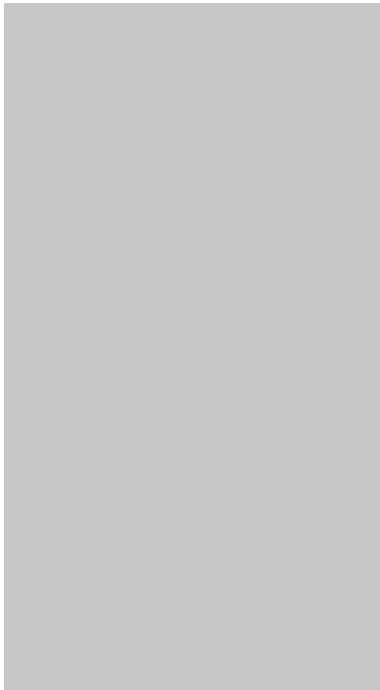




# EndurAlon™ (Alonizing™)

Corrosion Resistant Solutions

## About Enduralon™ (Alonizing™)



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Endurance Technologies EndurAlon™ (Alonizing™) diffusion-alloying process significantly improves steels resistance to corrosion caused by:

- Sulphidation
- Metal dusting
- Carburization
- Hydrogen permeation
- High temperature scaling
- Oxidation

The process can be applied to all types of steel including:

- Plain carbon steel
- Low alloy steel
- High alloy steel
- Austenitic stainless steel
- Ferritic stainless steel

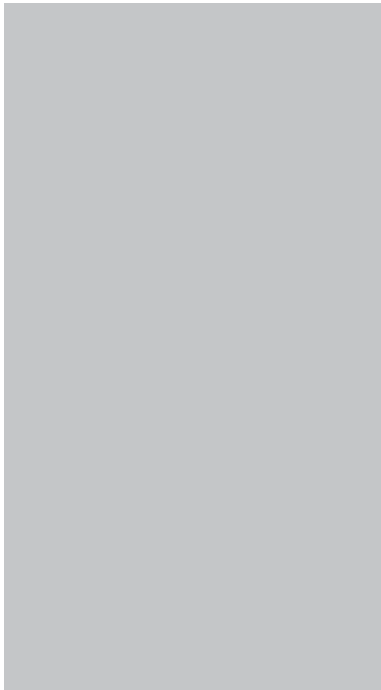
## EndurAlon™ (Alonizing™) Process

The EndurAlon™ (Alonizing™) Process is a thermo chemical CVD (Chemical Vapour Deposition) process wherein dry chemical powders, activators, alumina and aluminum powders, in an homogenous condition are added to a retort containing the substrate material to be EndurAlized™.

The retort is placed in a furnace which is subsequently raised to activation temperature. The retort and substrate material is maintained at activation temperature for a pre-determined residence time. This allows the aluminum to vapourize and diffuse into the substrate material to provide a change in substrate material chemistry for an engineered corrosion resistant, uniform case depth. The substrate material depending on it's chemistry will be tempered, cooled and removed from the furnace. It should be noted that the EndurAlon™ process is extremely labour intensive.

### Sales and Contact Information

71- 4511 Glenmore Trail SE  
Calgary, Alberta, Canada T2C 2R9  
Phone: 403-720-3633  
Toll Free: 877-806-3910 (North America)  
Email: [info@endurancetechnologies.com](mailto:info@endurancetechnologies.com)  
[www.endurancetechnologies.com](http://www.endurancetechnologies.com)



## EndurAlon™ (Alonizing™) Process continued

After the substrate material is removed from the furnace and allowed to cool it is subsequently removed from the retort, straightened and trimmed and if required other secondary operations such as bevelling are performed. Process quality is monitored by test coupons cut from the same grade material. The test coupons are located in retorts and are EndurAlized™ with the substrate material. The test coupons are sectioned and sent to both Endurance Technologies lab and a third party lab for verification. Case depth of the alloyed surface and the mechanical specifications of the substrate material are verified. Other tests such as aluminum content of the case depth can be performed at the request of the customer.

With the addition of the EndurAlon™ (Alonizing™) process to our portfolio we have progressed into the oil refining, petro-chemical and synthetic gas processing industries. EndurAlon™ (Alonizing™) technology (while using identical basic principles) is a great improvement over the original alonizing process that has been used for over 40 years. When considering exotic materials for use in boilers, heat exchangers, sulphur recovery units, sulphuric acid plants, fertilizer plants etc., look to EndurAlon™ (Alonizing™) for a highly regarded, cost effective, high performance alternative.



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[www.endurancetechnologies.com](http://www.endurancetechnologies.com)