Hardfacing Product Summary

Assessing the Application:

What size is the media creating the wear problem?

What is the media made of?

At what velocity is the media traveling?

What is the base metal?

What products have been used with moderate success?

What is the product failure risk and does the customer understand the risks?

What is the customer's history and skill with hardfacing?

What welding processes can be used?

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

CAUTIONS:

Fine particle impingement creates enormous wear problems. Example: Sand blasting – never use a carbide product in this kind of application. The fine particles of sand will wear out the soft matrix instead of the carbide.

We do not recommend mixing product classes. For example, putting a Martensitic product over an Austenitic buildup. In rare cases we will mix and match some, but you must be very careful when doing this, and the risk of failure increases. Please consult Lawson Engineering for assistance.

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.

Impact ◀ **Determine impact/abrasion balance to determine best product selection.** ▶ **Abrasion**

When comparing products in the same group, use the following codes to help differentiate products.

^ = Higher alloyed product

! = Better corrosion resistance

( ) = Certanium® product

		Buildup						Carbide-Bearing Products										Specialty Products
Product Description and Contents		General Purpose and Carbon Steels	Multipurpose for All Steels	Austenitic Products	Low Rc Martensitic	High Carbon, Heat-Treated	High Rc Martensitic	Boron Carbide	Low Chrome Carbide	Titanium Carbide	Moderate Chrome Carbide	Stabilized Chrome Carbide	High Chrome Carbide	Complex Carbide	Tungsten Carbide	Cobalt, Nickel, Chrome, Boron
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#10				
Applications	General Description	Torch cuttable	Non-torch cuttable, work hardens in use	High Manganese Good impact resistance, poor abrasion resistance	Moderate abrasion resistance and high impact	Good abrasion resistance and significant impact	Good abrasion resistance and moderate impact				Very good abrasion resistance, minimal impact	Good abrasion resistance with improved corrosion resistance	Very good abrasion resistance, little impact	Very good abrasion resistance in corrosive environment	Maximum abrasion resistance	High heat, metal to metal
	Specific	Carbon Steels Hard but easily machinable	Manganese Steel Work hardens in use	Large rock crusher rolls Crushing hammers 2 foot boulder at 5 foot drop	Large crushers Hard but machinable applications	Medium rock crushers Blade edges and debarkers Leading edge of buckets	Fine particle wear Screw conveyors Chromium-free hardfacing	Gravel crushers Chutes – Volleyball size rocks Mining truck beds – Small and medium rock	Fine particle wear Buckets – Rock and coal –	Auger flights Chutes – Softball size rocks Mining truck beds – Dirt and sand	Dredge pumps Screw conveyor –	Fork lift tines Chutes – Sand, coal, gravel, etc. –	Coal oven chutes Coke pushers Cement paddles	Earth core drill Coal augers –	–	–
Hardfacing	Brazing Alloys	–	–	–	–	–	–	–	–	–	–	–	–	–	75	79
	Wire Alloys	VX-GP	7770M-FC (706FC) VX-MP	7109M-FC (282FC) VX-H1	7540M-FC	^7500M-FC (281FC) VX-H3	VX-H4	(284FC) VX-H5	VX-H6	VX-H7	–	7310M-FC	7000M-FC VX-H10	–	MAD-H 65 and 75
	Tubular Alloys	–	–	–	–	–	–	–	–	7350 (247)	7370 (248)	7330 7355 (246)	!7230	7220 7222A	–
	Stick Alloys	–	7770, 706	777 7108	–	–	–	711 284	–	–	–	–	7000	–	747
Plate		–	–	–	–	Certa Plates (201)	–	–	–	Dim 1 (Single)	–	–	–	–	–