36	HM-37	HM-38	Acid-Proof
Properties	HM-32	HM-34	HM-36	HM-37	HM-38	Acid-Proof
Refractoriness (SK)	32	34	36	37	38	----
GrainSize(%)						
+0.5mm	≤2	≤2	≤2	≤2	≤2	≤2
-0.074mm	≥60	≥60	≥60	≥60	≥60	≥50
Bonding Strength(kg/cm ²)						
1500°Cx3hrs	----	----	≥20	≥20	≥20	----
1400°Cx3hrs	≥15	≥15	----	----	----	----
Chemical Composition (%)						
Al ₂ O ₃	≥32	≥45	≥50	≥60	≥70	----
SiO ₂	----	----	----	----	----	≥60

可塑性/搗固材/ 拋射修補耐火材料

Plastic / Ramming / Patching Refractories

本公司精選高鋁原料、碳化矽、石墨及粘土，以自動化製程生產出高塑性、易施工之塑性材及搗固材，其中搗固材適用於高爐之主流道、鐵水流道及渣流道，可塑性材適用於各類工業窯爐。

Sunward's plastic, ramming, and patching refractories are made from high-purity alumina, silicon-carbide, carbon, and plastic clay with a special mixing process. Ramming refractories are applied to main-troughs, slag-runners, and iron-runners of BF. Plastics refractories are suitable for industrial furnace.

The advantages of Sunward's plastic, ramming, and patching refractories.

1. Excellent plasticity.



Product Specification

Properties	Brand	PL-150	PL-170	PL-175	BFR-MTA	BFR-MTH	PC-1A-S
Bulk Density(g/cm ³)		≥2.0	≥2.05	≥2.25	≥2.5	≥2.5	≥2.5
1500°Cx3hrs					(1450°Cx3hrs)	(1450°Cx3hrs)	(1450°Cx3hrs)
Cold Crushing Strength(kg/cm ²)					≥180	≥180	≥20
1500°Cx3hrs		≥120	≥120	≥140	(1450°Cx3hrs)	(1450°Cx3hrs)	(1450°Cx3hrs)
Chemical Composition(%)							
Al ₂ O ₃		≥40	≥53	≥60	≥60	≥60	≥60
SiC+C		----	----	----	≥20.5	≥23	≥24
Characteristics		Plastic			Ramming		Patching

可鑄性耐火材料

Castable Refractories

本公司生產之可鑄性耐火物，具有：

1. 施工容易
2. 可施工於任何形狀之結構體
3. 具良好的耐剝落性

The advantages of Sunward's castable refractories are :

1. Easy laying.
2. Can be formed with any shape.
3. Great spalling resistance.



Product Specification

Properties	Brand	CA-185	CA-180S	CA-180	CA-170	CA-160	CA-150	CA-140	CA-130
Max. Service Temp (°C)		1800	1800	1800	1700	1600	1800	1800	1800
Bulk Density (g/cm ³)									
1500°Cx3hrs		≥2.65	≥2.50	≥2.35	----	----	≥2.05	----	----
1400°Cx3hrs		----	----	----	≥2.2	≥2.1	≥2.1	≥2.0	----
1200°Cx3hrs		----	----	----	----	----	----	----	≥1.95
Cold Crushing Strength (kg/cm ²)									
1500°Cx3hrs		≥300	≥280	≥250	----	----	----	----	----
1400°Cx3hrs		----	----	----	≥300	≥300	≥300	≥250	----
1200°Cx3hrs		----	----	----	----	----	----	----	≥150
Modulus of Rupture (kg/cm ²)									
1500°Cx3hrs		≥80	≥80	≥60	----	----	----	----	----
1400°Cx3hrs		----	----	----	≥60	≥60	≥60	≥50	----
1200°Cx3hrs		----	----	----	----	----	----	----	≥15
Chemical Composition (%)									
Al ₂ O ₃		≥95	≥90	≥75	≥60	≥60	≥45	≥42	≥30
Water Required (%)		8~9	9~11	11~13	11~13	11~13	12~14	12~14	12~15
Installation Method		Casting, Trowelling							

