Union Electric Åkers
Forged and Cast Rolls

Category:
FORGED ROLL

Application:
HOT MILL
WORK ROLL

5CR80MO

Forged Hardened Steel Hot Non-ferrous Mill Work Roll

Union Electric Åkers has revolutionized the hot rolling of nonferrous products by the development of our hot working die steel roll - 5CR80MO. Developed to provide a unique combination of superior high temperature thermal fatigue and wear properties, this alloy will provide an improvement to your overall roll performance and mill throughput. Our 5CR80MO roll has become the proven and established “roll of choice” for the majority of the world’s largest hot rolled non-ferrous producers.

The Union Electric Åkers Difference

High thermal fatigue strength, excellent resistance to cracking at elevated rolling temperatures and high hot hardness are achieved through our unique combination of chemistry and proprietary Union Electric Åkers heat treatment. The result is a roll that can withstand the extreme thermo-mechanical conditions encountered in hot rolling of non-ferrous products and provides superior surface finish properties throughout its extended mill campaign.

Features and Benefits

- **Enhanced thermal properties** provide greater resistance to firecracking which lead to a decrease in grinding stock removals
- **Higher hardness provides increased wear resistance** properties over traditional 3% and 5% Chrome grades resulting in improved surface retention (Ra)
- **Increased roll shop efficiencies** due to decreased grinding stock removals
- **Increased campaign lengths** over traditional 3% and 5% Chrome grades

Mill Applications

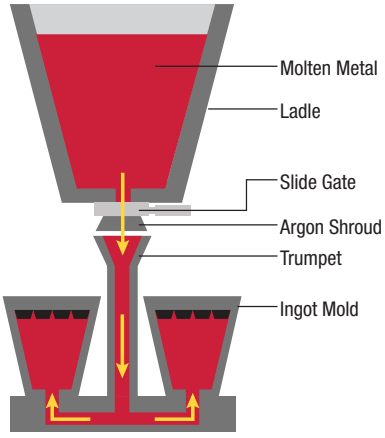
Non-ferrous hot rolling applications

- Roughing Mills
- Finishing Tandem Mills

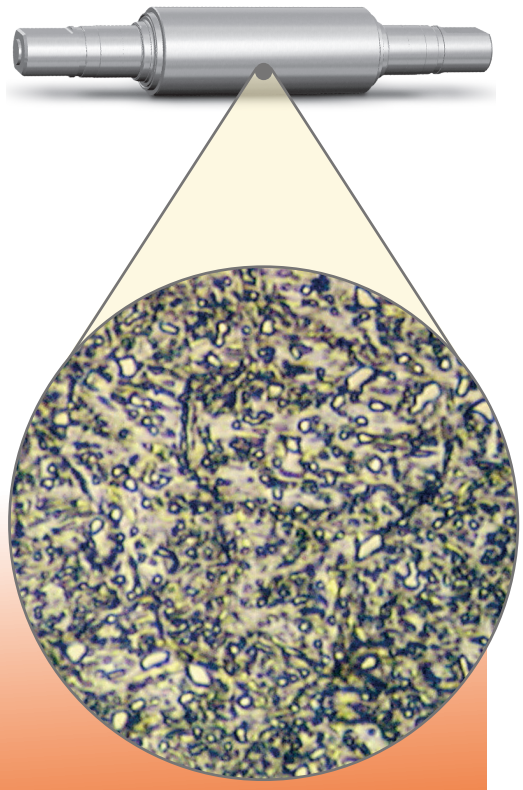
Manufacturing Method

Manufactured using the following sequence:

- Electric arc furnace melting
- Vacuum degassing
- Argon stirring
- Ingot bottom pouring



5CR80MO Specifications



Aim Chemistry (Wt%)

C	Mn	P	S	Si	Cr	Mo	V
0.65	0.27	.015 max	.012 max	0.37	5.12	0.8	0.06

Microstructure

The microstructure consists of a uniform dispersion of alloy carbides in a fine grain tempered martensitic matrix that manifests enhanced wear resistance.

Typical Carbide Analysis

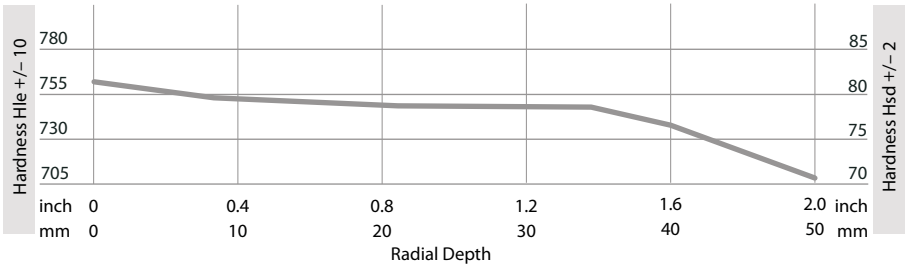
Carbide Type	Carbide Hardness (HV)	Surface Area (%)	Average Diameter	Carbide Density (Carbide/mm^2)
M_7C_3	1200-1600	8-9	0.7	2.5 X10^5

The high hardness M_7C_3 alloyed carbides and the enhanced martensitic microstructure provide improved high temperature fatigue strength and wear resistance resulting in greater mill throughput.

Mechanical/Physical Properties

Tensile Strength (Roll Neck)	825 MPa
Yield Strength (Roll Neck)	500 MPa
Modulus of Elasticity	200,000 MPa
Thermal Conductivity	38 (50°C), 42 (400°C) W/M °C
Coefficient Thermal Expansion	12.6 x 10-6/°C
Specific Heat	485 (50°C), 500 (400°C) J/KG °C

Typical Depth of Hardness



We engineer every product to meet your specific needs. Working closely with you, our highly trained sales team and technical support staff assess your rolling operations and recommend the most appropriate product for your application.

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™

Union Electric Åkers is the recognized global leader in roll technology for the most stringent mill requirements, superior product performance and world-class customer service.

For more information, please visit www.uniones.com.