

# Platinum Powder

**Formula:** Pt

**Percentage Purity:** 99.95%

**Maximum Particle Size:** 45µm

**Weight:** 2g

**CAS Number:** 7440-06-4

**UOM Code:** 121-238-30

**SKU:** 1000031963-group

**Product Code:** PT00-PD-000115

## Material Properties for Precious Metals

### Atomic Properties

| Element   | Value   |
|---|---|
| Atomic number                                     | 78  |
| Crystal structure                                 | Face centred cubic                                  |
| Electronic structure                              | Xe 4f <sup>14</sup> 5d <sup>9</sup> 6s <sup>1</sup> |
| Valences shown                                    | 1,2,3,4   |
| Atomic weight( amu )                              | 195.08  |
| Thermal neutron absorption cross-section( Barns ) | 9   |
| Photo-electric work function( eV )                | 5.3   |
| Natural isotope distribution( Mass No./% )        | 192/ 0.79   |
| Natural isotope distribution( Mass No./% )        | 196/ 25.30  |
| Natural isotope distribution( Mass No./% )        | 190/ 0.01   |
| Natural isotope distribution( Mass No./% )        | 195/ 33.80  |
| Natural isotope distribution( Mass No./% )        | 198/ 7.20   |
| Natural isotope distribution( Mass No./% )        | 194/ 32.90  |
| Atomic radius - Goldschmidt( nm )                 | 0.138   |
| Ionisation potential( No./eV )                    | 1/ 9.0  |
| Ionisation potential( No./eV )                    | 2/ 18.6   |

### Mechanical Properties

| Element            | Value |
|--------------------|-------|
| Material condition | Hard  |
| Material condition | Soft  |

| <b>Element</b>                            | <b>Value</b> |
|---|--------------|
| Poisson's ratio                           | 0.39         |
| Poisson's ratio                           | 0.39         |
| Bulk modulus( GPa )                       | 276          |
| Bulk modulus( GPa )                       | 276          |
| Tensile modulus( GPa )                    | 170          |
| Tensile modulus( GPa )                    | 170          |
| Hardness - Vickers( kgf mm <sup>2</sup> ) | 40           |
| Hardness - Vickers( kgf mm <sup>2</sup> ) | 100          |
| Tensile strength( MPa )                   | 200-300      |
| Tensile strength( MPa )                   | 125-150      |
| Yield strength( MPa )                     | 14-35        |
| Yield strength( MPa )                     | 185          |

## **Electrical Properties**

| <b>Element</b>                              | <b>Value</b>    |
|---|-----------------|
| Electrical resistivity( $\mu\text{Ohmcm}$ ) | 10.58@20@20°C   |
| Temperature coefficient( K <sup>-1</sup> )  | 0.00392@0-100°C |

## **Physical Properties**

| <b>Element</b>              | <b>Value</b> |
|-----------------------------|--------------|
| Boiling point( C )          | 3827         |
| Density( gcm <sup>3</sup> ) | 21.45@20°C   |

## **Thermal Properties**

| <b>Element</b>   | <b>Value</b> |
|--|--------------|
| Melting point( C )   | 1772         |
| Latent heat of evaporation( J g <sup>-1</sup> )                      | 2405         |
| Latent heat of fusion( J g <sup>-1</sup> )                           | 101          |
| Specific heat( J K <sup>-1</sup> kg <sup>-1</sup> )                  | 133@025°C    |
| Thermal conductivity( W m <sup>-1</sup> K <sup>-1</sup> )            | 71.6@0-100°C |
| Coefficient of thermal expansion( $\times 10^{-6}$ K <sup>-1</sup> ) | 9@0-100      |