

Alumina-Titania Composite Ceramic Powder

# MetaCeram® 25020



## COATING

- Excellent resistance to wear by abrasion
- Resists wetting by molten metals
- Good thermal shock resistance
- Good electrical insulating properties
- Excellent chemical stability in alkali and acids



## DESCRIPTION:

MetaCeram 25020 is a grey aluminum oxide powder with properties similar to MetaCeram 25010. It is designed for application by high energy combustion or conventional plasma non-transferred arc systems. The coatings produced are hard and resistant to abrasive and adhesive wear at moderate temperatures. In addition, 25020 coatings have good thermal shock resistance, good dielectric properties and are non-wetting to molten metals such as copper, aluminum and zinc. MetaCeram 25020 is similar to MetaCeram 25010 and can be used as an alternative when a lower cost is desired or when a white colored coating raises aesthetic concerns.

MetaCeram 25020 will require a bond coating in nearly all applications. Use Proxon 50000 or 21021 when the application temperature is low or when corrosion is not a concern. Use ProXon 21031 when the application temperature is high, corrosion is a concern or when the base metal is a stainless steel.

## TECHNICAL DATA:

### Coating Properties:

Composition: Grey Aluminum Oxide  
Method of Manufacture: Agglomerated and Sintered.  
Carney Flow Rate: 13.5 seconds  
Bulk Density: 1.8 g/cc

### Powder Properties:

MacroHardness: HRC 55 (15 N scale converted)  
Microhardness: DPH<sub>300</sub> 775  
Coating Density: 3.4g/cc (combustion) 3.9g/cc (plasma NTA)  
Maximum Service Temperature: 2000°F (1090°C)  
Porosity: < 10% (combustion) < 5% (plasma NTA)  
Ground & Lapped Finish: < 20 microinches AA

## SPRAY PARAMETERS:

TD 2000	Acetylene	Propylene
Nozzle	RL 210 or RL 210-W	RL 210M
Module Adaptor	Aqua	Aqua
RotoJet	RPA 3@40psi air	RPA 3@25psi air
Oxygen	50 psi / 35 flow	80 psi / 50 flow
Acetylene	12 psi / 75 flow	30 psi / 56 flow
T-Valve Setting	5 clicks	5 clicks
Coating Rate	3.0 lbs/hr	4.0 lbs/hr
Deposit Efficiency	80%	80%
Spray Distance	5 inches	6 inches

## PROCEDURE FOR USE:

### Coating Procedure

Pre-heat the bond-coated part to 300°F and maintain in the 300 – 400°F temperature range during coating. Rotational speed should be 150 to 200 sfpm and traverse speed should be fast enough to apply about 0.001" coating thickness per pass. Coatings applied at too low a temperature will be soft. Coatings applied at a high temperature will tend to crack or delaminate during cooling. Exact pre-heat temperature and the torch to work-piece speed will depend heavily on the geometry of the part.

### Finishing Procedure

Coatings of 25020 may be rough ground with 120 grit silicon carbide wheels but diamond grinding is preferred. Use a 150 grit diamond wheel for roughing and a 400 grit diamond wheel for finishing. Lapping with successively finer compounds will produce a finish of less than 20 microinches AA for combustion applied and less than 15 microinches AA for plasma non-transferred arc applied coatings. Coatings should be sealed with a high temperature wax or suitable alternative when wet grinding is performed.

## TYPICAL APPLICATIONS:

- Pump sleeves
- Pouring troughs for molten metals
- Soldering tips
- Pyrometer probes
- Thermal insulation

TD 3000	Acetylene	Propylene
Nozzle	RL 3310	RL 310M
RotoJet	None	RPA 3@10 psi
Oxygen	50 psi / 36 flow	80 psi / 53 flow
Gas Flow	12 psi / 60 flow	30 psi / 47 flow
Carrier Gas	N2 or Ar@55 psi	N2 or Ar@55 psi
TeroMeter*	60	60
Coating Rate	2.5 lbs/hr	3.5 lbs/hr
Spray Distance	3.5 inches	8 inches

\*Adjust to achieve indicated spray rate

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