



Welding
Alloys
Group



ACTING GLOBAL
WELDING LOCAL

WA Corresist
Innovative solutions for
cladding upper segment rolls

WA Corresist

Corresist wire is the latest in a long line of flux-cored wire cladding products from Welding Alloys which offers outstanding performance for use in continuous casting. This particular product is designed for overcoming the aggressive corrosion & wear associated with the rolls located in upper segments of continuous casting machines.

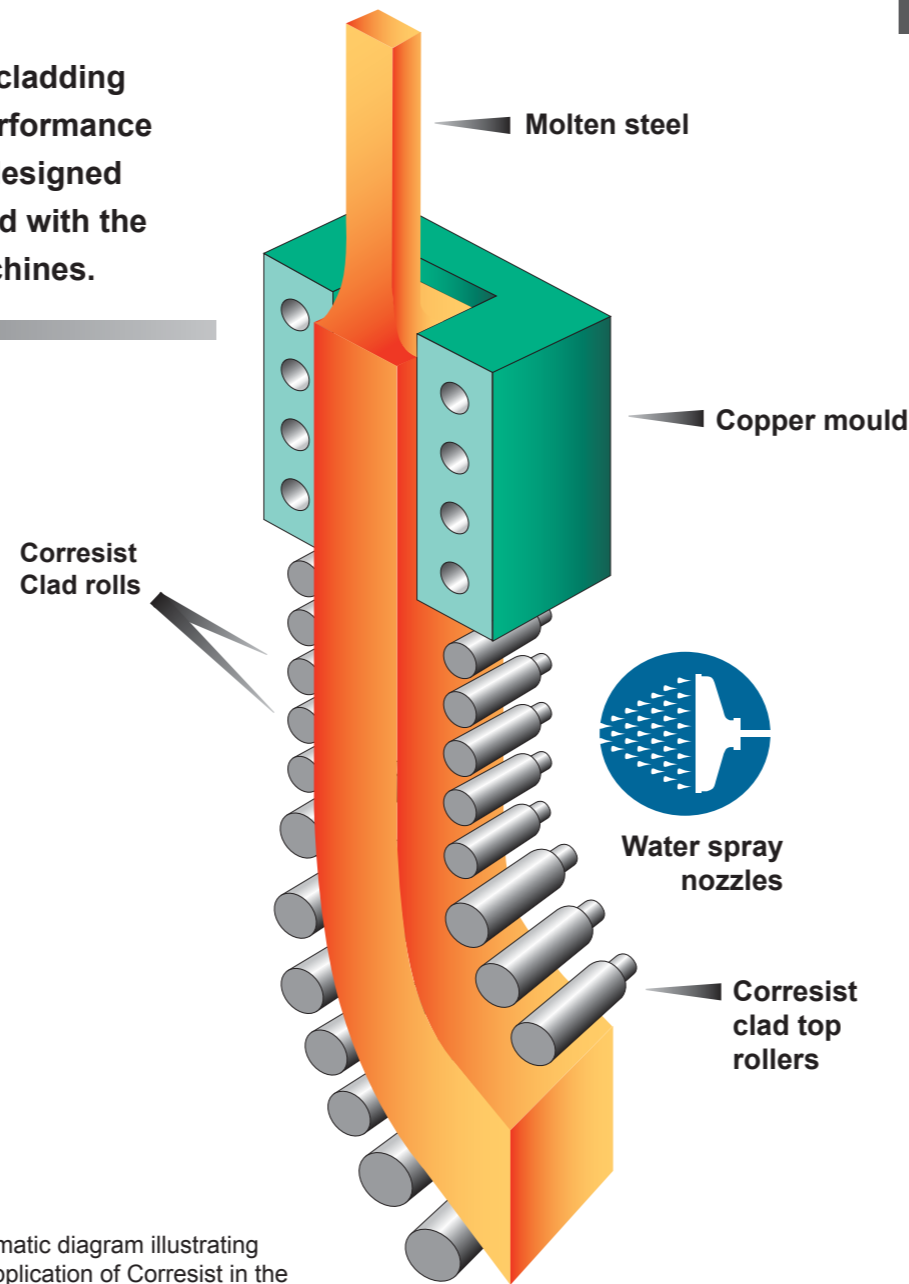
Why develop WA Corresist?

The upper segment rolls support the partially solidified slab/billet (10-22mm skin thickness), with a surface temperature of around 1000°C in order to overcome the bulging of the slab due to ferrostatic pressure of the liquid. The upper segment rolls are spaced with small roller pitch.

These rolls are subjected to extreme temperatures as a result of direct contact with the slab/billet and radiation. Subsequent air and water cooling of the rollers generates the surface stresses and thermal cracking. In addition, the slab skin is covered by a mould flux which typically contains inorganic fluorides (i.e CaF₂). The reactions between cooling water and mould flux by-products generate a very acidic and corrosive environment with an acidity of 3-4pH and forming products HCl, CO₂, H⁺ and HF. This corrosive and abrasive environment resulting in severe surface deterioration on the rolls.

As a result of this scenario WA Corresist has been developed and performs exceptionally well in this highly corrosive environment.

