

## 氣硬性耐火泥

### Air-Set Mortars

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 mortars. Each mortar is designed to maximize the service life of particular type of bricks. The advantages of Sunward's airset mortars are:

1. High bonding strength.
2. Good workability.



### Product Specification:

Properties	Brand	AM-32	AM-33	AM-35	AM-36	AM-37	AM-38	AM-39	AM-40	Insulation
Refractoriness(SK)		32	33	35	36	37	38	39	40	--
GrainSize(%)										
+0.5mm		≦2	≦2	≦2	≦2	≦2	≦2	≦3	≦2	≦3
-0.074mm		≧60	≧60	≧60	≧60	≧60	≧60	≧40	≧60	≧70
Bonding Strength (KG/cm <sup>2</sup> )										
1500°Cx3 hrs		—	--	—	--	≧30	≧30	≧50	≧30	--
1400°Cx3 hrs		≧20	≧20	≧20	≧20	--	--	—	—	--
Chemical Composition (%)										
Al <sub>2</sub> O <sub>3</sub>		≧35	≧40	≧55	≧60	≧70	≧75	≧85	≧90	--

## 熱硬性耐火泥 Heat-Set Mortars

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 heat-set mortars. Each mortar is designed to maximize the service life of particular type of bricks. The advantages of Sunward's heatset mortars are:

1. High bonding strength.
2. Good workability.

### Product Specification:

Brand 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	≧50	≧50	≧50	≧50	≧60	≧50
Bonding Strength (KG/cm <sup>2</sup> )						
1500°Cx3 hrs	--	--	≧20	≧20	≧20	—
1400°Cx3 hrs	≧15	≧15	--	--	--	--
Chemical Composition (%)						
Al <sub>2</sub> O <sub>3</sub>	≧30	≧40	≧50	≧60	≧70	—
SiO <sub>2</sub>	--	--	--	--	--	≧60

## 可塑性/搗固材/拋射修補耐火材料 Plastics/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 plastics, ramming, and patching 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 low cement castable are:

1. Excellent plasticity.
2. Easily installed with an air hammer.



### Product Specification:

Properties \ Brand	PL-150	PL-170	PL-175	BFR-MTA	BFR-MTH	PC-1A-S
Bulk Density(g/cm <sup>3</sup> ) 1500°Cx3hrs	≧2.00	≧2.05	≧2.25	≧2.50	≧2.50	≧2.25
Cold Crushing Strength (kg/cm <sup>2</sup> ) 1500°Cx3hrs	≧80	≧80	≧140	≧180	≧180	≧200
Chemical Composition(%) Al <sub>2</sub> O <sub>3</sub>	≧40.0	≧55.0	≧60.0	≧60.0	≧60.0	≧60.0
SiC + C	—	—	—	≧20.0	≧23.0	≧5.0
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

Sunward's castable refractories are made from alumina cement and various raw materials are mixed, then they are cast in place. Finally they are aged and dried.

Castable refractories are suitable for industrial furnaces.

The advantages of Sunward's castable refractories are :

1. Good workability.
2. Can be into any shape.
3. Good 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	1500	1400	1300
Bulk Density (g/cm <sup>3</sup> )									
1500°Cx3hrs		≧2.90	≧2.60	≧2.50	≧2.20	≧2.10	--	--	--
1400°Cx3hrs		--	--	--	--	--	≧2.05	≧2.00	--
1200°Cx3hrs		--	--	--	--	--	--	--	≧1.95
Cold Crushing Strength (kg/cm <sup>2</sup> )									
1500°Cx3hrs		≧480	≧300	≧250	≧300	≧300	--	--	--
1400°Cx3hrs		--	--	--	--	--	≧300	≧300	--
1200°Cx3hrs		--	--	--	--	--	--	--	≧120
Modulus of Repture (kg/cm <sup>2</sup> )									
1500°Cx3hrs		≧120	≧100	≧60.0	≧75.0	≧65.0	--	--	--
1400°Cx3hrs		--	--	--	--	--	≧60.0	≧50.0	--
1200°Cx3hrs		--	--	--	--	--	--	--	≧25
Chemical Composition (%)									
Al <sub>2</sub> O <sub>3</sub>		≧95	≧90	≧75	≧60	≧55	≧45	≧40	≧35
Water Required (%)		7~8	9~11	11~13	11~13	11~13	12~14	12~14	12~15
Installation Method		Casting, Trowelling							

## 低水泥可鑄性耐火材 Low Cement Castables

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 power, 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.

