

# Stellite



**JKTM 6189**

**TECHNICAL NOTE**

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 SUPERSEDES : 10/7/92  
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90% Tungsten Carbide/  
 10% Nickel  
 Mechanically Alloyed Powder

**DESCRIPTION**

JK6189 powder for JET KOTER<sup>®</sup> Surfacing Systems, produces coatings that may be used in similar applications that Tungsten Carbide/Cobalt coatings are used in. The substitution of nickel instead of cobalt appears to provide additional corrosion resistance with minimal loss of wear resistance.

**APPROXIMATE COMPOSITION, Wt. %**

Carbon 3.7  
 Iron .5  
 Nickel 10.0  
 Tungsten Balance

**MESH SIZE**

270/D

**APPLICATIONS:**

Hardfacing of compressor shafts, pump casings, pump impellers, pump plungers, pump sleeves, mechanical seal faces, feed screws, gate valves, marine components, chemical and petrochemical parts.

**COATING CHARACTERISTICS**

Approximate properties of JK6189 coatings produced by JET KOTER<sup>®</sup> II and JET KOTE IIA units follow.

	<u>SET A</u>	<u>SET B</u>	<u>SET C</u>
Bond Strength, PSI (per ASTM 633)	10,500+	10,500+	10,700+
Microhardness, DPH [300g]	923-1043	1015	1119
Macrohardness, 15N	90.6	90.5	90.8
Estimated Porosity, As-Sprayed	<1%	<2%	<1%
Maximum Coating Thickness, Inches	.035	.035	.030
As-Sprayed, Flat or Irregular Shapes	Unknown	Unknown	Unknown
Maximum Coating Thickness, Inches	Unknown	Unknown	Unknown
As-Sprayed on Cylindrical Shapes	Unknown	Unknown	Unknown
Est. Maximum Service Temperature, °F	1000	1000	1000
Est. Deposit Efficiency, %	44.4	47.4	48.3
Estimated Coverage, Lb/Ft <sup>2</sup> /.010"	1.5	1.4	1.3
Est. Surface Finish, Microinch AA	Unknown	Unknown	Unknown
Abrasive Wear Resistance, MM <sup>3</sup> Loss	Unknown	Unknown	Unknown
Per ASTM G65-80	Unknown	Unknown	Unknown

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SET C OPERATING PARAMETERS(1)Hydrogen (H<sub>2</sub>)

Argon (Ar)

1/4 x 9

#40

Fuel Gas  
Powder Carrier Type  
Nozzle  
Injector

Console Type  
Manifold Pressures, PSI

Oxygen  
Main Fuel Gas  
Carrier Gas  
Hydrogen (Pilot)

Console Pressures, PSI

Oxygen  
Main Fuel  
Carrier

Console Flows(4)

Oxygen  
Main Fuel  
Carrier

Console Settings

Oxygen  
Main Fuel  
Carrier

Cooling Water(5)

°F IN  
°F OUT

Powder feed Settings

Dial Set (Approximate)  
RPM (Approximate)

Feed Rate (6), grams/Min.

Spray Distance, Inches

	JKII (2) (7)	JKIIA (3)
	120	90
	120	90
	100	85
	25	
	58-64	64-68
	80-85	81-84
	59-65	57-67
	525	570
	1200	1150
	28-30	57
		31.7
		63.9
		40.7
	80-90	80-90
	115-120	115-120
	162-187	162-187
	2.0-2.5	2.0-2.5
	60-75	60-75
	10	10

NOTES:

- Pressures shown are running pressures with powder feeding.
- Manifold pressures for JKII system are critical, manifold regulators must be located at factory supplied hose ends.
- Manifold pressure too low will not allow enough flow. If it is too high the controller will pulse upon start up.
- JKII system does not correct flow due to change in gas temperature or pressures at the meters, JKIIA system compensates and flow is displayed as true Standard Cubic Feet per Hour (SCFH) :  
T = 0°C, P = 14.7 PSIA
- A heat exchanger to control the water inlet temperature to the gun is recommended. Adjust water flow to achieve outlet temperature. Water temperatures may affect coating quality and gun performance.
- Powder feed rate must be checked with powder flowing through lit gun. Powder Feed Rate (PFR) = (Powder Weight (g) Initial-Powder Weight Final (g)) / Powder Feed Time (min.) Powder feed time must be greater than 1 min. PFR is linear to RPM of the feeder. To achieve required PFR, change RPM as follows:  
RPM (NEW) =  $\frac{\text{PFR (Required) RPM (Original)}}{\text{PFR (Calculated)}}$

- JKII flowmeter requires change for specific gas use:

H<sub>2</sub> - Part #972915C<sub>3</sub>H<sub>8</sub> - Part #972763