Properties	Brand	CA-13I	CA-12I	CA-11I	CA-10I	CA-9I	CA-8I	CA-7I	CA-6I	CA-5I
Max. Service Temp (°C)		1300	1200	1100	1000	200	800	700	600	500
Bulk Density (g/cm ³)										
110°Cx24hrs		≤1.4	≤1.3	≤1.2	≤1.1	≤1.0	≤0.9	≤0.8	≤0.7	≤0.6
Cold Crushing Strength (kg/cm ²)										
1200°C		≥30	≥30	≥25	≥25	≥20	≥15	≥10	≥10	≥8
°Cx3hrs		1200°C	1200°C	1000°C	1000°C	800°C	800°C	600°C	600°C	500°C
Modulus of Rupture (kg/cm ²)										
°Cx3hrs		≥10	≥10	≥8	≥8	≥7	≥6	≥5	≥5	≥4
		1200°C	1200°C	1000°C	1000°C	800°C	800°C	600°C	600°C	500°C

低水泥可鑄性耐火材料

Low Cement Castable

高強度水泥可鑄材是以高級骨材配合超細微粉原料及特殊添加劑所製造，由於其低水泥量及低施工加水量，使其具有：

1. 於各溫度範圍，皆具有高強度。
2. 高耐磨力及高耐侵蝕力。
3. 良好的體積穩定性。

Sunward's high strength low cement castables are made from superior refractory aggregate, ultra-fine powder, and special binder with low water content.

The advantages of Sunward's low cement castable are:

1. High strength over a broad temperature range.
2. Excellent wear and corrosion resistance.
3. Excellent volume stability.

Product Specification

Brand Properties	SNC-W45	SNC-W55	SNC-W60	SNC-W70	SNC-W80	SNC-W90	SNC-S85	SNC-S60	SNC-M81	SNC-M82
Bulk Density (g/cm ³) 1500(1450)°C×3hrs	≥2.1	≥2.3	≥2.4	≥2.65	≥2.7	≥2.85	1450°C (≥2.4)	1450°C (≥2.3)	1450°C (≥2.8)	1450°C (≥2.8)
Cold Crushing Strength (kg/cm ²) 1500°C×3 hrs	≥600	≥600	≥550	≥500	≥600	≥500	1450°C (≥500)	1450°C (≥500)	1450°C (≥300)	1450°C (≥300)
Modulus of Rupture (kg/cm ²) 1500°C×3hrs	≥100	≥100	≥80	≥80	≥120	≥200	1450°C (≥200)	1450°C (≥180)	1450°C (≥50)	1450°C (≥70)
Chemical Composition(%)										
Al ₂ O ₃	≥45	≥55	≥60	≥70	≥80	≥90	----	----	≥65	≥55
CaO	≤2	≤2	≤2	≤2	≤2	≤2.5	----	----	----	----
F.C.+SiC	----	----	----	----	----	----	----	----	≥20	≥35
SiC	----	----	----	----	----	----	≥85	≥60	----	----
Water Required (%)	7.5~8.5	6.5~7.5	6.5~7.5	6.0~7.0	5.5~6.5	5.0~5.5	7.5~8.5	7.5~8.5	5.0~5.5	5.0~5.5
Installation Method	Vibrating									



噴漿耐火材料

Gunning Refractories

本公司以最適之粒度配比，特殊添加劑的使用，來達到最低的噴附掉落量及良好的耐侵蝕力，公司分別生產輕質、高鋁質、鎂質及鋁碳質的噴漿材，供水泥窯、魚雷車、盛鋼桶、主流道及各種工業用窯爐使用。

Sunward offers four main types of gunning refractories: light-weight, high-alumina, magnesia, and alumina-carbon. Each type of gunning aserrals uses a special binder and precisely controlled grain size. Sunward's gunning refractories are often used for Cement kilns, Torpedo car, Ladles, main-troughs of BF, and other industrial kilns. The advantages of Sunward's gunning refractories are:

