

IRON  
INDUSTRY

## Monolithic Concept Solutions

FERRO-ALLOYS



# Innovative Refractory Solutions for the Ferro-Alloys Industry



**The Ferro-Alloys Industry grew considerably over the last number of years and Calderys had the opportunity to share and incorporate our creative solutions.**

**The diversity of our products and services made Calderys the perfect partner in the industry including the:**

- Ferro-Chrome                  • Silicon-Manganese
- Ferro-Manganese              • Silicon Industry.
- Ferro-Silicon

## Efficiency & quality

Calderys is aware of the present-day demands for fast and economical installation without substituting the refractory quality.

**Several types of monolithic refractory products have been developed to meet these criteria:**

- Plastic mouldables
- Ramming
- Casting (hand packing, rodding)
- Vibration casting
- Self-flow casting
- Gunning
- Pumping
- Spraycasting (Shotcreting)
- Injection
- Trowelling

Each unique Calderys product has been carefully formulated and manufactured with advanced technology and quality assurance, controlled by ISO 9001.

Installation, dry-out and start-up operations are also critical to a long refractory service life. Detailed product information, installation procedures and material safety data sheets are supplied by Calderys.

These critical services are furnished by engineering and service personnel with years of refractory experience. The Ferro-Alloys industry can rely on the expert services of the Calderys team who develops a dependable refractory product and the solutions required to ensure a long service life with reduced costs.

# Product Application

The Calderys team is constantly improving their refractory products to meet the needs of the Ferro-Alloys Industry.

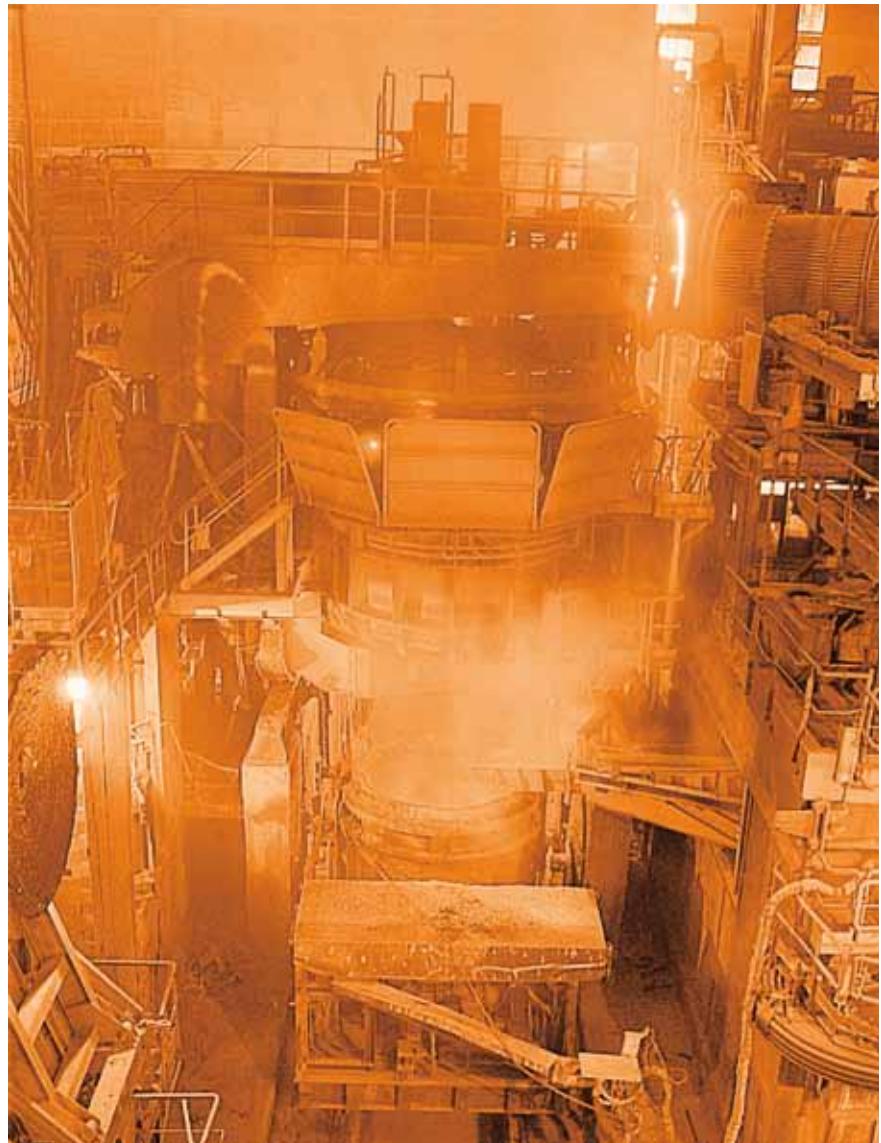
Calderys has earned an international reputation for leading refractory technology, high quality materials, and competent installation teams. This capability assures maximum service performance, reduced maintenance, and economical installation.

