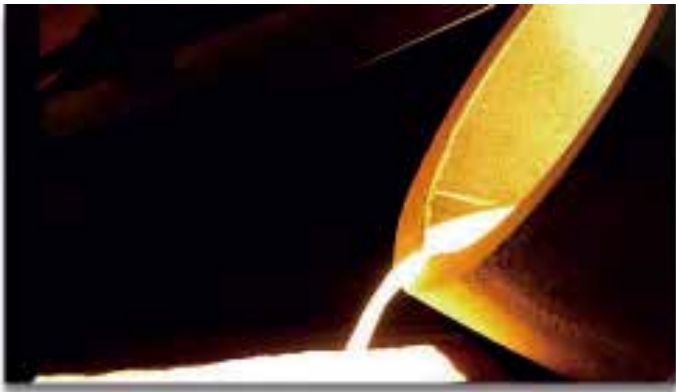


## HSCI Solid Stick Anodes (SA Series)

Jennings have been manufacturing and supplying HSCI Solid Stick anodes for over 40 years having initially manufactured all the Durichlor-51 Anodes at our plant in the UK.

Jennings Anodes has developed a full product line of High Silicon Cast Iron Solid anodes with a capacity of over 3,000 T per year from production facilities based in the UK and China.

Solid anodes are manufactured by a Chill casting method using gravity to feed the metal mold.



## Product Features

1. Compact structure: lower chemical segregation, no gas porosity, no internal shrinkage, and non-metallic inclusions.
2. Cast in taper pin or bolt connection with high quality epoxy resin encapsulation & heat shrink sleeve ensures superior cable connection at the anode head.
3. High Anode Utilization of between 60% - 70% of the anode weight results in an economic CP solution.



## 2. Impact Resistance & Improved Handling



## Applications

HSCI Anodes are used for Impressed Current cathodic Protection applications including deep well systems, shallow installations and Grounding Cells.

HSCI anodes form a protective oxide film on their outer surface when anodically polarized and damp, prolonging life expectancy. The additional of Chromium to the chemistry is recommended for more severe environments such as brackish or saltwater environments.



# Impressed Current Anodes HSCI Solid Stick Anodes



## Specifications

Anode Model	Anode Weight	Anode Body Diameter	Overall Length	Surface Area
JA - 48 - SA2S	23.00lbs (10.50kg)	Φ1.50" (38mm)	48" (1220mm)	1.61sq.ft. (0.15m <sup>2</sup> )
JA - 48 - SA3S	39.50lbs (18.00kg)	Φ2.00" (51mm)		2.15sq.ft. (0.20m <sup>2</sup> )
JA - 48 - SA4S	88.00lbs (40.00kg)	Φ3.00" (76mm)		3.23sq.ft. (0.30m <sup>2</sup> )

Anode Model	Anode Weight	Anode Diameter	Overall Length	Surface Area
JA - 60 - SA2	28.50lbs (13.00kg)	Φ1.50" (38mm)	60" (1524mm)	2.10sq.ft. (0.19 m <sup>2</sup> )
JA - 60 - SA3	48.50lbs (22.00kg)	Φ2.00" (51mm)		2.70sq.ft. (0.25 m <sup>2</sup> )
JA - 60 - SA4	108.00lbs (49.00kg)	Φ3.00" (76mm)		4.00sq.ft. (0.37 m <sup>2</sup> )

All weights and dimensions are nominal and subject to variation in material compositions and Jennings Anodes foundry tolerance.

Please kindly contact Jennings Anodes for further assistance.