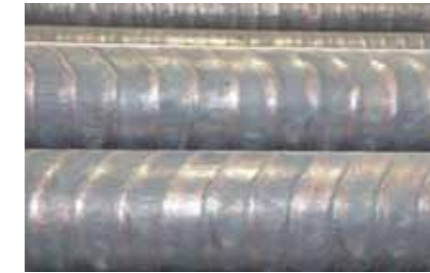
Schematic diagram illustrating the application of Corresist in the Continuous Casting Process.



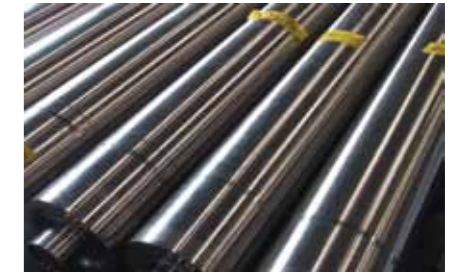
WA Corresist Wires

Corresist is the result of continued research & development at Welding Alloys. The new wire is an iron-based super alloy and offers outstanding results through performing exceptionally well in high temperatures where corrosion and wear take place.

Extensive experience with Continuous Casting rolls clad with Corresist wire on foot rolls and upper bender segments of Continuous Casting machines have taken place in Steel plants across the world.



Corresist clad rolls prior to machining and finishing



Machined Continuous casting rolls clad with Corresist wire

Corresist's unparalleled performance results in the longer operating life of the rolls, reduced offline maintenance and lower operating costs for continuous casting production lines.

Corresist wire features:

- Iron based super-alloy
- Excellent oxidation and corrosion resistance
- Microstructurally stable at high temperatures
- Service life comparable to Nickel based alloys
- Available in the following diameters 1.6, 2.0, 2.4 and 3.2mm
- WAF325 and WAF415 flux is recommended
- Open arc / submerged arc and gas shielded wire versions are available

Corresist clad roll benefits:

- Reduced maintenance costs
- Improved caster utilisation & productivity
- Reduction in off-line maintenance and roll swap outs
- Improved slab / billet quality
- A reduced number of breakouts



Corresist Submerged arc welding

Customer Case Studies

Corresist proves its worth again

A steel factory located on the North American continent had its foot rolls clad with Corresist wire for performance trials in its slab cast continuous casting line to overcome extreme corrosion conditions.

The mould segment had to be changed after just 400 heats due to wear on 17-4 type stainless steel material at which time the Corresist foot rolls were surveyed and showed no sign of significant wear. The rolls clad with Corresist have been in-service now for more than 1,400 heats.



Achieved more than 3 times the life compared to 17-4 SS rolls.

Asia/Pacific steelworks benefits from outstanding roll performance

A leading steel manufacturer has been using rolls clad with Corresist in their upper Segments 1-5 for a number of years. Exceptionally long life has been achieved due to the outstanding performance of Corresist. The picture (left) shows a typical roll surface in Segment 4 after 17,395 heats (4.6 million tonnes of steel). Rolls are found to have little or no wear and are put in service for further use.



Life comparable to nickel base alloy.

Corresist consistently performs in Europe

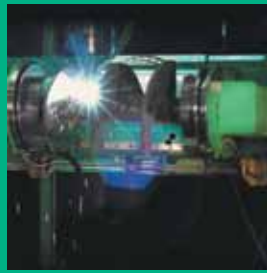
Extensive trials at an Eastern-European steel plant have proved that Corresist clad foot rolls and upper segment rolls have performed consistently well in their slab cast continuous casting line.

The picture (left) shows the foot rolls during an interim inspection after 550 heats. The top roll is clad with Corresist versus the bottom clad with martensitic steel. The trials with Corresist clad foot rolls were comparable with those obtained with Nickel-based alloys.

A perfectly controlled technology



WA Cored Wires™
Design and manufacture
of all types of cored
welding wires



WA MultiSurfacer™
Design and manufacture
of automated welding
equipment for hardfacing
and rebuilding applications



WA Integra™ Services
Innovative hardfacing
and rebuilding solutions
by welding

A worldwide presence

**United Kingdom
(Head office)**
Welding Alloys Ltd

Argentina
Welding Alloys Argentina S.A.

Australia (Trading Partner)
Specialised Welding Products Pty Ltd

Brazil
Welding Alloys Brasil Ltda

China
Welding Alloys China Ltd

Egypt
Welding Alloys Egypt

Finland
Welding Alloys Finland Oy

France
Welding Alloys France SAS

Germany
Welding Alloys
Deutschland GmbH

Greece
Welding Alloys Hellas EPE

India
Welding Alloys
South Asia Pvt Ltd

Iran
Aliaj Joosh Iran

Italy
Welding Alloys Italiana s.r.l.

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Welding Alloys Japan

Malaysia
Welding Alloys (Far East) Sdn. Bhd.

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Welding Alloys Maroc Sàrl

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Welding Alloys Korea Ltd

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Welding Alloys España

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Welding Alloys Sweden

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Welding Alloys Taiwan Co.

Thailand
Welding Alloys (Thailand) Co. Ltd

Turkey
Welding Alloys Limited Şirketi

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Welding Alloys Ukraine

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