

# Calcium Silicon

|                      |                             |                                      |                             |
|----------------------|-----------------------------|--------------------------------------|-----------------------------|
| 20                   | 40.078                      | 14                                   | 28.0855                     |
| <b>Ca</b>            | <sup>1</sup> S <sub>0</sub> | <b>Si</b>                            | <sup>3</sup> P <sub>0</sub> |
|                      | 1,00                        |                                      | 1,90                        |
| <b>Calcium</b>       |                             | <b>Silicon</b>                       |                             |
| 1,55                 | 6,1132                      | 2,33                                 | 8,1517                      |
| 842                  | 1484                        | 1414                                 | 2900                        |
| (m) 197              | FCC                         | (v) 111                              | cubic                       |
| [Ar] 4s <sup>2</sup> |                             | [Ne] 3s <sup>2</sup> 3p <sup>2</sup> |                             |
| +2                   |                             | +2,4,4                               |                             |

## Description

Calcium Silicon is a powerful deoxidizing and desulphurizing agent used in the production of high quality steels. Although Silicon is in itself a potent deoxidizer, Calcium is to a much greater extent. Additionally, Calcium Silicon is used to control the shape, size and distribution of oxide and sulphide inclusions to improve the fluidity, machinability, ductility and impact resistance properties of the final product.

It is produced in submerged arc electric furnaces from quartz, limestone and coal as raw materials. Calcium Silicon for cleaning steel inclusions is considered one of the most practical ways to introduce Calcium in the treatment, a stage at which the Ferro Alloy is in a liquid state.

Calcium is a powerful modifier of oxides and sulphides. It transforms alumina inclusions in complex calcium aluminate compounds thus improving the machinability of steel, increasing the life of cutting tools and decreasing the amount of energy present throughout the process, with the evident advantages that this involves.

It improves the castability of steel, with this being a very important fact in the continuous casting process by preventing the deposit of solid inclusions within the tundish nozzles, thereby preventing their obstruction.

## Properties

|                  |                      |
|------------------|----------------------|
| PHYSICAL STATE   | Solid                |
| COLOUR           | Metallic gray        |
| ODOUR            | Odourless            |
| MELTING POINT    | 900-1000°C           |
| BOILING POINT    | -                    |
| SPECIFIC GRAVITY | 2.5g/cm <sup>3</sup> |

When in contact with moisture or water, it may release hydrogen and may form flammable or explosive mixtures with air. What's more, impurities can produce arsine (identifiable by its garlic smell) and phosphine, developing toxic gases in such proportions that, under conditions of mechanical ventilation, the risk of poisoning clearly prevails over that of explosion. It occurs more abundantly in recently fragmented surfaces.

This material is classified for road transportation (ADR) as Class 4.3, Packaging Group III, UN Number: 1408, N.I.D. 462 and for maritime shipping as category A.

## Uses

- As a desulphurizing and deoxidizing agent in the manufacturing of steel products.
- Alloying agent to modify oxides and sulphides in the manufacturing of steel products.

### COMETAL, S.A.

- C/José Lázaro Galdiano 4
- 28036 Madrid (Spain)
- Tel: +34 91 4585980
- Fax: +34 91 4585987

- cometal@cometalsa.com
- www.cometalsa.com
- VAT Nr ESA28117026