The Calderys product applications for the Ferro-Alloys Industry are shown on the pages indexed below.

The Ferro-Alloys Industry can depend on these refractory products to meet the Calderys guideline of "Quality leads to success".

## **Our services include:**

- Turnkey Projects
- Maintenance Contracts
- General Maintenance
- Refractory Installation
- Technical Assistance



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# The Submerged-Arc Furnace

## Carbon-Graphite lining (UCAR Freeze lining concept)

### Retaining ring

CALDE™ GUN A 54

### Hearth ramming

Q.A. RAM 001 C\*

### Floor leveling layer

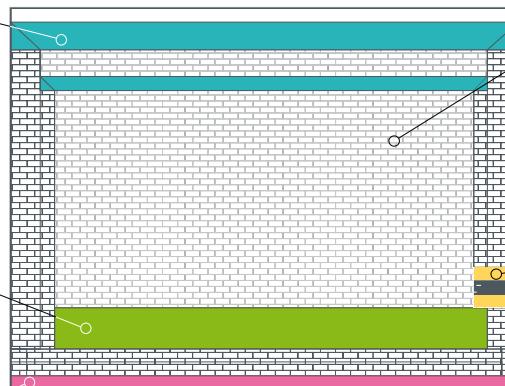
CALDE™ CAST LX 58

### Expansion ramming

Q.A EXPANSION RAM\*

### Tap block

CALDE™ CAST 40 TR



## Carbon lining concept

### Retaining ring

CALDE™ GUN A 54

### Hearth & sidewall ramming

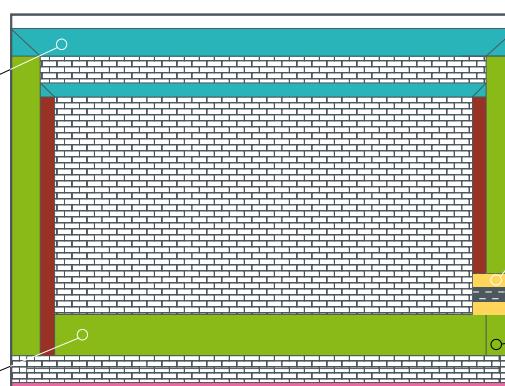
Q.A. RAM 001 C

### Tap block

CALDE™ CAST 40 TR

### Floor leveling layer

CALDE™ CAST LX 58



\* Only for the South African and Indian market. Please contact your Calderys salesman.

