

# NOBIL-METAL

## NOBIL 4000

ALLOY DATA

*Non-precious alloy for metal ceramic, ISO 9693 - white colour*

### Chemical composition

The analysis of the chemical composition of the alloy is performed by emission spectrometry. The composition of the alloy is reported in the table below:

Co%	Cr%	Mo%	Si%	Trace%
62.0	31.0	4.0	2.2	Mn - Fe - W

### Technical data:

Density g/cm <sup>3</sup>	8.6	Yield strength MPa	510 - 540
Melting range °C	1210 - 1370	Elongation %	12 - 7
Casting temperature °C	1470	Tensile Strength MPa	590 - 600
TEC 25-500°C/25-600°C 10 <sup>-6</sup> K <sup>-1</sup>	14.4 - 14.9	Vickers hardness HV5/30	290 - 300
Modulus of elasticity GPa	220	Crucible	Refractory

### Solders:

**Pre-solder:** SOLDER 1130 (1140°C)  
**Post-solder:** not recommended

### Corrosion resistance

The electrochemical properties of this alloy were evaluated in an electrochemical cell built according to standards defined in ISO 10271.

The following results were obtained:

$E_{ocp} = -0.201\text{mV}$        $E_p = 499\text{mV}$        $I_{300} = 0.42\mu\text{A}\cdot\text{cm}^{-2}$        $I_p = 9.93\mu\text{A}\cdot\text{cm}^{-2}$

The high value of the breakdown potential ( $E_p$ , 499mV) with the low current density at 300 mV ( $I_{300}$ , 0.42 $\mu\text{A}\cdot\text{cm}^{-2}$ ) indicate the excellent corrosion resistance of this alloy.

### Cytotoxicity testing

Cytotoxicity of NOBIL 4000 alloy has been evaluated according to ISO 10993-5 standard, using the L-929 (mouse fibroblasts) cell line.

Results have confirmed the perfect cytocompatibility of this alloy. Cells behaviour and function were definitely similar to those measured in tests involving pure gold, that is the paradigmatic non-toxic material.

### Specific properties

- ✧ **Color white**
- ✧ **Nichel and Beryllium free**