

ENDURALLOY™ TUBING

FREQUENTLY ASKED QUESTIONS

What is EndurAlloy? How does it work?

EndurAlloy is a thermo-chemical process often referred to as diffusion alloying, pack cementation or chemical vapour deposition (CVD) where boron is diffused into the metal surface.

The surface is alloyed to contain boron, one of the hardest natural occurring elements on Earth.



How can EndurAlloy be both very hard and highly resistant to corrosion?

Once diffusion alloyed, the new EndurAlloy surface is now an alloy that is extremely hard and dense. This alloyed surface is very resistant to corrosive gases and fluids.

We have various test documents to support the corrosion resistance of our product.

Can EndurAlloy Tubing also be processed on the external surface?

Special order EndurAlloy Tubing can be processed on the external surface for corrosion protection or for use as blast joints.

However, due to the EndurAlloy surface, externally processed tubing has special handling requirements. We have the necessary handling procedures available to run this product.



How does EndurAlloy Tubing save on down time and money?

Typically, EndurAlloy Tubing lasts three to ten times longer than regular tubing depending on various well conditions.

The savings by avoiding your first service rig job and associated down time will provide an ROI many times over the cost of the EndurAlloy tubing itself.

ENDURANCE
TECHNOLOGIES INC.™

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Is EndurAlloy a coating?

No, EndurAlloy is a diffusion alloying process (boronizing), not a coating. EndurAlloy deposits boron molecules directly into the substrate of the steel.

Coatings and liners have an interface with the host material, which means they can separate. EndurAlloy cannot separate.



Can EndurAlloy be applied to other products?

The EndurAlloy process can be applied to a wide range of equipment used in the oil and gas industry, including; Pup joints, Casing, Sucker rod couplings, ESP stages, centrifugal pumps (cases, impellers, stuffing boxes), frac nipples, chokes, valves, fittings, and many other items where erosion or corrosion are a problem.

What materials can be processed?

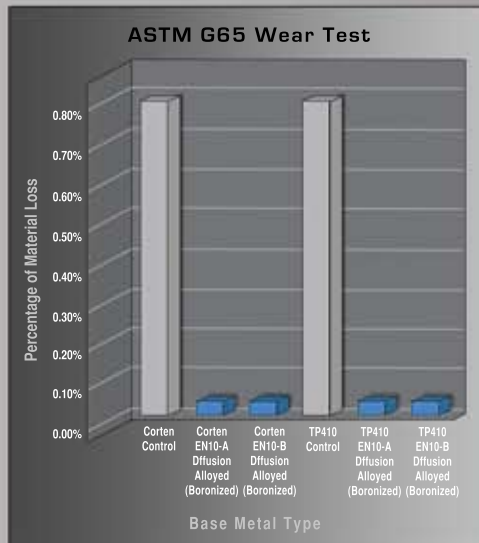
All carbon steels, 410 stainless steel, ni-resist, 174ph, cast steel and forged steel.

We have other processes that can be used on other materials. Please contact our office with your specific requirements.

Can the EndurAlloy surface be machined?

No, the new surface is so hard that it cannot be accurately or efficiently machined.

ASTM G65 Wear Test



The ASTM G65 Wear Test allows comparison of wear resistant materials by their volume loss in cubic millimeters.

Materials of higher wear resistance, such as metals treated with the EndurAlloy process, have much lower material loss than untreated metals or the control substances.

What are the turnaround times for EndurAlloy products?

Endurance Technologies carries an inventory of EndurAlloy Tubing at its' Calgary location ready for immediate shipment to our distributors. Processing other parts generally takes 2-4 weeks, depending on Endurance's production schedule, though rush jobs can be completed more quickly.

Are there any special handling requirements for installing EndurAlloy Tubing?

EndurAlloy tubing, processed on the inside surface only, can be installed with exactly the same equipment as regular tubing.

Does EndurAlloy Tubing maintain the mechanical properties of J55 Tubing?

Tensile and yield properties of J55 tubing remain within API specs.

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