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# Infralloy™ S7417 Tungsten Carbide/Cobalt 83WC/17Co Thermal Spray Powder

## SUMMARY

Infralloy™ S7417 is a tungsten carbide/cobalt (WC/Co) powder. Its chemistry is 86wt%WC and 17wt%Co. Particle size is in the range of:

| | |
|---|---|
| Praxair JP5000 system: | -45 to +15 microns |
| Metco DJ 2700 hybrid: | -45 to +5 microns |

Other particle size for plasma spray gun system can also be obtained, *e.g.,* -45 to +10 microns, can be obtained depending on customers' specific needs.

## SUGGESTED COATING SPRAY SYSTEMS

Metco DJ 2700, Praxair JP5000, or detonation, etc.

## SUGGESTED APPLICATIONS

Coatings of Infralloy™ S7410 are recommended for the following applications

### Typical Applications

**Wear resistance** — Bearing surfaces, knife edges, conveyor screws, thread guides, impeller shafts, anti-galling sleeves, exhaust fans, oil field ball/gate valves, aircraft flap tracks, turbine compressor stators, turbine mid-span supports (fan blades), turbine fan duct segments, rollers (steel making or printing)

## POWDER CHARACTERISTICS

| | | |
|---|---|---|
| Typical Composition: | WC:Co:Cr wt ratio | 83 : 17 |
| | Alloy elements | <1% |
| Particle size: | -45 to +5 microns for DJ 2700 Metco<br>Or -45 to +15 microns for Praxair JP5000 | |
| Eutectic Temperature | 1320°C | |

# Infralloy™ S7417 Tungsten Carbide/Cobalt 83WC/17Co Thermal Spray Powder

## TYPICAL PHYSICAL PROPERTIES OF THE COATINGS

| | |
|---|---|
| Textures of as-sprayed | 120-200 microinches |
| Ground surface | 2-4 microinches |
| Cross Section Microhardness | 900-1050 $VHN_{300}$ |
| Bond strength (low carbon steel coupons) | >12,000 psi |

## WEAR RESISTANCE

This coating is suitable for high wear resistant surface application where high toughness is required

## POST SPRAY FINISHING

Coatings of Infralloy™ S7410 are best finished by grinding. Finishing of 2-4 micron inch of surface can be achieved

## TYPICAL STARTING SPRAYING PARAMETERS

Hybrid DJ 2700 using Propylene

| Hardware | Pressure psig | | | Folwmeter Reading (FMR) | | | Flow (SCFH) | | | Powder Feeder (DJP) | | | Spray | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Air Cap | $O_2$ | $C_3H_6$ | Air | $O_2$ | $C_3H_6$ | Air | $O_2$ | $C_3H_6$ | Air | $N_2$ FMR | $N_2$ SCFH | Air psig | Rate lbs/h | Dist inch |
| DJ2701 | 150 | 100 | 100 | 40 | 40 | 48 | 578 | 176 | 857 | 55 | 28.5 | 20 | 5-15 | 8-10 |

Hybrid DJ2600 using hydrogen

| Hardware | Pressure psig | | | Folwmeter Reading (FMR) | | | Flow (SCFH) | | | Powder Feeder (DJP) | | | Spray | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Air Cap | $O_2$ | $H_2$ | Air | $O_2$ | $H_2$ | Air | $O_2$ | $H_2$ | Air | $N_2$ FMR | $N_2$ SCFH | Air psig | Rate lbs/h | Dist inch |
| DJ2603 | 170 | 140 | 100 | 32 | 62 | 44 | 489 | 1450 | 786 | 55 | 28.5 | 20 | 5-15 | 8-10 |

Standard DJ 9A using Propylene

| Hardware | Pressure psig | | | Folwmeter Reading (FMR) | | | Flow (SCFH) | | | Powder Feeder (DJP) | | | Spray | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Air Cap | $O_2$ | $C_3H_6$ | Air | $O_2$ | $C_3H_6$ | Air | $O_2$ | $C_3H_6$ | Air | $N_2$ FMR | $N_2$ SCFH | Air psig | Rate lbs/h | Dist inch |
| DJ3-9 | 150 | 80 | 75 | 43 | 42 | 47 | 620 | 167 | 742 | 55 | 26.3 | 20 | 5 | 6-8 |

# Infralloy™ S7417 Tungsten Carbide/Cobalt 83WC/17Co Thermal Spray Powder

Standard DJ8A using hydrogen

| Hardware | Pressure psig | | | Folwmeter Reading (FMR) | | | Flow (SCFH) | | | Powder Feeder (DJP) | | | Spray | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Air Cap | $O_2$ | $H_2$ | Air | $O_2$ | $H_2$ | Air | $O_2$ | $H_2$ | Air | $N_2$ FMR | $N_2$ SCFH | Air psig | Rate lbs/h | Dist inch |
| DJ3-8 | 150 | 125 | 75 | 38 | 63 | 45 | 550 | 1400 | 710 | 60 | 28.7 | 20 | 5 | 6 |

## POWDER HANDLING

Wear a mask and gloves when pouring powders into the feeder or discharging from the feeder

## SAFETY MEASURES IN SPRAYING

Thermal (plasma) spray is a completely safe process when performed in accordance with Equipment Safety Measures. Familiarize with yourself with local safety regulations before start spray operations. When spraying it is recommended always have at least two personnel on sight.

DISREGARDING TO THESE SAFETY INSTRUCTION MAYBE DANGEROUS TO YOUR HEALTH