

The alloy corresponds to the standard ISO 22674/Type 4.

### 1. Composition

Au (ISO 9202:1991)	60.00%
Cu	14.00%
Pt	10.50%
Ag	7.00%
Pd	6.50%
Zn	2.00%

### 2. Physical Properties

Melting range	960-1065°C
Density	15.1 g/cm <sup>3</sup>
Young's Modulus	110 GPa
Linear Coeff. of thermal expansion (25-500°C)	16.5 x10 <sup>-6</sup> K <sup>-1</sup>
Linear Coeff. of thermal expansion (25-600°C)	17.7 x10 <sup>-6</sup> K <sup>-1</sup>
Colour	white

### 3. Mechanical Properties

Condition	cold worked	soft	hardened
Parameters	35-50%KV	800°C/1h/H2O	800°C/1h/H2O&400°C/15'/air
Hardness HV5	>315	275	345
Tensile strength (Rm)	>930 MPa	805 MPa	1190 MPa
0.2% Proof stress (Rp 0.2%)	>850 MPa	740 MPa	1035 MPa
Elongation	>5 %	18 %	8 %

### 4. Biological Testing

#### Cytotoxicity Test according to ISO 10993-5:

The cytotoxic effect of the alloy was tested with the Extraction Test.  
(Project, 990880F, 01.01.2000, BSL Bioservice, DE-82152 Planegg, FRG)

#### Sensitization Test according to ISO 10993-10:

The allergic sensitization of the alloy was tested with the Maximation Test.  
(Project 990881F, 01.01.2000, BSL Bioservice, DE-82152 Planegg, FRG)

#### Mutagenicity Test (AMES) according to ISO 10993-3:

There have been no AMES test.

#### Results:

The alloy showed no cytotoxic potential nor did it cause any allergic sensitization.

### 5. Handling

thermal treatments: The alloy is suited for polymerization, brazing, laser and phaser welding. OSV is self-hardening. Do not harden after brazing and welding, as the alloy may become brittle. The alloy has good mechanical properties even without hardening.

Surface-conditioning: Pickling: 10 Vol.% warm sulfuric acid (H2SO4). Do not pickle in Neacid (sulphamic acid), nitric acid (HNO3) or hydrochloric acid (HCl).

Remarks: Hardening

OSV hardens around 400-425°C.

The hardening curve in paragraph was determined on material recrystallized at

800°C/1h/H<sub>2</sub>O with hardening times of 15 min. and air cooling.

### Recrystallization

OSV is softest at 700°C and recrystallized at 800°C. At temperatures above 800°C slight grain growth occurs and hardness increases.

The recrystallization curves in paragraph 7 is a mean curve of recrystallizations of material cold worked to 46%. Annealing times were 1 hour followed by quenching in water.

### Cold work curve

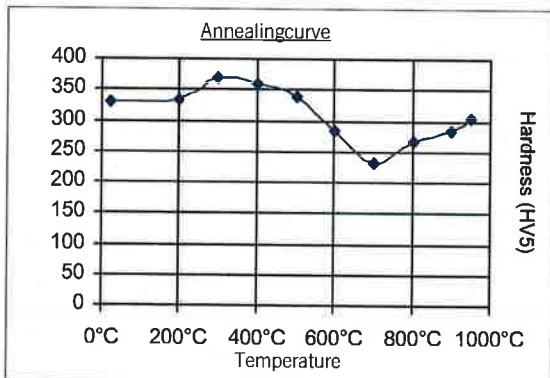
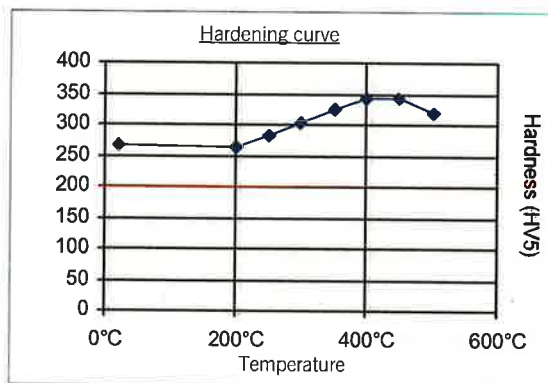
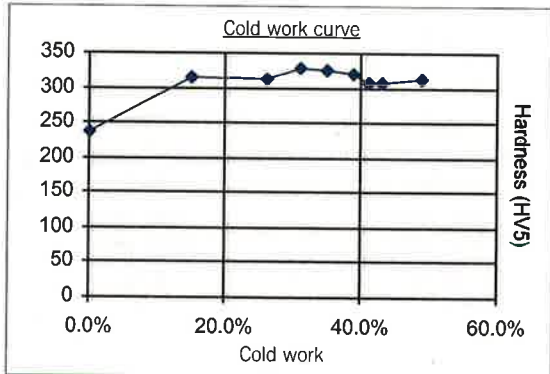
The material strongly hardens at low rates of cold work. With cold work above 35% the mechanical properties remain constant, the hardness decreases slightly

## 6. Certification

Corrosion testing according to standard ISO/DIS 10271 showed, that a total of  $0.88\mu\text{g}/\text{cm}^2 \times 7\text{d}$  was set free (limit:  $200\mu\text{g}/\text{cm}^2 \times 7\text{d}$ ).

Manufacture, packing and delivery are constantly monitored according to the quality management system standards according to ISO 9001 and ISO 13485.

## 7. Graphs



Cendres+Métaux SA

Dr. Niklaus Baltzer  
Head of Materials Development

Dr. Flavio Campana  
Head of Material Testing