## The Submerged-Arc Furnace Roof

**Side skirts**

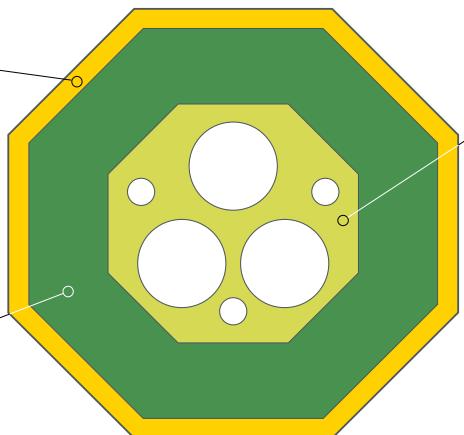
CALDE™ CAST LX 58 W2

**Horizontal roof - outer section**

CALDE™ CAST LC 80

**Horizontal roof-delta section**

CALDE™ CAST 40 TR W2



## The Roof Ducting (By-pass & Emergency Stack)

**Hot-face lining**

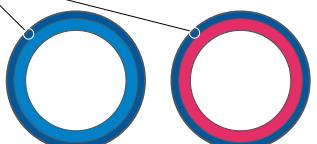
CALDE™ CAST HYMOR 2800

**Hot-face lining**

CALDE™ CAST LC 80

**Insulating lining  
(optional)**

CALDE™ CAST XL 140

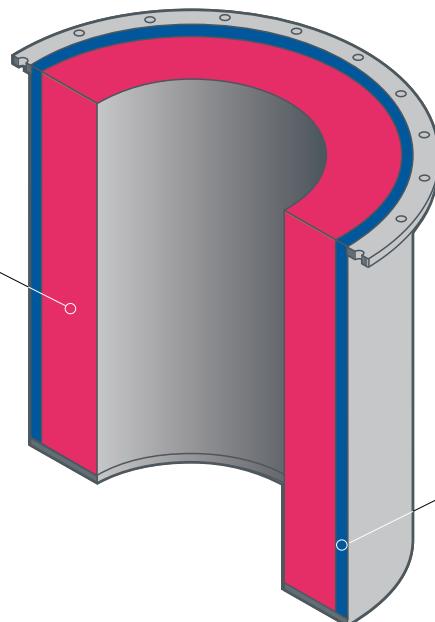


## The Feed Chutes & Feed Chute Tips

with cast linings

