Stellite®

JK™ 577 Stellite® S/F 6 Powder

Technical Note
DATE: 1/31/92
SUPERSEDES: NEW
NO: C-035
PAGE: 1 of 3

PRELIMINARY TECHNICAL INFORMATION

DESCRIPTION

JK577, Stellite S/F 6 powder for JET KOTE® Surfacing Systems produces coatings similar to JK576, Stellite 6, however the chemistry is such that the resulting coating can be heat treated or fused. Since the coating has low shrinkage when fused, less material and less heat is required to produce a fused deposit when compared to standard Spray and Fuse techniques. The coating in the fused state will take more physical abuse and is likely to have improved wear and corrosion resistance over the as sprayed coating, however the as sprayed coating has many applications where the coating can perform satisfactorily.

COMPOSITION, WT %	
Boron	1.6
Carbon	.7
Chromium	19.0
Cobalt	Balance
Iron	3.0*
Nickel	14.5
Other	2.0*
Silicon	2.5
Tungsten	7.5

* Maximum

MESH SIZE
270/D

COATING CHARACTERISTICS

The parameters that follow are to be considered as a starting JET KOTE parameters. The following coating properties are representative of first time results of coatings obtained from commercially available JK577 powder. Typical range of coating properties have not been established due to the few repeat runs made to date. Data in ( ) denotes property of fused deposit.

	SET A		SET B
Microhardness, DPH [300g]	636,(506)		790 (525)
Macrohardness, 15N	88.6 (85.5)		91.8 (85.7)
Bond Strength, PSI (Per ASTM 633)	3787		8314
Estimated Coverage, Lb/Ft^2/.010"	.5		.45
Est. Surface Finish, Microinch AA		Unknown	
Maximum Coating Thickness, Inches	.030		.140 made
Maximum Service Temperature, °F	1200		1200
Abrasive Wear Resistance, MM^3 Loss 30 Lb Load, 500 Revolutions (ASTM G65)		Unknown	

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Developmental JK™ 577 Alloy
Stellite® S/F 6

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SET A OPERATING PARAMETERS (1)

Fuel Gas	Propylene (C3H6)	
Powder Carrier Type	Nitrogen (N2)	
Nozzle	5/16 x 6	
Injector	#50	
Console Type	JKII	JKIIA
Manifold Pressures, PSI	(2) (7)	(3)
Oxygen	120	100
Main Fuel Gas	80	80
Carrier Gas	100	80
Hydrogen	25	100
Console Pressures, PSI		
Oxygen	75-85	62-72
Main Fuel	60-65	54-64
Carrier	65	52-62
Console Flows(4)		
Oxygen	980-1020	980-1020
Main Fuel	56-60%	127-137
Carrier	30-35	67-77
Console Settings		
Oxygen		54.4-56.7
Main Fuel		42.3-45.7
Carrier		67.0-77.0
Cooling Water(5)		
°F IN	80-90	80-90
°F OUT	115-120	115-120
Powder feed Settings		
Dial Set (Approx.)	194	194
RPM (Approx.)	2.6	2.6
Feed Rate(6), Grams/Min.	40-45	40-45
Spray Distance, Inches	7-8	7-8

NOTES:

1. Pressures shown are running pressures with powder feeding.
2. Manifold pressures for JKII system are critical, manifold regulators must be located at factory supplied hose ends.
3. Manifold pressure too low will not allow enough flow, too high and controller will pulse upon start up.
4. JKII system does not correct flow due to change in temperature or gas pressures at meters, JKIIA system compensates and flow display is true STANDARD cubic feet per hour (SCFH) (T=0°C, 1 ATM=14.7 PSI).
5. A heat exchanger to control the water inlet temperature to the gun is recommended. Recommended operation range 80-85°F inlet, adjust water flow to achieve 115-120°F outlet temperature. Water temperature may affect coating quality and gun performance.
6. Powder feed rate must be checked with powder flowing through lit gun. Powder Feed Rate (PFR) = (Powder Weight (g) Initial - Powder Weight (g) Final/Powder Feed Time (min.) Powder feed time must be greater than 1 min. PFR is linear to RPM of feeder. To change RPM to achieve required PFR:

$$\text{RPM (NEW)} = \frac{\text{PFR (Required) RPM (Original)}}{\text{PFR (Calculated)}}$$

7. JKII flowmeter requires change for specific gas use:
   H_2 - Part #972915 C_3H_6 - Part #972763

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SET B OPERATING PARAMETERS (1)

Fuel Gas	Hydrogen (H2)	
Powder Carrier Type	Argon (Ar)	
Nozzle	1/4 x 9	
Injector	#40	
Console Type	**JKII**	**JKIIA**
Manifold Pressures, PSI	(2) (7)	(3)
Oxygen	120	90
Main Fuel Gas	120	90
Carrier Gas	100	80
Hydrogen	25	90
Console Pressures, PSI		
Oxygen	46-50	43-47
Main Fuel	70-73	59-62
Carrier	49-51	49-51
Console Flows(4)		
Oxygen	400-425	400-450
Main Fuel	1200	1150-1160
Carrier	30-35	62-66
Console Settings		
Oxygen		23.6-25.0
Main Fuel		63.9-64.1
Carrier		44.3-47.1
Cooling Water(5)		
°F IN	80-90	80-90
°F OUT	115-120	115-120
Powder feed Settings		
Dial Set (Approx.)	194	162
RPM (Approx.)	2.6	2.6
Feed Rate(6), Grams/Min.	30-35	30-35
Spray Distance, Inches	6-7	6-7

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