

Product Introduction: *Hi – CaSi*®

1. Introduction

Hi – CaSi® is a new product in the *Hi – Core*® family designed to be used in steel that do not have a silicon restriction. The technology allows for higher and more stable levels of calcium to be achieved with optimal and reduced consumption. Overall a reduction in consumption, fuming and splashing can be expected.

Hi – CaSi® is unique in the fact that pure calcium and pure silicon (not CaSi alloy) is encased in our unique and patented welded seam sheath.

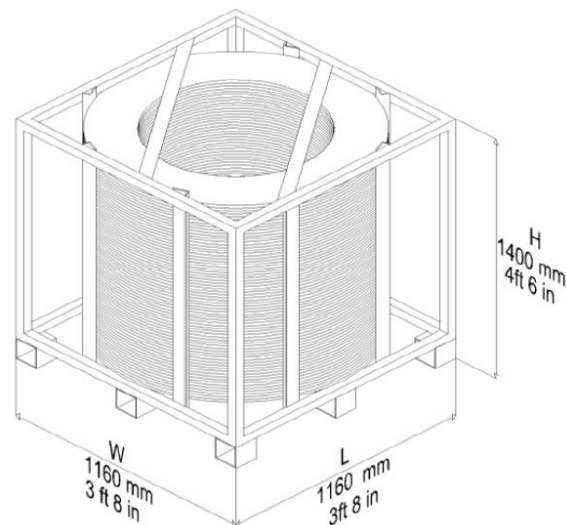
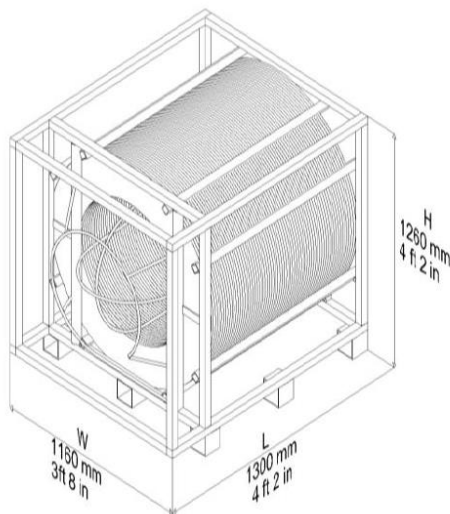
2. Technical specification

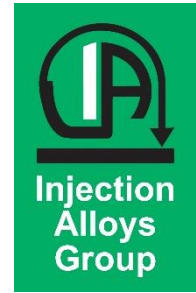
Chemical Analysis:

Calcium	28 – 30%
Silicon	68 – 72%



	Metric	Imperial
Wire diameter	13 mm	0.551 in
Powder weight	203 g/m	0.136 lb./ft.
Wire weight	538 g/m	0.362 lb./ft.
Net powder weight	771 kg	1701 lb.
Coil gross weight	2044 kg	4507 lb.





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3. Previous results

Case Study 1

The facility produces forgings produced using electric arc production process, after smelting the steel is processed using ladle furnace and vacuum degasser. Calcium is used to modify inclusions. The facility was looking for a solution to the fuming problems that the CaSi CCW wire presents, due the restrictions placed on the facility to reduce emissions. Point of control is considered during teaming.

Hi – CaSi® was introduced and optimized for the specific requirements of the facility. During trials, the speed was adjusted to obtain optimal recovery and satisfactory fuming. Optimization improved recovery by 7%. Below is a comparison of CaSi CCW vs *Hi – CaSi*® at this facility:

	CaSi CCW	<i>Hi – CaSi</i> ®
Average amount Ca injected per treatment	10.84 kg	4.26 kg
Average amount of wire injected	164.6 m	70.1 m
Average ppm Ca achieved	23 ppm	24.9 ppm
Average recovery	15.6%	45.1%
Amount of Ca per liquid ton treated	0.134 kg/ton	0.053 kg/ton

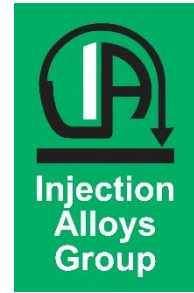
Overall fuming, injection time and injection amount was reduced and recovery was increased.

Case Study 2

The facility produces billets via the blast iron production process, after conversion the steel is processed using ladle furnace treatment station. Calcium is used for castability and inclusion modification. The facility was investigating cost savings in the production process. Point of control is at ladle furnace.

Hi – CaSi® was introduced and optimized for the specific requirements of the facility. Below is a comparison of CaSi CCW vs *Hi – CaSi*® at this facility:

	CaSi CCW	<i>Hi – CaSi</i> ®
Average amount Ca injected per treatment	9.43 kg	2.22 kg
Average amount of wire injected	133.4 m	38.3 m
Average ppm Ca achieved	13 ppm	11 ppm
Average recovery	19%	58%
Amount of Ca per liquid ton treated	0.075 kg/ton	0.018 kg/ton



Cost savings was achieved by reduced consumption, this also leads to reduced inventory and freight.

Case Study 3

The facility produces slabs and billets via the blast iron production process, after conversion the steel is processed using ladle furnace treatment station. Calcium is used for castability and inclusion modification. The facility was investigating cost savings in the production process. Point of control is at ladle furnace.

Hi – CaSi® was introduced and optimized for the specific requirements of the facility. Below is a comparison of CaSi CCW vs *Hi – CaSi*® at this facility, for this facility the results were split for high calcium (20 – 40ppm) requirement grades and low requirement (10 – 20ppm):

High Calcium grades	CaSi CCW	<i>Hi – CaSi</i>®
Average amount Ca injected per treatment	46.54 kg	12.35 kg
Average amount of wire injected	431 m	204.8 m
Average ppm Ca achieved	29 ppm	30 ppm
Average recovery	9.3%	36.9%
Amount of Ca per liquid ton treated	0.302 kg/ton	0.08 kg/ton

Low Calcium grades	CaSi CCW	<i>Hi – CaSi</i>®
Average amount Ca injected per treatment	25.31 kg	6.75 kg
Average amount of wire injected	234.4 m	111.9 m
Average ppm Ca achieved	18 ppm	18 ppm
Average recovery	10.8%	40.6%
Amount of Ca per liquid ton treated	0.164 kg/ton	0.044 kg/ton

Overall amount of material required was decreased, thus decreasing inventory required, reducing freight cost, reducing treatment time. This facility had a more stable and smaller drop of calcium ppm from ladle furnace to caster.