### Hot-face lining

CALDE™ CAST MB 80 G3



### Insulating lining

CALDE™ CAST XL 140

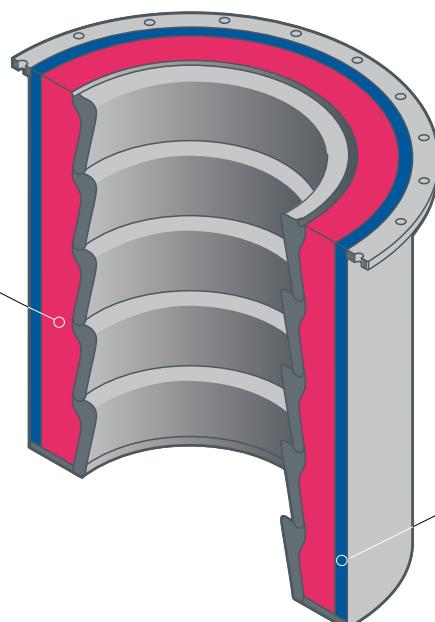
with SiC insert

### Intermediate lining

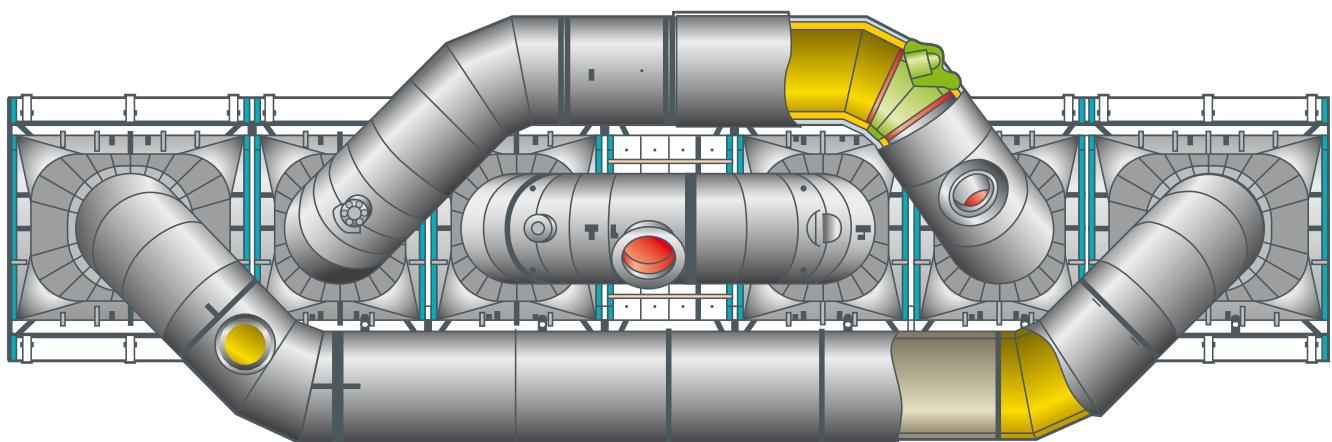
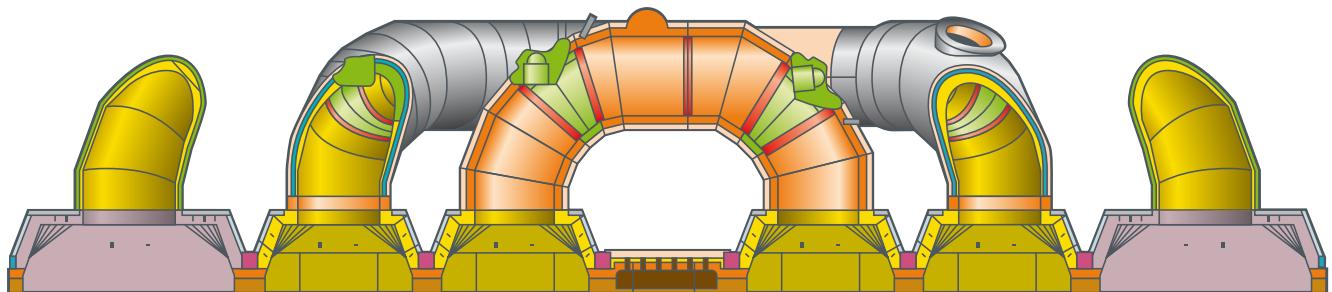
CALDE™ CAST HYMOR 2800

### Insulating lining (optional)

CALDE™ CAST XL 140



# The Sinter Plant



For Outokumpu designed sinter plants, Calderys is the preferred monolithic material supplier with complete access to the CALDE™ range.

Calderys is the leading refractory installer for the Outokumpu sinter plants in Southern Africa.

