



PRODUCT DATA SHEET

Weartech 6 (WT-6) Rods, Powders, Wires & Electrodes

Description:

Weartech 6 hardfacing products provide resistance to many forms of chemical and mechanical degradation over a wide temperature range. It is the most versatile and widely used cobalt alloy, with a good balance of abrasion and impact resistance. Particular attributes of Weartech 6 are its outstanding anti-galling properties, high temperature hardness, and high resistance to cavitation erosion, which results in its wide use as a valve seat material. It bonds well to most weldable alloy steels and stainless.

Applications:

- Chemical and Refinery Valve Trim
- Diesel Engine Valves
- Trunnions
- Bearing and Bushing Areas
- Forging Dies
- Pump Shafts & Sleeves
- Zinc Tanks
- Guide Rolls
- Plastic Extrusion Screws

Forms, Sizes and Packaging Specifications: See Packaging Data Sheet

| Weld Parameters | | | | | | | | | | |
|---------------------------------|------------|-------------|-------------|------------|------------|------------|------------|------------|------------|------------|
| Diameter (<i>Mesh</i>) | (80/270) | 0.045" | 0.062" | 0.045" | 0.062" | 3/32" | 1/8" | 5/32" | 3/16" | 1/4" |
| | (100/325) | 1.2mm | 1.6mm | 1.2mm | 1.6mm | 2.4mm | 3.2mm | 4.0mm | 5.0mm | 6.4mm |
| Welding Process | PTAW {PTA} | GMAW {MIG} | GMAW {MIG} | GTAW {TIG} | GTAW {TIG} | GTAW {TIG} | GTAW {TIG} | GTAW {TIG} | GTAW {TIG} | GTAW {TIG} |
| Consumable Type | PTA | Metal | Metal | Solid | Solid | Bare | Bare | Bare | Bare | Bare |
| | Powder | Cored Wires | Cored Wires | Wire | Wire | Cast Rod | Cast Rod | Cast Rod | Cast Rod | Cast Rod |
| Current | DCEN | DCEP | DCEP | DCEN | DCEN | DCEN | DCEN | DCEN | DCEN | DCEN |
| Amperage | 120-180 | 180-200 | 280-300 | 50-80 | 55-90 | 75-100 | 90-120 | 120-140 | 140-160 | 160-180 |
| Voltage | 18-25 | 25-27 | 26-28 | 15-25 | 15-25 | 15-25 | 15-30 | 15-30 | 15-30 | 15-30 |
| Shielding Gas | 100% Ar*** | 100% Ar | 100% Ar | 100% Ar | 100% Ar | 100% Ar | 100% Ar | 100% Ar | 100% Ar | 100% Ar |
| Tip Size (OFW) | | n/a | n/a | 3 | 3-4 | 3-4 | 4 | 4 | 5 | 6 |
| Flame (OFW) (<i>Stickout</i>) | | 1/2"-5/8" | 5/8"-3/4" | 3X-4X | 3X-4X | 3X-4X | 3X-4X | 3X-4X | 3X-4X | 3X-4X |
| Current (SMAW) | | n/a | n/a | n/a | n/a | DCEP | DCEP | DCEP | DCEP | DCEP |
| Amperage (SMAW) * | | n/a | n/a | n/a | n/a | 50-70 | 80-110 | 120-150 | 150-180 | 190-250 |

(GTAW) - Gas Tungsten Arc Welding {TIG}, (GMAW) - Gas Metal Arc {MIG} Recommended Flow Rate of Argon: 25-40 cfh
 (SMAW) - Shielded Metal Arc Welding * SHORT ARC LENGTH, OFW - Oxyacetylene Fuel Welding {OXY}
 (PTAW) - Plasma Transfer Arc Welding [***Argon Gas Flow Rates - Center 1.5-2.5 LPM, Powder 1.3-1.5 LPM, Shielding 10-15 LPM]

| Typical Deposit Chemistry (wt%) | | | | | | | | |
|---------------------------------|----|-----|-----|-----|------|-----|-----|-----|
| C | Mn | Si | W | Fe | Cr | Ni | Mo | Co |
| 1.2 | .9 | 0.6 | 4.0 | 4.0 | 28.1 | 0.2 | 0.1 | BAL |

| Deposit Characteristics | | | |
|-------------------------|-----------|----------------------|---|
| Abrasion Resistance | Excellent | Deposit Layers | 2 Maximum |
| Impact Resistance | Good | Surface Cross Checks | No with Proper Preheat |
| Corrosion Resistance | Good | Machinability | Use Carbide Tools or Grind |
| Hot Hardness | Excellent | Specifications | AWS/SFA A5.13-2000 ECoCr-A |
| Friction Resistance | Excellent | | AWS/SFA A5.21-2001 ERCoCr-A, ERCCoCr-A |
| Magnetic | No | | UNS R30006, UNS W73006, UNS W73036 |
| Hardness | Rc 35-48 | | MIL-R-17131C Type MIL-RCoCr-A-1, AMS 5788 |

| Typical Physical and Mechanical Properties | | | | | |
|--|--------------------|------------------------|-----------------------------|--------------------------------|-------------------|
| Density | | Liquidus | | Specific Heat | Thermal Expansion |
| g/cc | lb/in ³ | °C | °F | BTU/lb °F | µin/in °F |
| 8.39 | 0.303 | 1292 | 2360 | 0.101 | 9.1 |
| Tensile Strength | | Yield Strength | | Elongation | Impact Strength |
| ksi, As Cast | | ksi, As Cast | | %, RT | RT, ft/lb |
| 115 | | 60 | | 1.5 | As Cast 9 |
| Comparative Average Abrasion Wear Data * | | | | | |
| Oxyacetylene | | | Gas Tungsten Arc (GTAW,TIG) | | |
| Volume Loss (mm ³) | | Wear Coefficient** | | Volume Loss (mm ³) | |
| 29 | | 6.2 x 10 ⁻⁴ | | 64 | |
| | | | | 13.0 x 10 ⁻⁴ | |

* Tested for 2000 revolutions at load of 30 lbs (13.6kg) using a 9 inch (229mm) diameter rubber wheel and dry sand
 ** The wear coefficient (K) was calculated using the equation V=KPL/h where V=wear volume (mm³); P=Load(kg); L=sliding distance(mm); h=diamond pyramid hardness