

Product Data Sheet

Thickness Readable, Hard Austenitic Thermally Stable Steel Alloy (Vecalloy Readable)

Wire Products: Metco 8294

Patent pending
Previously sold as Vecalloy Readable

Product Overview

When applied as a coating using electric arc wire spray, Metco™ 8294 is the only iron-based material that is readable in the as-sprayed condition and after exposure to high temperatures. 'Readability' indicates that the thickness of the coating can be read accurately using a standard electromagnetic thickness gauge.

In addition to the inherent 'readability', Metco 8294 coatings form a hard wear-resistant layer. The high wear resistance coupled with the coating remaining 'readable' after exposure to high temperatures make Metco 8294 a perfect candidate for power generation applications such as the coating of boiler tubes.

Typical Applications

Metco 8294 is suggested for use in coating applications where high temperature erosion and corrosion resistance is required.

Specific applications include:

- Power generation boiler tubes
- Waste-to-Energy boiler tubes

The Benefit of Metco 8294

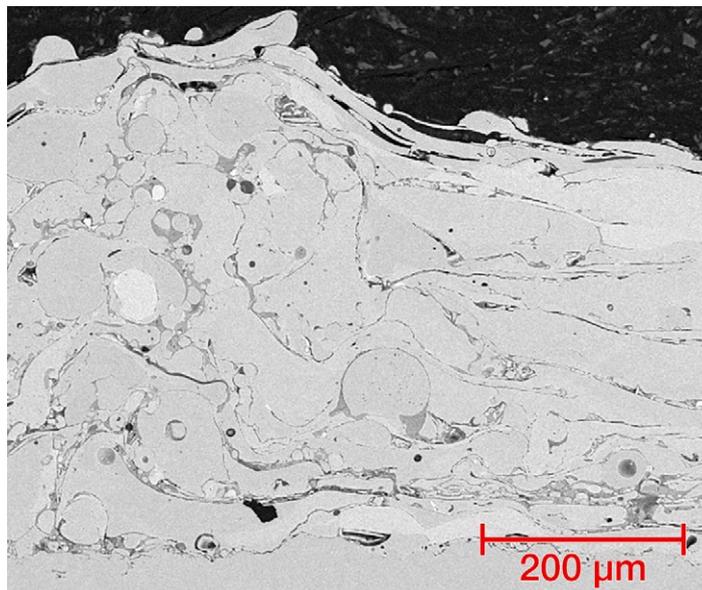
Metco 8294 enables thermal spray applicators to avoid a difficult choice—use a non-readable coating and live with the uncertainty of the product they deliver to the customer, or struggle with low productivity and deposition rates of readable coatings produced via HVOF or atmospheric plasma spray processes.

Metco 8294 is the only thermal spray alloy that combines the cost-effectiveness of iron-based alloys, the high productivity process benefit of electric arc wire spray, and the application consistency provided by readability. Electric arc wire spray is

Performance Data

Readability	<ul style="list-style-type: none"> ✓ As-Sprayed ✓ After 500 °C (930 °F) exposure ✓ After 800 °C (1475 °F) exposure
Bond Strength	≥ 62 MPa (9000 psi)
Deposit Efficiency	> 70 %
Hot Erosion (ASTM G76)	80 mg loss ^a
Vickers Hardness	≈ 500 HV300
Rockwell Hardness	≈ 50 HRC (converted)

^a up to 2 times better than equivalent non-readable coatings



Typical as-sprayed coating microstructure of Metco 8294.

simply the most effective and fastest method to deliver a consistent coating over a large area. Minimizing customer downtime is important, and Metco 8294 is an important step in providing measurable, high-quality coatings quickly and consistently.

When using Metco 8294, calibrate the thickness gauge once and read:

- As-sprayed coatings
- Coatings exposed up to 800 °C (1475 °F)
- Coatings of varied thickness

The Importance of 'Readability'

Readable coatings ensure that the proper coating thickness is achieved consistently over large areas.

