Postalloy® DuraHard™ Crack-Free Hardfacing Alloys

Prevent failure and promote endurance and durability.

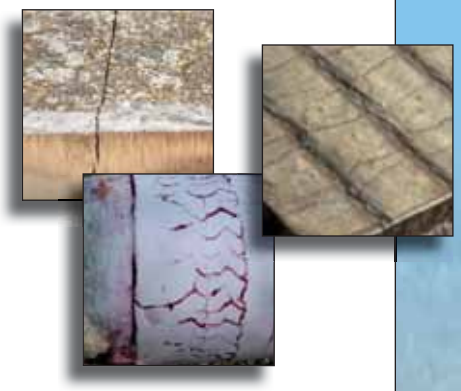
by Postle

Postalloy® HARDFACE TECHNOLOGIES®

www.hardfacetechnologies.com

Crack-Free Hardfacing Alloys

- **PREVENT FAILURE**
- **PROLONG THE LIFE OF WEAR-PRONE PARTS**
- **REDUCE REAPPLICATION COSTS**



Chromium Carbide Hardfacing with stress relief cracks

When hardfacing, check-cracks throughout the weld deposit are a distinctive characteristic of using chromium carbide hardface overlays. The cause of these check-cracks is well known. A hardfacing weld deposit that check-cracks contains a metallurgy of chromium carbides.

Immediately after welding, as the hardfacing weld deposit cools and contracts, with no ductility, check-cracks form along the chromium carbide grain boundaries. This is normal for chromium carbide alloys. In fact, if they did not check-crack, the weld deposit would most likely spall off.

Tire Shredding Knife

However, there are applications when check-cracks in the hardfacing weld layer are detrimental and should not be tolerated.

- Applications when a crack in the hardface layer might continue into the base material.
- Applications that require multiple layers or repeated reapplications.
- Applications where the abrasive material, such as soil, metal ores, or other foreign matter might get caught in the check-cracks.

Postalloy® DuraHard™ Crack-Free Hardfacing

If check-cracking in the hardface must be avoided, **DuraHard™ Crack-Free Hardfacing Alloys** from Postle Industries are an obvious choice. They have been developed with various chemistries to meet different hardfacing and wear-resistant requirements. **Postle's crack-free carbide hardfacing alloys generally exhibit the same or better abrasion resistance compared to chromium carbide hardfacing products, and with better toughness and impact resistance.**

Perfect Compatibility

The metallurgy of these crack-free alloys contain Niobium, Vanadium, Molybdenum, Tungsten or Titanium, together with a balanced level of carbon, encapsulated in a martensitic tool steel microstructure so the **weld metal and base metal are perfectly compatible.**

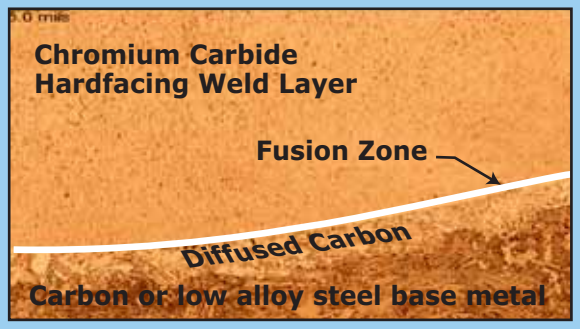
Easy Reapplication and Multi-Layers

Check-cracks in hardfacing weld deposits can present a problem if multi-layers are required and during reapplications since contaminants and other foreign material can become trapped in the cracks. **Without contaminants to get in the way of welding, these crack-free alloys are easier to apply in multiple layers and for reapplication**. Products are available as gas-shielded metal-cored welding alloys as well as a flux-cored open-arc wire.

DuraHard™ Crack-Free hardfacing alloys should also be chosen if there is a concern of check-cracks, common with chromium carbide hardfacing alloys, penetrating into the base metal.

Extend the Life of the Part

Chromium carbide hardfacing frequently results in chipping, spalling and delamination. This is due to an enriched **hard and brittle layer known as diffused carbon** that builds up in the fusion zone due to reapplications. **However, unlike chromium carbide alloys, the weld interface of the DuraHard™ Crack-Free hardfacing alloys and the base metal will always blend uniformly with carbon or low alloy steel base metals, no matter how many reapplications are applied over the lifetime of the part.**



Hardfacing with chromium carbide results in an enriched **hard and brittle layer known as diffused carbon**, where the base metal meets the weld metal (white area in the photo above) leading to spalling and chipping.

Postalloy® DuraHard™ Crack-Free hardfacing compatible with base metal chemistry will NOT lead to diffusion and spalling.

A product should be selected that meets the abrasion and wear resistance requirements needed, but that also maintains enough toughness and ductility in the weld deposit to prevent cracks. **Carbides in martensite are an excellent choice for applications requiring crack-free deposits with good wear characteristics and tough weld deposits.**

Examples of applications that benefit from a crack-free weld deposit include cement, slag and ore roller presses and grinding rolls, drill pipe, cutting and shredding knives, shredding hammers, agricultural tillage tools, rendering equipment, bucket pins, stabilizers, debarking hammers, and vertical shaft impact crusher rotors.

Crack-Free Hardfacing alloy with martensitic tool steel structure

Postalloy® DuraHard™ Crack-Free Hardface Series

ALLOY	TYPE WIRE	GAS COVER NEEDED	PRIMARY PURPOSE	WEAR RATING (10 is best)
DuraHard™ 2825NC-MCG	Metal-cored / Gas-shielded	yes	Abrasion and impact	5
DuraHard™ 2826NC-MCG	Metal-cored / Gas-shielded	yes	Abrasion and impact	8
DuraHard™ 2827NC-MCG	Metal-cored / Gas-shielded	yes	Abrasion	10
DuraHard™ 2828NCTi-FCO	Flux-Cored / Open-arc	no	Abrasion and impact	8
DuraHard™ 2898-MCG	Metal-cored / Gas-shielded	yes	Abrasion and impact	3
DuraHard™ 2899-FCO	Flux-Cored / Open-arc	no	Abrasion and impact	3
Super Edge	Metal-cored / Gas-shielded	yes	Cutting edge retention	7
DuraHard™ PS-156Nb-MCO*	Metal-cored / Gas-shielded	yes	Abrasion	10
DuraHard™ PS-158Ti-FCO*	Flux-Cored / Open-arc	no	Abrasion and impact	8

*Only available in large diameter wire 7/64" and 1/8".

Wear Resistant Solutions for All Industries

MINING/QUARRIES

SUGAR CANE

CONSTRUCTION

ENERGY/POWER

LOGGING

FOUNDATION DRILLING

RECYCLING

DREDGING

AGRICULTURE

RAILROADS

CEMENT INDUSTRY

WOOD/MULCH

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