

Product Information Report

Hardfacing and Wearplate



Overview

Protect Your Equipment, Reduce Downtime, Save Money.

Companies spend a great deal of money purchasing and maintaining equipment. But even the best maintained equipment experiences wear, especially in highly abrasive environments or impact conditions. While you often can't change the environment in which equipment is used, you can protect equipment from the effects of wear by using the proper hardfacing product to increase wear resistance and wear life. Extending wear life by just a little can lead to huge savings. The key to increasing wear life is to choose the proper wear-resistant product for the appropriate environment.

What is Hardfacing?

Hardfacing is a metal deposit intended to reduce how quickly a metallic part wears. It is an excellent way to increase the life of your equipment and wear parts by protecting them from abrasion and impact.

Choosing the right hardfacing (wear-resistant product) will reduce changeovers, equipment downtime and installation labor and extend equipment life, and increase productivity and efficiency

What is Wear?

There are many types of wear, many kinds of material which can cause wear and many metallic alloys to prevent wear.

Types of Wear:

- Abrasive Wear: The most common type of wear is caused by abrasive particles or material rubbing against metal (for example, sandpaper wearing away metal)
- Impact Wear: The second most common type of wear is caused by large objects impacting metal or smaller objects propelled at high speed into the metal (for example: hammers breaking up rock or a large rock being dropped)
- Other Types of Wear: Corrosion wear, high heat wear, metal-to-metal wear and other less common types of wear

Types of Materials Which Cause Wear:

- Abrasive materials such as sandstone, sand, coal, ash, rock, metal-to-metal, etc.
- Impact materials such as rock, metal, etc.

Preventing Wear

You cannot eliminate wear, but you can make equipment, parts and components less susceptible to wear by adding wear-resistant materials to the equipment surfaces.

Types of Materials That Prevent Wear:

- Very Abrasion Resistant (Carbide-Bearing)
 - 80% of the market: Cronatron 711, 7355 and 7310 M-FC
- Moderate Impact and Abrasion Resistant (Martensitic)
 - 10% of the market: Cronatron 750 and 7500 M-FC
- Impact Resistant (Austenitic)
 - 5% of the market: Cronatron 777 and 7109 M-FC
- Buildup Products
 - Cronatron 7770 and 7770 M-FC
- Other Wear Mechanisms (High-Heat, Corrosion, Metal-to-Metal)
 - 5% of the market: Cronatron 7000 and 7000 M-FC

Choosing a Product

Assess the Application

- What size is the media creating the wear problem?
- At what velocity is the media traveling?
- What is the media made from?
- Is it a wet or dry environment?
- Does the application involve abrasion, impact or a combination of both?
- What products have been used in this application?

Other Factors

Are there other wear considerations like heat, friction, corrosion or extreme velocity?

CAUTION: Fine particle impingement creates enormous wear problems. For example: Never use a carbide product in a sandblasting application. The fine sand particles will wear away the soft matrix instead of the carbide.

We do not recommend mixing product classes. For example, do not put a martensitic product over an austenitic buildup. In rare cases, some products may be mixed and matched, but care must be taken when doing this and the risk of failure increases. Please consult Cronatron Technical Service. We do not recommend applying more than two layers of carbide-bearing material, because the likelihood of chunking or spalling increases rapidly. It is acceptable to put as many layers as needed of martensitic and austenitic products.

Wearplate

The Dimension Wearplate line is a high-chrome carbide hardfacing deposited over mild steel. It is sold in 4' x 8' sheets and can be cut with a plasma cutter and welded or bolted into place. It is also available in custom-cut pieces and fabricated parts upon request. Pipe and pipe assemblies are also available.

Typical applications include liners, chutes, buckets, augers, pipe, pipe components, digesters, snow plow blade shoes, compactor wheel pads, rammers, cyclones, hoppers, conveyors, loaders, forks, log stackers and pickers.

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When comparing products in the same group, use the following codes to help differentiate products.
 ^ = Higher alloyed product
 ! = Better corrosion resistance
 () = Certanium® product

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Determine impact/abrasion balance to determine best product selection.															Abrasion			
Impact															Abrasion			
Product Description and Contents	Buildup	Carbide-Bearing Products													#10	Specialty Products		
		General-Purpose and Carbon Steels	Multipurpose for All Steels	Austenitic Products	Low Rc Martensitic	High Rc Martensitic	#4	#5	#6	#7	#8	#9	Complex Carbide	Tungsten Carbide				
				High Manganese	High Carbon, Heat-Treated	Boron Carbide	Low Chrome Carbide	Titanium Carbide	Moderate Chrome Carbide	Stabilized Chrome Carbide	High Chrome Carbide							
General Description	Torch cuttable	Non-torch cuttable, work hardens in use	Good impact resistance, poor abrasion resistance	Moderate abrasion resistance and high impact	Good abrasion resistance and significant impact	Good abrasion resistance and moderate impact	Good abrasion resistance and moderate impact	Gravel crushers	Fine particle wear	Buckets - Rock and coal	Chutes - Softball size rocks	Auger flights	Dredge pumps	Fork lift tines	Very good abrasion resistance in corrosive environment	Maximum abrasion resistance	Cobalt, Nickel, Chrome, Boron	
Applications	Carbon Steels Hard but easily machinable	Manganese Steel Work hardens in use	Crushing hammers	Hard but machinable applications	Blade edges and debarkers	Screw conveyors	Chutes - Volleyball size rocks	Buckets - Rock and coal	Chutes - Softball size rocks	Screw conveyor	Chutes - Sand, coal, gravel, etc.	Coke pushers	Coal augers	Earth core drill	Coal oven chutes	Earth core drill	-	
			2 foot boulder at 5 foot drop	Chromium-free hardfacing	Leading edge of buckets	Chromium-free hardfacing	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	Mining truck beds - Small and medium rock	-
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Hardfacing	Brazing Alloys	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	79	
	Wire Alloys	VX-GP	7770MFC (706FC) VX-MP	7109MFC (282FC) VX-H1	7540MFC	7500MFC (281FC) VX-H3	VX-H4	(284FC) VX-H5	VX-H6	VX-H7	-	7310MFC	7000MFC VX-H10	-	-	-	MAD-H 65 and 75	
	Tubular Alloys	-	-	-	-	-	-	-	-	7350 (247)	7370 (248)	7330 7355 (246)	7220 7222A	-	-	-	-	
	Stick Alloys	-	7770, 706	777 7108	-	-	-	711 284	-	-	-	-	-	7000	-	-	747	
Plate	-	-	-	-	Certa Plates (201)	-	-	-	-	Dim 1 (Single)	-	-	-	-	-	-	-	