

# Stellite®

JK™ 625 Powder

## TECHNICAL NOTE

DATE: 1/31/92  
SUPERSEDES: 9/13/91  
NO: C-036  
PAGE: 1 of 3

## DESCRIPTION

JK625 powder for JET KOTE<sup>R</sup> Surfacing Systems produces coatings that resists salt water and other forms of corrosive attack. The material is similar to International Nickel's wrought alloy 625. The coatings appear to have many Marine applications such as: Bearing and seal restoration of ship drive shafts and restoration of bilge pumps.

## COMPOSITION ( WT. %)

## MESH SIZE

|                       |         |
|-----------------------|---------|
| Carbon                | .1*     |
| Cobalt                | 1.0*    |
| Chrome                | 21.5    |
| Iron                  | 5.0*    |
| Manganese             | .5*     |
| Molybdenum            | 9.0     |
| Nickel                | Balance |
| Niobium +<br>Tantalum | 3.7     |
| Other                 | 1.0*    |
| Silicon               | .5*     |

270/D

\* Maximum

## COATING CHARACTERISTICS

Typical range of coating properties have not been established due to few repeat runs made to date. Stellite may elect to change the parameters listed due to coating improvements as determined by ongoing coating development.

|  | <u>SET A</u>   | <u>SET B</u> |
|--|----------------|--------------|
| Microhardness, DPH [300g]  | 388-461        | 400          |
| Macrohardness, 15N (Rc Conversion)   | 79.0 (30)      | 79.5 (30)    |
| Bond Strength, PSI (Per ASTM 633)  | 5600           | 4917         |
| Estimated Coverage, Lb/Ft <sup>2</sup> /.010"  | .6             | .5           |
| Est. Surface Finish, Microinch AA  | 170-250        | 120-150      |
| Maximum Coating Thickness, Inches  | .040           | Unknown      |
| Maximum Service Temperature, °F  | Unknown        |              |
| Abrasive Wear Resistance, MM <sup>3</sup> Loss<br>30 Lb Load, 500 Revolutions (ASTM G65) | Not Determined |              |

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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              |

| <u>Console Type</u>                   | <u>JKII</u> | <u>JKIIIA</u> |
|---------------------------------------|-------------|---------------|
| <u>Manifold Pressures, PSI</u>        | (2) (7)     | (3)           |
| Oxygen                                | 120         | 100           |
| Main Fuel Gas                         | 80          | 80            |
| Carrier Gas                           | 100         | 80            |
| Hydrogen                              | 25          | 100           |
| <u>Console Pressures, PSI</u>         |             |               |
| Oxygen                                | 75-85       | 62-72         |
| Main Fuel                             | 57-62       | 52-62         |
| Carrier                               | 65          | 58-62         |
| <u>Console Flows<sup>(4)</sup></u>    |             |               |
| Oxygen                                | 980-1020    | 980-1020      |
| Main Fuel                             | 49-51%      | 112-120       |
| Carrier                               | 35          | 77            |
| <u>Console Settings</u>               |             |               |
| Oxygen                                |             | 54.4-56.7     |
| Main Fuel                             |             | 37.3-40.0     |
| Carrier                               |             | 77.0          |
| <u>Cooling Water<sup>(5)</sup></u>    |             |               |
| °F IN                                 | 80-90       | 80-90         |
| °F OUT                                | 115-120     | 115-120       |
| <u>Powder Feed Settings</u>           |             |               |
| Dial Set (Approx.)                    | 194         | 194           |
| RPM (Approx.)                         | 2.6         | 2.6           |
| Feed Rate <sup>(6)</sup> , Grams/Min. | 50-55       | 50-55         |
| <u>Spray Distance, Inches</u>         | 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, too high and controller will pulse upon start up.
- JKII system does not correct flow due to change in temperature or gas pressures at meters, JKIIIA system compensates and flow display is true STANDARD cubic feet per hour (SCFH) (T=0°C, 1 ATM=14.7 PSI).
- 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.
- 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:  

$$RPM (NEW) = \frac{PFR (Required) RPM (Original)}{PFR (Calculated)}$$
- JKII flowmeter requires change for specific gas use:  
 H<sub>2</sub> - Part #972915  
 C<sub>3</sub>H<sub>6</sub> - Part #972763

SET B OPERATING PARAMETERS (1)

Fuel Gas  
 Powder Carrier Type =  
 Nozzle =  
 Injector =

Hydrogen (H2)  
 Argon (Ar)  
 1/4 x 9  
 #40

| <u>Console Type</u>                   | <u>JKII</u> | <u>JKIIA</u> |
|---------------------------------------|-------------|--------------|
| <u>Manifold Pressures, PSI</u>        | (2) (7)     | (3)          |
| Oxygen                                | 120         | 90           |
| Main Fuel Gas                         | 120         | 90           |
| Carrier Gas                           | 100         | 80           |
| Hydrogen                              | 25          | 90           |
| <u>Console Pressures, PSI</u>         |             |              |
| Oxygen                                | 53-55       | 50-52        |
| Main Fuel                             | 73-75       | 62-65        |
| Carrier                               | 55-60       | 58-60        |
| <u>Console Flows<sup>(4)</sup></u>    |             |              |
| Oxygen                                | 425-450     | 450-470      |
| Main Fuel                             | 1200        | 1150-1160    |
| Carrier                               | 30-35       | 62-66        |
| <u>Console Settings</u>               |             |              |
| Oxygen                                |             | 25.0-26.1    |
| Main Fuel                             |             | 63.9-64.1    |
| Carrier                               |             | 44.3-47.1    |
| <u>Cooling Water<sup>(5)</sup></u>    |             |              |
| °F IN                                 | 80-90       | 80-90        |
| °F OUT                                | 115-120     | 115-120      |
| <u>Powder Feed Settings</u>           |             |              |
| Dial Set (Approx.)                    | 162         | 162          |
| RPM (Approx.)                         | 2.00        | 2.00         |
| Feed Rate <sup>(6)</sup> , Grams/Min. | 30-35       | 30-35        |
| <u>Spray Distance, Inches</u>         | 8-10        | 8-10         |

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$$\text{RPM (NEW)} = \frac{\text{PFR (Required)} \times \text{RPM (Original)}}{\text{PFR (Calculated)}}$$
- JKII flowmeter requires change for specific gas use:  
 H<sub>2</sub> - Part #972915      C<sub>3</sub>H<sub>8</sub> - Part #972763