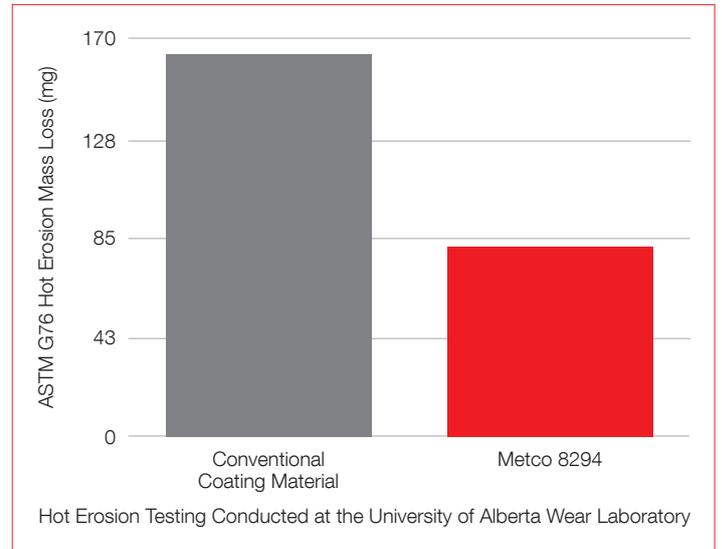
Non-readable coatings are inevitably sprayed thicker in some areas and thinner in other areas, resulting in a deficient coating system for the end user and additional cost and time for the applicator to apply the coating. A readable coating enables the applicator to better control material usage, reduce application time and improve quality control.

Ongoing maintenance and understanding of the performance in the boiler is enhanced with readable coatings. High wear areas are easily identified and repaired while low wear areas are left alone. Readable coatings enable the applicator to act as a trusted advisor to his customer.

In boiler applications, readable coatings save time and money while enhancing performance and maintenance.

Comparison of Metco 8294 to Conventional Coating Materials

Conventional electric arc wire spray coatings used for boiler applications are not thickness readable. In addition, Metco 8294 has better coating adhesion and erosion resistance. Also note that the as-sprayed hardness of conventional alloys is not maintained after prolonged exposure to the high temperature of the boiler.



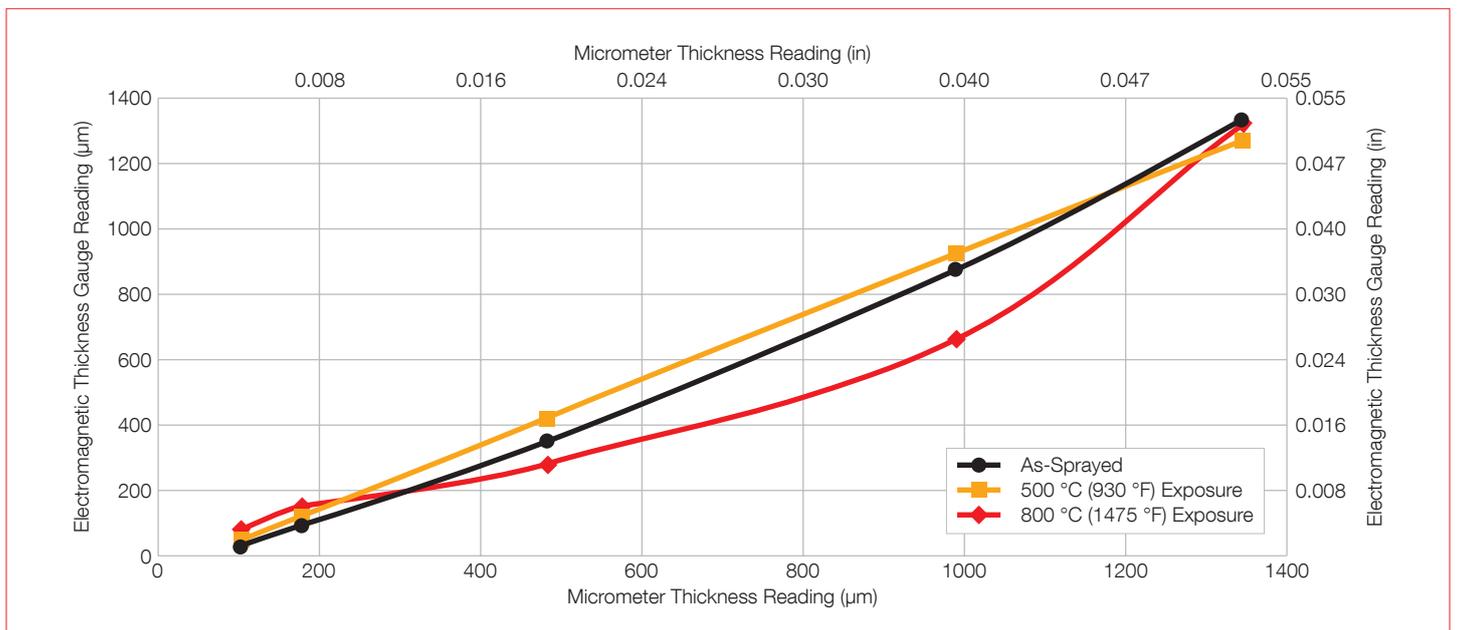
Determining 'Readability'

