FUSION TECHNOLOGIES
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W-NIFD

(Ni based cored wire with tungsten carbide)

Description:

FT-W-NIFD is a cored wire filled with Fused Tungsten Carbide (FTC or "cast" tungsten carbide) in a nickel-based matrix alloy. The wire can be used with manual, semi-auto or fully automatic welding process (GMAW) to create coatings that are highly resistant to abrasion with some resistance to erosion and corrosion.
The weld overlay contains blocky cast tungsten carbide particles (W_2C-WC both angular and spherical) embedded in a Ni-B-Si alloy.
The Ni-B-Si self-fluxing matrix alloy has a low melting point (1650-1950 F) with very good flowability producing a clean and smooth surface.

Application

FT-W-NIFD is designed to repair and hard surface a wide range of ferritic and austenitic steel. It has proven very effective to protect components in the oil and gas industry such as downhole motor components (fixed bend housing, adjusting rings, stators…) as well as industrial processing equipment, mixers, screws, pumps and more.
FT-W-NIFD matrix has a low melting point (1,800F to 1,900F) which allows a welding coating with a low voltage and amperage, reducing heat input, dilution and carbide dissolution. In turn this will favor repairability and minimize part distortion.

Properties:

Fused tungsten carbide (FTC) hardness: 2,100-2,350 $HV_{0.1}$
Spherical Fused tungsten carbide (SFTC) hardness: 2,400-3,000 $HV_{0.1}$
Matrix Alloy NiBSi: Hardness 45-48 HRc (outside dilution)

Welding Parameters recommendations:

To ensure a minimal degradation of tungsten carbide properties during welding process, please weld W-NIFD with lower amperage and voltage settings.
The surface to be hard-faced should be clean and any oil, rust, scale or other contamination should be removed.
Please follow weld procedure specification guided by metal composition and part configuration, the following parameters are for general guidance.

Wire diameter	Carbide % (weight)	Spool size	Current (Amps)	Voltage
0.045" - (1.2 mm)	40-45	33 lbs (15kg)	100-150	16-20V
1/16" - (1.6 mm)	45-55	33 lbs (15kg)	120-160	17-20V
5/64" - (2.0 mm)	48-58	33 lbs (15kg)	120-160	17-21 V
3/32" - (2.4 mm)	50-60	55 lbs (25kg)	140-220	21-24V

Other diameters and composition available on request.

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