

INTRODUCING:



Cladinox
Stainless Steel Clad



The only choice for cost-effective +100 year life Infrastructure

CLADINOX: The only choice for cost-effective +100 year life Infrastructure



Cladinox is stainless steel clad carbon steel and is the outcome of a unique chain of advancements over a 30-year period by the same author in bimetallic fusion, culminating in what may well be the final and definitive technology in this still globally unique steel-making sector. Stainless Clad Rebar (SCR) is AASHTO specified and has been used successfully in major government infrastructure projects by US State Departments of Transportation over the last 17 years as well as in Canada and Scotland. The latest generation technology was patented in 2010 across every continent to accommodate our growing global licensee portfolio: Cladinox is the future of cost-effective +100 year life infrastructure.



“Because of the toughness of the cladding, no cracks or other form of damage on the cladding of the installed bars was visually observed. Thus, it is expected that the cladding will provide very good protection to the bars against corrosion. In contrast, damage to the epoxy coating was easily observed on many of the epoxy coated bars installed on the other spans despite their good condition before placement.”

Dr. Gerardo.G. Clemena Final Report 2003. [Click here for further studies...](#)

- ❖ Un-damageable either during its installation or service life
- ❖ Enabling high tensile core and high corrosion resistance to be combined in a single bar such as for Studs and Studding for Oil & Gas pipelines
- ❖ SS cladding thickness can be specified from 175µ min
- ❖ Can be roll threaded, welded, stored, bent and cut on site as with black bar and if required stainless steel end caps pre-filled with PU can be mechanically crimped on the ends as supplied, or on site
- ❖ Cladinox reinforcing bar welded structures can be supplied to drawings

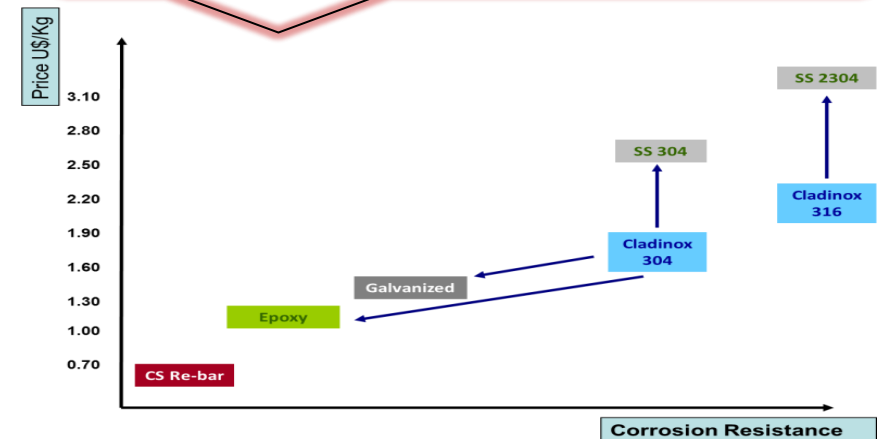
“During Construction the Contractor was very impressed with the quality of the stainless clad reinforcing bar (SCR) & its workability during construction (32 Ton supply of SCR for the Top & Bottom Mats of the Superstructure & Concrete Fascia Bridge Barriers – 2001). After 16 years there are no signs of deterioration using stainless steel clad reinforcing bar. This is no small feat in our climate with the large amount of road salt applied during our harsh winters”

P.E Provost 2008 (Assistant Director Structures Design) NYS . [Click here for further testimonials...](#)

<u>Cost comparison</u>	Black	ECR	Clad	Stainless
Expected Life (yr)	20-30	35-40	100-125	100-125
Project Bid Price (\$)	--	903,800	942,000	--
Bar Unit Cost (\$/kg) <small>in place cost . US figures updated</small>	2.98	3.45	4.72	7.48
<u>Cost of Bars:</u>				
% of Total Project	--	4.62	8.49	--
<u>Long-Term Cost of Bar:</u>				
(\$/kg-yr)	0.1103	0.0932	0.0420	0.067
Relative to Black Steel	0.0%	- 15.5%	- 62.0%	-39.3%

Virginia Department of Transport Study's Product Life Cycle cost and durability comparison shows SCR it as the most economical corrosion strategy for project life. (Bar unit cost for installed bar.)

Graph showing that Cladinox is as corrosion resistant as stainless steel with the strength/handling of carbon in price ranges of epoxy and galvanised.





WHAT IS CLADINOX?

In the simplest of terms Cladinox is a **stainless steel clad carbon core** which has been hot rolled to produce an **impeccably bonded bimetal**; this bonding is truly revolutionary and as a Middle East government official recently pointed out, “you have actually created a new material at the bond interface”.