Metco 8294 has been verified as 'readable' in the as-sprayed and heat treated conditions. It is always recommended that the thickness gauge be calibrated to read Metco 8294 coatings.

of 0 to 1500 µm (0 to 0.060 in). The upper thickness limit is the typical thickness limitation of the electromagnetic thickness gauge.

Once properly calibrated, Metco 8294 coatings can be read in the as-sprayed condition and after high-temperature exposure up to 800 °C (1475 °F) over the entire thickness range

The graph below shows how the thickness of Metco 8294 coatings as measured using an electromagnetic thickness gauge matches the thickness measured using a micrometer.



Using Metco 8294

Metco 8294 is currently available in 1/16 in (1.6 mm) cored wire. It can be used with most electric arc spray systems that can use that wire diameter and type. Partial starting point parameters are provided here.

Coating thickness per pass	0.05 to 0.08 mm (0.002 to 0.003 in)
Spray rate per 100 amps	76 g/min (10 lb/h)
Coverage	0.96 kg/m ² /0.1 mm (0.05 lb/ft ² /0.001 in)
Microhardness (average)	500 HV300
Expected adhesion	> 40 MPa (6000 psi)

Ordering Information

To order, please contact your Oerlikon Metco sales representative or sales office.

Product	Order No.	Form	Size	Package Size	Availability
Metco 8294	1300506	Wire	1/16 in (1.6 mm)	25 lb (11 kg) spool	Global

Advanced Technology Solutions and Services

Perfect solutions through optimum materials and innovative technologies

Oerlikon Metco is a global leader in surface engineering solutions and services offering:

- A broad range of thermal spray, laser cladding and other advanced surface technology equipment
- Integrated systems and materials
- Specialized coating and surface enhancement services
- Manufactured components for the turbine, automotive and other industries
- Customer support services

Oerlikon Metco provides a comprehensive manufacturing, distribution and service network, catering to aviation, power generation, automotive and other strategic growth industries.

To take control of your surface engineering challenges, contact your Oerlikon Metco sales office, visit our web site at www.oerlikon.com/metco or e-mail us at info.metco@oerlikon.com.

The Oerlikon Metco Difference:

Metco 8294 was developed using our patented and proprietary **Scoperta™** high throughput computational metallurgical process to evaluate millions of candidate alloy compositions. Potential candidates are then experimentally evaluated using an advanced screening process where both properties and alloy microstructure are measured.

The combined **Scoperta** computational and experimental approach allows Oerlikon Metco to rapidly design the final material with a much better accuracy than conventional empirically-based methodologies.