### Product Specification:

Properties	Brand	SNC-W45	SNC-W55	SNC-W60	SNC-W70	SNC-W80	SNC-W90	SNC-S85	SNC-S60
Bulk Density (g/cm <sup>3</sup> ) 1500 (1000)°C x 3 hrs		≧2.1	≧2.3	≧2.4	≧2.65	≧2.7	≧3.1	≧2.4	≧2.3
Cold Crushing Strength (kg/cm <sup>2</sup> ) 1450°C x 3 hrs		≧600	≧600	≧550	≧500	≧600	≧750	(≧500)	(≧500)
Modulus of Rupture (kg/cm <sup>2</sup> ) 1450°C x 3 hrs		≧100	≧100	≧80	≧80	≧120	≧200	(≧200)	(≧180)
Chemical Composition(%)									
Al <sub>2</sub> O <sub>3</sub>		≧45	≧55	≧60	≧70	≧80	≧90	--	--
CaO		≦2	≦2	≦2	≦2	≦2	≦1	--	--
Cr <sub>2</sub> O <sub>3</sub>		--	--	--	--	--	--	--	--
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
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 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	SGM-A01	SGM-A02	SGM-A03	SGM-A05	SGM-A06	SGM-A07	SGM-M12	SGM-M15	SGM-B02	SGM-S80
<b>Properties</b>										
<b>Bulk Density (g/cm<sup>3</sup>)</b>	≧0.70	≧1.30	≧1.75	≧2.00	≧2.10	≧2.15	≧2.45	≧2.20	≧2.20	≧2.20
<b>After heat treatment at °C X3 hrs</b>	1000°C	1000°C	1000°C	1400°C	1500°C	1500°C	1500°C	1500°C	1450°C in Coke	1450°C in Coke
<b>Cold Crushing Strength (kg/cm<sup>2</sup>)</b>	≧5 1000°C X3hrs	≧25 1000°C X3hrs	≧100 1000°C X3hrs	≧300 1000°C X3hrs	≧200 1500°C X3hrs	≧200 1500°C X3hrs	≧60 1500°C X3hrs	≧80 1500°C X3hrs	≧100 1450°C X3hrs in Coke	≧200 1450 °C X3hrs in Coke
<b>Chemical Composition (%)</b>										
Al <sub>2</sub> O <sub>3</sub>	≧35	≧35	≧40	≧55	≧60	≧74	—	—	≧60	—
MgO	—	—	—	—	—	—	≧87	≧83	—	≧80
SiC+ C	—	—	—	—	—	—	—	—	≧20	—
<b>Application</b>	Industrial Furnace						EAF	EAF	BF Main-Trough	Incinerator