Even partially hot-rolled Cladinox shows a **strong metallurgical bond between core and cladding**: demonstrated microscopically by the “**Kirkendall Effect**”: the atomic inter-diffusion of the carbon core into the stainless steel cladding and vice-versa across their common interface. The interface or “bond” containing both materials in its lattice structure grows during hot rolling and spans some 110 microns (0.11mm) in the finished product.

This “new material” at the interface is actually **stronger than the stainless steel** itself because of the stronger carbon steel atoms now contained. It means that Cladinox can never de-bond such as sometimes occurs with conventionally clad plate during heat treatment or during welding..

Ever.

WHERE IS CLADINOX USED?

Global demand is for longer lasting infrastructure with more and more designers specifying stainless steel and stainless steel clad reinforcing bar; veering away from inferior coated or composite bars. Many US and Canadian departments of transportation have stopped specifying epoxy coated and galvanised altogether... Cladinox is the ultimate designer steel which can empower you to combine in a single steel bar, section or plate all the properties you require for a particular project:

- Concrete reinforcing bar for infrastructure, off and onshore
- Structural tie-rods
- Grip Bars
- Energy Pylons
- Structural Sections
- Open Grate Forge Welded Grid Flooring "Non-Slip" for Oil & Gas On/Off shore
- Sheet Piling for river and sea/wharves
- Rock Bolts & Soil Nails
- Structural & Architectural Ties
- Studs & Studding for Oil & Gas Industry
- Expanding Ground Anchors

HOW IS CLADINOX MADE?

[Please click here to see Cladinox being seamlessly hot rolled by a US Steel Major...](#)

- 1) Cladinox starts off with a carbon steel billet inserted into a stainless tube which is then tightly squeezed on as part of the patented technology.
- 2) This composite billet is then heated in a conventional billet re-heating furnace during which its “End Filter” Technology removes all impurities to insure that during subsequent hot rolling, impeccable bonding will occur to form a perfectly bonded bi-metal end product.
- 3) Exposed carbon steel ends of the finished product can be sealed with a mechanically crimped on polyurethane pre-filled stainless steel end cap after cutting to length and usually prior to delivery on site. Otherwise end sealing can be undertaken on site.

Cladinox meets all your needs and more, and at costs for far less than your budgeted maintenance of inferior steels.

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Cladinox licenses its patented technology to specially selected, innovative manufacturers, who are well positioned and have the capability to supply the growing demand for Cladinox to the countries for which they are licensed.

Cladinox is proud to announce it has signed its first licensing partner, **AKS Group** who will produce Cladinox and supply it for the Middle East, India, Indonesia and Malaysia.



At the forefront of Indian steelmaking, AKS Group is a dynamic, cutting-edge and technologies-driven group unparalleled in the industry by its commitment to “Best in Class” award winning standards. Chennai-based, this renowned group of steel companies is proud to introduce Cladinox.

- Consistent winner of the prestigious “*Dhatu Nayak Award*”. No other company has ever won this three years consecutively.

- Awarded the “Ispat Ratan Award” two years running for excellence in the quality of steel product manufactured.

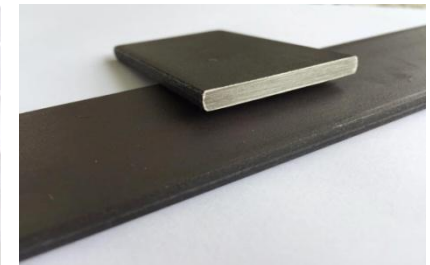
- AKS Group has installed a 100,000 ton state-of-the-art Cladinox production plant and steel mill in Chennai to supply stainless-clad rebar to infrastructure projects in the Middle East, the Indian subcontinent, Malaysia, Indonesia and elsewhere.

- In addition to supplying stainless-clad reinforcing bars, AKS will also supply stainless-clad structural sections for bridge fabricating; avoiding the need for painting, galvanising and other protective measures for the lifetime of the structure, becoming a leader in the corrosion resistant structural market.

AKS UPDATES:

- AKS Group successfully launched Cladinox at the IQPC Middle East Forum for Roads and Bridges in April, Dubai.

- Successful trials completed at Midlands Steel Major ahead of 100,000 ton production in Chennai.





www.cladinox.com

ORDER A QUOTE FROM CLADINOX: We will be in full production at 100,000 tons/year from Autumn. Please order now for a quote.

LICENSE CLADINOX: Cladinox technology is the only technology like it globally. We are on our way to completing our global licensee portfolio, but are actively looking for licensees to cover Asia, South America and Europe. Contact Nino for next steps.

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