Technical Data

Bulletin

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Praxair and TAFA Arc Spray Copper-Nickel Indium Wire - 58T

Material Review:

Made exclusively for arc spraying as an essentially Copper-Nickel Indium wire. Praxair and TAFA's 58T produces low porosity coatings and when machined, yields a dense finish. Praxair and TAFA's 58T with the addition of indium probably increases the lubricity and antigalling characteristics of the coating. This coating is designed to meet the requirements of aircraft specifications

Arc Spray 58T Copper-Nickel Indium wire can be sprayed with any Praxair and TAFA Arc Spray gun.

CAUTION: All Praxair and TAFA 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 TAFA certified wires.

Application Review:

Used primarily as a "root" coating on aircraft turbine blades to resist fretting wear and for machine element work where conditions involve higher temperatures and necessitate corrosion protection. Some examples beside blade roots include resurfaced pump plungers, impellers, rams, pump sleeves, shafts, seal rings, casings, valve plugs, and wedges. The applications include seal joints and other parts that see low temperature fretting with no intended motion. Also used to attach graphite to current lugs an some nuclear industry anodes. Coating thicknesses vary between .001" and .040", dependent on application.

Composition:	
Nickel	36.5%
Indium	5.0%
Copper	Balance
Coating Physical Properties	
Wire Size	1/16" (1.6 mm)
Deposit Efficiency	70 Percent*
Melting Point	2650°F (1455°C)
Bond Strength	Good
Coating Texture (as sprayed)	Variable** (see next page)
Hardness	48 R_b
Coating Density	7.85 gm/cc***
Coating Weight	0.039 lbs/ft^2/mil (.74 Kg/m^2/0.1 mm)
Bond Strength	4400 psi (2750)
Spraying:	
Spray Rate	9 lbs/hr/100 amps (4.09 kg/hr/100 amps)
Coverage (wire consumption)	0.8 oz/ft^2/0.001" (0.98 kg/m^2/100 microns)
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	82 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 and standoff.

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

Spraying Procedure

Coating Type				
	Normal 8830/8835	Arc Jet 8830/8835	Arc Jet 9000	9000
Atomizing Air Pressure: Primary Secondary	50[c] ---	50 [c] 40 [c]	60 [c] 60 [c]	60[c] ---
Nozzle Cap	Blue	*	Green	Green
Nozzle/Positioner (Cross=C; Slot=S)	Short C	**	Long C	Long C
Arc Load Volts[a]	28-30	28-30	28-32	28-30
Amps[b]	75-150	75-150	75-150	75-150
Standoff Inches	3-5	3-5	3-5	3-5
Coating Thickness/Pass-mils	2	2	2	2
Coating Texture-microinches aa	200-350	150-250	150-250	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.

NOTE: Standard air caps and positioners can be used in 8830 systems.

* P/N 450729 8830 Arc Jet Air Cap
** P/N 620074 Arc Jet Modified Short Cross (8830)

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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 75-150 depending on size of workpiece and traverse speed.

[c] For finer finish, raise air pressure at point of finish.

Finishing:

Copper-Nickel alloys are usually finished by machining or grinding. Conventional tool shapes are used and light cuts and high work speeds give best results.

Hazards:

Observe normal spraying practices, respiratory protection and proper air flow patterns 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 TAFA 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 TAFA warrants only that the wires are free of defects in material and workmanship. No other warranty is expressed or implied.

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TAFA is constantly improving its products, therefore specifications are subject to change without notice

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