

## Electronics

### Tweezers 4WF Wafer Tweezes



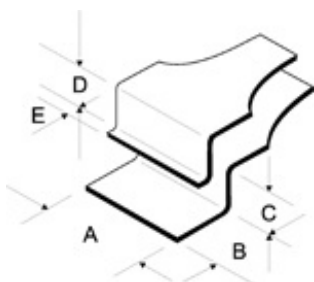
A 0.47" 12.0 mm

B 0.33" 9.0 mm

C 0.10" 2.5 mm

D 0.15" 4.0 mm

E 0.1" 2.5 mm



4WFSA **Anti-Magnetic Anti-Acid Stainless Steel**

### General Notes

- low carbon austenitic steel (Material number 1.4435, DIN X2CrNiMo18-14-3, AISI number 316L)

- contains from 16.5 to 18.5 wt% chromium and has important quantities of nickel and molybdenum as additional alloying elements
- non-magnetizable
- good corrosion resistance to most chemicals, salts and acids
- generally used where corrosion resistance and toughness are primary requirements
- typical applications include tweezers for the electronic industry, watch-makers, jewelers and laboratory and medical applications in moderately aggressive chemical environments

## Composition

| Component | Wt. %   | Component | Wt. %     | Component | Wt. %     |
|-----------|---------|-----------|-----------|-----------|-----------|
| C         | ≤0.03   | Si        | ≤1.0      | Mn        | ≤2.0      |
| P         | ≤0.045  | S         | ≤0.03     | Cr        | 17.0-19.0 |
| Mo        | 2.5-3.0 | Ni        | 12.5-15.0 |           |           |

## Mechanical properties:

|                            |                       |
|----------------------------|-----------------------|
| State                      | annealed              |
| Density                    | 8.0 g/cm <sup>3</sup> |
| hardness HB30              | ≤215                  |
| Hardness Rockwell B        | 79                    |
| Tensile strength, ultimate | 500-700 MPa           |
| Tensile strength, yield    | 290                   |
| 0.2% Yield stress          | ≤200 MPa              |
| Elongation, break          | 40%                   |
| Modulus of elasticity      | 200 GPa               |

## Thermal properties

|                               |              |            |
|-------------------------------|--------------|------------|
| Coef. of lin. therm expansion | 16.0 E-6/°C  | 20°C-100°C |
| Coef. of lin. therm expansion | 17.0 E-6/°C  | 20°C-300°C |
| Specific heat capacity:       | 0.50 J/(g·K) |            |
| Thermal conductivity:         | 15W/(m·K)    |            |
| Continuous use temperature:   | 350°C        |            |
| Max service temperature, ait  | 925°C        |            |

## Electrical properties

|             |                 |
|-------------|-----------------|
| Resistivity | 0.75 E-4 Ohm.cm |
|-------------|-----------------|

## Credits