## Chemical Composition

Element	ASTMA518 -99 (2012)		BS 1591 1975
	Grade 1 (Si-Fe)	Grade 3 (Si-Fe-Cr)	
Carbon	0.65~1.10%	0.70~1.10%	1.40% Max.
Manganese	1.50% Max.	1.50% Max.	0.50% Max.
Silicon	14.20~14.75%	14.20~14.75%	14.25~15.25%
Chromium	0.50% Max.	3.25~5.00%	0.50% Max.
Molybdenum	0.50% Max.	0.20% Max.	~~
Copper	0.50% Max.	0.50% Max.	~~
Sulphur	~~	~~	0.10% Max.
Phosphorus	~~	~~	0.25% Max.
Iron	Remainder	Remainder	Remainder

## Electrochemical Properties

Environment	Nominal Current Density	Consumption Rate	Note
Soil / Fresh Water	2- 5 A/m <sup>2</sup>	0.1 - 0.5 kg/ A-y	<b>Avoid:</b> Dry Soils High pH Value High Sulfate <b>Consider during design:</b> End Effect Brittle Chrome Alloy - Chloride Environment
	0.2 - 0.5 A/ft <sup>2</sup>	0.2-1.2 lbs/A-y	
Carbon Backfill	5.0 - 10 A/m <sup>2</sup>	0.05 -0.3 kg/ A-y	
	0.5 -1.0 A/ft <sup>2</sup>	0.1- 0.7 lbs/A-y	
Seawater	10 - 50 A/m <sup>2</sup>	0.3 - 0.5 kg/ A-y	
	1.0 - 5.0 A/ft <sup>2</sup>	0.7 -1.0 lbs/A-y	

## Quality Assurance & Testing

Testing	Chemical Composition	Physical Appearance
Standards & Methods	ISO 9001:2015 Quality Management System and Foundry Internal Standards of HSCI Tubular Anodes	
	ASTM E350	ASTM E186/E446, Foundry ITP
Testing Items	Chemical Analysis	Anode Surface, Finish and Appearance (Oxide Slag, Internal Shrinkage, Gas Porosity, Surface Crack, Non-metallic Inclusion etc.) Anode Size, Unit Weight Lead Wire / Cable Specification, Pulling Tension of Lead Wire / Cable connection Epoxy Resin Sealing, Connection Resistance, Drop Impact test etc.
Equipment & Devices	Optical Emission Spectrometer Labspark 750A, Thermo Scientific Niton XL2-980	Calibrated Digital Measuring Devices

## Packing

Jennings ensures that all anodes are packed to the highest standards to guarantee product integrity. Clear concise shipping marks facilitate easy identification and allocation of goods.

Anode Model	Unit of Measurement	Packing Details				
		Number of Anodes per Crate/Pallet	Crate/Pallet Dimension	Net Weight	Gross Weight	Number of Crates/Pallets per 20ft. Container
JA - 48 - SA2S	EA	90	57" x 24" x 29" (1450 x 600 x 730mm)	2083lbs (945kg)	2194lbs (995kg)	22
JA - 48 - SA3S		56	57" x 23" x 28" (1450 x 590 x 720mm)	2222lbs (1008kg)	2359lbs (1070kg)	20
JA - 48 - SA4S		25	57" x 24" x 27" (1450 x 600 x 690mm)	2205lbs (1000kg)	2348lbs (1065kg)	20

## Quality Assurance & Testing

Anode Model	Unit of Measurement	Packing Details				
		Number of Anodes per Crate/Pallet	Crate/Pallet Dimension	Net Weight	Gross Weight	Number of Crates/Pallets per 20ft. Container
JA - 60 - SA2	EA	90	69" x 24" x 29" (1760 x 600 x 730mm)	2379lbs (1170kg)	2734lbs (1240kg)	17
JA - 60 - SA3		56	69" x 23" x 28" (1760 x 590 x 720mm)	2716lbs (1232kg)	2877lbs (1305kg)	16
JA - 60 - SA4		25	69" x 24" x 27" (1760 x 600 x 690mm)	2701lbs (1225kg)	2855lbs (1295kg)	16

## Shipping Documents

1. Proforma Invoice
2. Packing List
3. Testing Reports (Chemical Composition, Electrochemical Properties Test, Certificate of Compliance Others upon request (Certificate of Origin etc.)