## 濕式噴漿材 Wet-Gunning

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

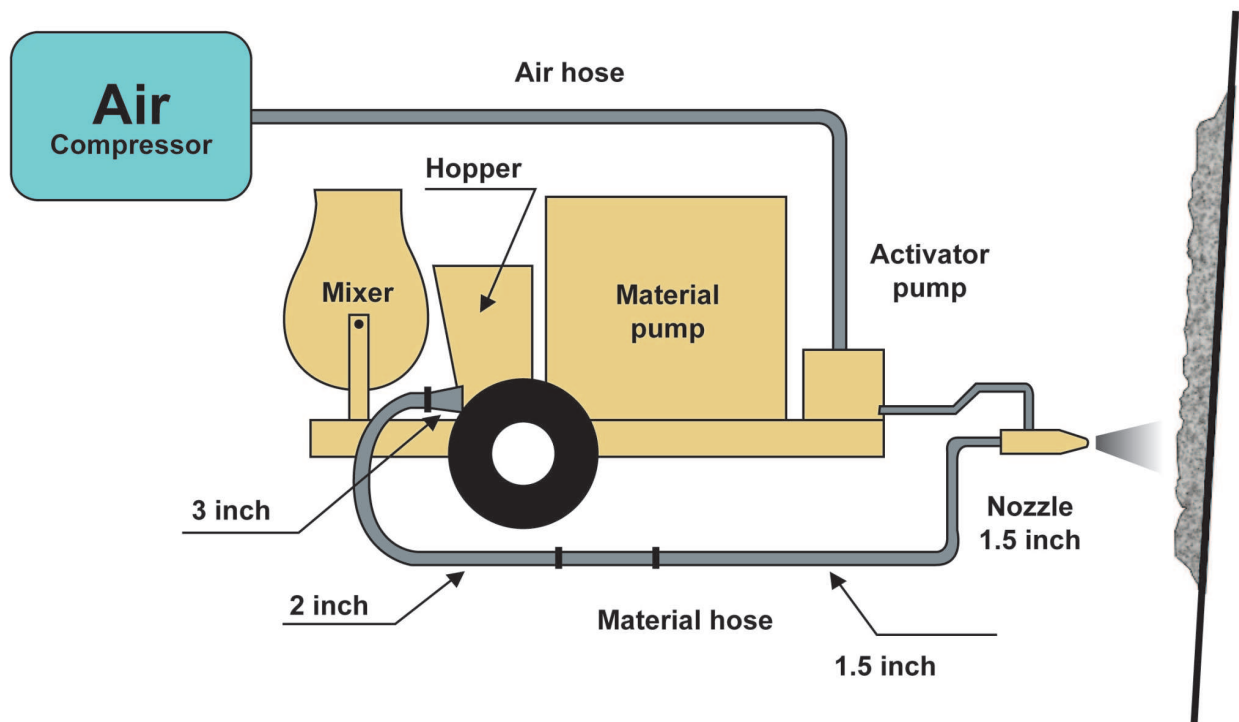
Sunward accordingly the maintains feature from various of industrial, we signed licensing agreement with Japan Krosaki Harima Corporation and develop the new technique: Wet Gunning products

### 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 production

### 2. Suitable furnace

- a. Trough of blast furnace
- b. Torpedo cars
- c. Ladle furnace
- d. Cement Kiln
- e. Incinerator



## Product Specification:

Properties \ Brand	SPNG-TMZ	SPNG-TS1	SPNG-TP70S	SPNG-TP32	SPNG-LD1
Bulk Density (g/cm <sup>3</sup> ) 1450°Cx3hrs	≧2.85	≧2.80	≧2.75	≧2.85	≧2.70
Apparent Porosity (%) 1450°Cx3hrs	≧20	≧20	≧23	≧23	≧25
Modulus of rupture (kg/cm <sup>2</sup> ) 1450°Cx3hrs	≧50	≧50	≧100	≧50	≧150
Cold Crushing Strength (kg/cm <sup>2</sup> ) 1450°Cx3hrs	≧350	≧300	≧500	≧300	≧500
Chemical Composition( % )					
Al <sub>2</sub> O <sub>3</sub>	≧65	≧52	≧64	≧72	≧80
MgO	≧5	—	—	—	≧5
SiC + C	≧10	≧30	≧12.5	≧15	—
Application	Trough metal zone	Trough slag zone	Torpedo ladle	Torpedo ladle	Steel ladle

Properties \ Brand	SPNG-45T	SPNG-60T	SPNG-14R	SPNG-SC50	SPNG-SC80
Bulk Density (g/cm <sup>3</sup> ) 1450°Cx3hrs	≧2.20	≧2.50	≧2.30	≧2.30	≧2.40
Apparent Porosity (%) 1450°Cx3hrs	≧20	≧25	≧21	≧24	≧22
Modulus of rupture (kg/cm <sup>2</sup> ) 1450°Cx3hrs	≧125	≧120	≧175	≧170	≧250
Cold Crushing Strength (kg/cm <sup>2</sup> ) 1450°Cx3hrs	≧700	≧750	≧900	≧750	≧800
Chemical Composition( % )					
Al <sub>2</sub> O <sub>3</sub>	≧45	≧75	≧55	≧22	≧5
SiC	—	—	—	≧50	≧80
Application	Incinerator / Cement-Kiln			Incinerator	