

File: 1.9.1.2-71T
Issue: M11029
Supersedes: K10328

Praxair and TAFE TAFALLOY® Nickel-Chrome-Moly Wire - 71T

Material Review:

Made exclusively for arc spraying. The material is extremely effective against corrosion and stress cracking in caustic mediums. It is also very corrosion resistant in a broad range of acidic and chloride environments.

CAUTION: All Praxair and TAFE wires have been optimized for arc spraying. Use of alternate wires usually cause problems such as excessive tip wear, spitting and feeding problems. We only recommend Praxair and TAFE certified wires.

Application Review:

TAFALLOY Nickel-Chrome-Moly wire has proven very effective as a coating material in paper mill digesters. Traditionally, weld overlay of high nickel alloys has been used to prevent caustic stress corrosion cracking of the carbon steel substrate in continuous digestors. Weld overlay has proven effective, but extremely costly.

Arc sprayed 71T is an economical alternative to overlaying. Coupled with a sealer, a 0.070-inch thick coating will provide continuous protection with virtually no loss of coating thickness. The sealer can be effective to 1200°F and is critical to preventing the caustic medium from penetrating through the coating to the substrate.

TAFALLOY 71T, coupled with an appropriate sealer, should also be considered for service in many acidic environments.

Composition:	
Nickel	62.5
Chromium	22.0
Moly	10.0
Iron	2.0
Other	3.5
Coating Physical Properties	
Wire Size	1/16" (1.6 mm)
Deposit Efficiency	70 Percent*
Melting Point	2400°F
Bond Strength	7000 psi (48 MPa)
Tensile Strength	24,000 psi
Coating Texture	Variable*,** (see next page)
Macrohardness	92 R _b
Coating Density	7.2 gm/cc***
Coating Weight	0.038 lbs/ft ² /mil
Shrink	0.001 in/in (cm/cm)
Spraying (inert chamber with argon):	
Spray Rate	11 lbs./hr/100 amps (5 kg/hr/100 amps)
Coverage (wire consumption)	0.8 oz/ft ² /0.001" (0.98 kg/m ² /100 micron)
Spray Pattern****(approximate 8" standoff)	Cross Nozzle/Positioner - 1" (2.5 cm) vertical height x 1-3/4" (4.4 cm) width Slot Nozzle/Positioner - 2" (5 cm) vertical height x 1" (2.5 cm) width
Length of wire per lb	88 ft. (1/16")

* Depends on air pressure, standoff, nozzle cap and target size.

** 6" standoff, 40 psi - 8830, depends on air pressure - fine with high psi, average with medium psi, and rough with low psi.

*** Depends on atomizing air pressure.

**** Higher air pressures, smaller wire (1/16), and lower amperage with red nozzle cap gives smallest diameter pattern.

Spraying Procedure:

These are starting parameters only. Optimum will vary depending on application, utilities, environment, spray rate and equipment.

Coating Type			
	Standard 8830/8835	Standard 8850	Standard 9000
Atomizing Air Pressure:Primary	50 ^c	60 ^c	60 ^c
Secondary	---	---	---
Nozzle Cap	Blue	Green	Green
Nozzle/Positioner (Cross=C; Slot=S)	Short C	Long C	Long C
Arc Load Volts ^a	29-30	30-32	30-32
Amps ^b	50-300	50-300	50-300
Standoff Inches	5-7	5-7	5-7
Coating Thickness/Pass-mils	5	5	5
Coating Texture-microinches aa	200-350	200-300	200-300

Using excessive voltage reduces quality of coating. Voltage should be adjusted to give minimum noise and smooth arc operation. Excessive voltage causes larger particles and poor spray pattern. Too low a voltage will cause popping.

Be sure not to overheat substrate even if this means stopping to allow cooling, use air jet cooling if greater speed is required. Note that on some applications where preheating is tolerable, preheating work to 300°F can improve bond and deposit efficiency.

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- a When using power lead extensions other than the normal 12 foot furnished, the voltage must be increased by approximately 3.4 volts per 50 foot extension; i.e. add 3.4 volts to the recommended voltage setting for a given wire if the extension is increased to a 50 foot length.
- b Can vary between 50-300 depending on size of workpiece and traverse speed.
- c For finer finish, raise air pressure at point of finish.

Hazards:

Chrome is under investigation in the welding industry as a toxic substance. Full respiratory protection should be used when spraying this material.

Observe normal spraying practices, respiratory protection and proper air flow pattern advised. For general spray practices, see AWS Publications AWS C2.1-73, "Recommended Safe Practices for Thermal Spraying" and AWS TSS-85, "Thermal Spraying, Practice, Theory and Application." Thermal spraying is a completely safe process when performed in accordance with proper safety measures. Become familiar with local safety regulations before starting spray operations. **DO NOT** operate your spraying equipment or use the spray material supplied before you have thoroughly read the Praxair and TAFE Instruction Manual.

A Material Safety Data Sheet will be sent with each initial purchase and updated as required.

DISREGARDING THESE INSTRUCTIONS MAY BE DANGEROUS TO YOUR HEALTH.

The Information provided herein is believed to be accurate and reliable; however, results may vary with workpiece preparation and operator technique. Praxair and TAFE warrants only that the wires are free of defects in material and workmanship. No other warranty is expressed or implied.



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Printed in the United States of America 05-2000



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