## The Sinter Plant By-pass Stack

### Hot-face lining

CALDE™ CAST MW STRONG LITE

### Hot-face lining

CALDE™ CAST LC 80

## The Furnace Tapping Launder

### Runner

CALDE™ CAST LA 64

### Runner tip

CALDE™ CAST 40 TR W2

## The Ladle

### Retaining ring

CALDE™ CAST 40 TR W2

### Hot-face lining

CALDE™ CAST LA 62

CALDE™ CAST LC 82

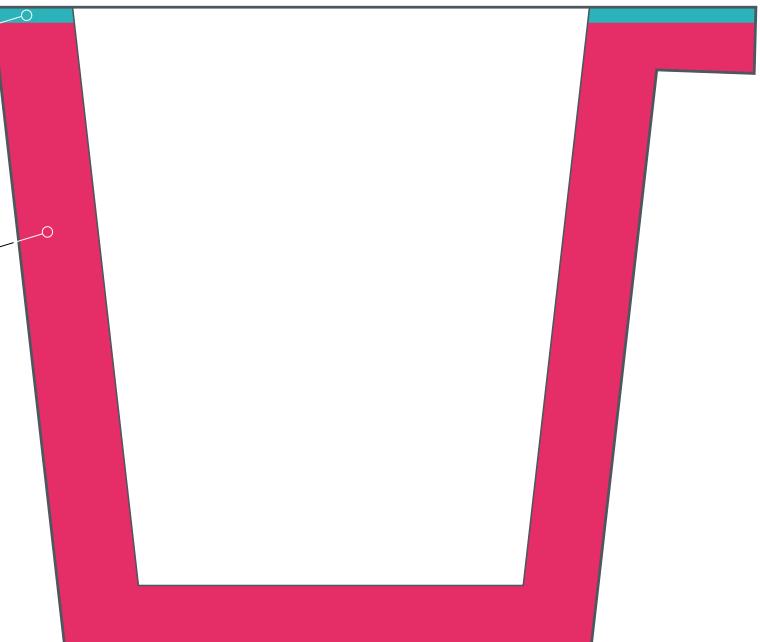
CALDE™ FLOW MC 80

### Repairs

CALDE™ GUN F 48 SC

CALDE™ GUN R 85

CALDE™ PLAST C 90 AB



## The Tap-Hole Clays

### Tap-hole clays

#### STANDARD CLAYS

CALDE™ TAP 010 FASX

CALDE™ TAP 015 FASX

#### RECONSTRUCTIVE CLAYS

CALDE™ TAP 025 FASX

CALDE™ TAP 335 CMS

# Technical Data



Product name	Main component	Max. recomm. temp. (°C)	Chemical analysis (wt %)				Material required (t/m³)	Water required (l/kg)	CCS 110°C (Mpa)
			Al₂O₃	SiO₂	Fe₂O₃	CaO			
CALDE™ CAST 40 TR	Tabular Alumina	1820	95	0.10	0.10	4.40	2.67	8 to 10	80
CALDE™ CAST HYMOR 2800	Chamotte	1480	50	43	0.80	4.20	2.33	6.40 to 7.60	120
CALDE™ CAST LA 62	Andalusite	1650	63	34	0.60	1.50	2.72	4.50 to 5.40	46
CALDE™ CAST LA 64	Andalusite	1700	63	33	0.70	1.80	2.70	5.70 to 6.20	75
CALDE™ CAST LC 80	Corundum	1750	79	17.50	0.50	1.50	2.65	6 to 6.80	70
CALDE™ CAST LC 82	Corundum	1700	80	16.50	0.20	1.40	3.03	4.20 to 5.20	79
CALDE™ CAST LX 58	Andalusite	1650	57	38	1.10	2.30	2.50	5.60 to 6	95
CALDE™ CAST MB 80 G3	Bauxite	1300	80	11	1.20	5.30	2.85	5.60 to 6.80	140
CALDE™ CAST MW STRONG LITE	Insulating Chamotte	1320	40	38	5.50	13	1.43	20 to 24	25
CALDE™ CAST XL 140	Light Weight Aggregates	1400	45	36	0.90	16	0.64	50 to 56	4

# Technical Data

Product name	Main component	Max. recomm. temp. (°C)	Chemical analysis (wt %)				Material required (t/m <sup>3</sup> )	Water required (l/kg)	CCS 110°C (Mpa)
			Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO			
CALDE™ FLOW MC 80	Corundum	1700	80	17	0.20	2.50	2.85	6 to 7.20	80
CALDE™ GUN A 54	Andalusite	1600	53	40.40	0.90	4.40	2.50	added at the nozzle	55
CALDE™ GUN F 48 SC	Chamotte	1550	51	40	1	6.50	2.20	added at the nozzle	35
CALDE™ GUN R 85	Bauxite	1700	85	8	0.70	4.20	2.60	added at the nozzle	40
CALDE™ MAG SPRAY S 70	Magnesia Olivine	1700	1.50	23	4	70 (MgO)	1.65	added at the nozzle	-
CALDE™ PLAST C 90 AB	Corundum	1750	90	8	0.70	-	2.95	-	15
CALDE™ PLAST PC 90 HP	Corundum	1800	93	3	0.20	3.10 (P <sub>2</sub> O <sub>5</sub> )	3	-	30
CALDE™ PLAST PM 72 HP	Mullite	1700	73	20	1	3.10 (P <sub>2</sub> O <sub>5</sub> )	2.70	-	15

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