1. Low rebound-loss
2. Good wear resistance

Product Specification

Brand Properties	SGM-06I	SGM-12I	SGM-A40	SGM-A50	SGM-A60	SGM-A70	SGM-M12	SGM-M15	MT-RG2	SGM-S80
Bulk Density (g/cm ³)	≤0.7	≤1.3	≥1.75	≥2.00	≥2.1	≥2.15	≥2.45	≥2.20	≤2.20	≥2.25
After heat treatment at °C×3hrs	1000°C	1000°C	1400°C	1400°C	1500°C	1500°C	1500°C	1500°C	1450°C in Coke	1450°C in Coke
Cold Crushing Strength(kg/cm ²)	1000°C ×3hrs	1000°C ×3hrs	1400°C ×3hrs	1400°C ×3hrs	1500°C ×3hrs	1500°C ×3hrs	1500°C ×3hrs	1500°C ×3hrs	1450°C ×3hrs in Coke	1450°C ×3hrs in Coke
Chemical Composition (%)										
Al ₂ O ₃	≥30	≥35	≥40	≥50	≥60	≥70	----	----	≥60	≤8
MgO	----	----	----	----	----	----	≥87	≥83	----	≥80(SiC)
SiC+C	----	----	----	----	----	----	----	----	≥22	----
Application	Industrial Furnace						EAF	EAF	BF Main-Trough	Incinerator



高爐堵泥材

Tap-Hole Mud for Blast Furnace

本公司針對高爐需求，開發適合各高爐操作條件之堵泥材，具有下列特性：

1. 能使用於交互與連續出銑
2. 易開孔，能使用於預先開孔條件
3. 高耐蝕性
4. 與舊材結合性佳

For the demand of operating condition of Blast-Furnace, MUD materials with the following features:

- 1.Can be applied to alternative and continuous tapping
- 2.Easily dig
- 3.High corrosion resistance to molten iron and slag
- 4.Easy adhere to old material



Product Specification

Properties		Brand	STA-01	STA-02	STA-03	STA-04
After heat treatment for 3 hours at 600°C	Bulk Density (g/cm ³)		≥ 1.9	≥ 1.9	≥ 1.9	≥ 1.9
	Cold Crushing Strength (Kg/cm ²)		≥ 60	≥ 65	≥ 60	≥ 60
	Modulus of Rupture (Kg/cm ²)		≥ 25	≥ 27.5	≥ 27	≥ 26.5
Chemical Composition (%)	Al ₂ O ₃		≥ 37	≥ 43	≥ 40	≥ 39
	SiC+Si ₃ N ₄		≥ 13	≥ 13	≥ 15	≥ 15

出鋼口磚

Tapping Hole Bricks

本公司生產的出鋼口磚是一種組合型不燒耐火功能材料，以高純電熔鎂砂加高純石墨為主要原料，添加多種添加劑。產品具有優良的抗侵蝕性和抗沖刷性。適用於煉鋼轉爐和電爐出口部位、出鋼口襯磚和外套磚。可以單件供應，也可以組裝後成套供應。

The Tapping Hole Brick is a sort of combination refractory and manufactured without burning. Its main raw material includes high-pure electric-smelting magnesia and pure graphite, it also contains multitude of reagents. The Tapping Hole Brick has characteristics of good resistance for corrosion and erosion. This products is mainly used for discharge port, converter, ,tapping hole line, wrapping of converter and electric arc. It can be supplied with single piece and a whole set after combination.



Product Specification

Properties		Brand	ZGK-A	ZGK-B
Cold Crushing Strength (Mpa)			≥ 45	≥ 45
Modulus of Rupture at Elevated Temperature, 1400°Cx30min(Mpa)			≥ 12	≥ 12
Bulk Density (g/cm ³)			≥ 2.98	≥ 2.95
Apparent Porosity (%)			≤ 3	≤ 3
Chemical Composition (%)	MgO		≥ 80	≥ 75
	C		≥ 10	≥ 15