

NOBIL-METAL®



Quality, research and technology of the production to guarantee top results

Today, the Nobil Metal plant covers an area of about 6000 square metres, and the company is a **leader** among companies in this field, producing almost 200 different types of dental alloys and solders, appreciated by dental technicians in over 50 countries throughout the world. Nobil Metal alloy and solder production is renowned for the particularly severe selection criteria and **quality** control on all their metals and alloys. The quality control is performed by Nobil Bio Ricerche, a company exclusively dedicated to **research**, with which Nobil Metal created a direct work-line to guarantee the dental technicians the best technical and scientific support. Nobil Bio Ricerche has confirmed that Nobil Metal alloys are perfectly compatible and do not release even the slightest ions that could result as toxic for humans.

Reliability, safety and biological compatibility are the essential criteria on which Nobil Metal have established their work process when creating new dental materials. The synergies of analysis on alloys, production, scientific research, and **qualified technical assistance** are the guidelines used by Nobil Metal in providing customers in Italy and abroad with an excellent customer service composed of skilled technicians and experts in metallurgy and prosthetics.

KERAMIT 450+HV

EXCELLENT THERMAL STABILITY
EXCEPTIONAL HOMOGENEITY

COMPOSITION & TECHNICAL PROPERTIES

COMPOSITION								
Au	Pd	Ag	In	Sn	Ga	Re	Ru	Au & Pgm
45,0%	38,9%	5,0%	8,6%	x	1,4%	x	x	84,2%

x = < 1,0%

TECHNICAL FEATURES		
Colour	-	White
Density	g/cm ³	13,6
T.E.C. 25-500°C	10 ⁻⁴ K ⁻¹	13,9
T.E.C. 25-600°C	10 ⁻⁴ K ⁻¹	14,2
Melting range	°C	1215-1305

		Softened	Hardened
Vickers Hardness	HV 5/30	240	270
Yield strength	MPa	780	800
Tensile strength	MPa	550	600
Elongation	%	19	10
Modulus of elasticity	GPa	140	
Adesion	Rb (MPa)	42,28	
Investment	-	Phosphate	
Crucible	-	Ceramic	
Burn-out temperature	°C	820	
Casting temperature	°C	1400	
Homogenizing	°C/min in VAC	980/10	
Oxydation	°C/min	980/10	

For further information, please, refer to Nobil Metal "Alloys&Solders" chart.

ISO 9693

CE
0546

NOBIL-METAL®

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Alloys & Solders



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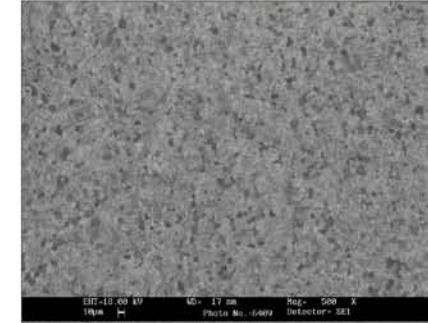
Milling on lower bar



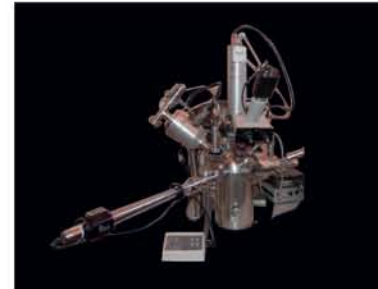
Bridge of Keramit 450+HV



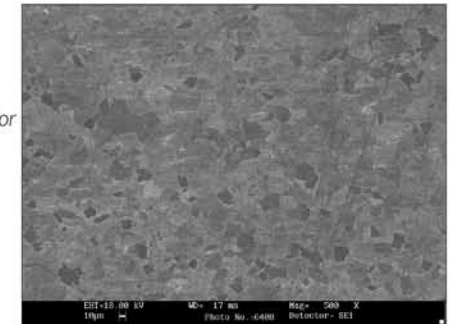
Picture SEM
Scanning Electron
Microscope



Picture 1 - Keramit
450+HV at SEM



Picture XPS
spectrophotometer used for
the surface analysis
metal-ceramic interface



Picture 2 - competitor
alloy at the same
magnification

Research, projects, production cycle and sales are totally monitored, certified and quality assessed. The improvement of exclusive production techniques, a particular technology in the use of vacuum (from here the "HV" i.e High Vacuum in the alloy name), the introduction of microelements traces during the alloying process together with specific technical skills allowed to achieve relevant improvements. Keramit 450+ HV results extremely interesting from every point of view.

The Modulus of elasticity has been improved and reached 140 Gpa. It makes the alloy recommended for implantology, telescopic crowns and milling.

It is particularly interesting the stability the alloy keeps even at high temperatures: even at minimal thickness on the margins, the structures in Keramit 450+ HV do not show any change or distortion, even after several ceramic firings (characteristic known as "creep and sag resistance").

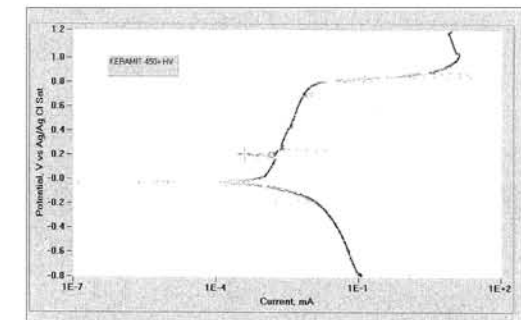
The crystal lattice is finer and more homogeneous than the

previous version and then the most of competitor alloys with similar composition.

The grain size is 8 micron, on the average.

This data is shown in pictures 1 and 2 carried out by Electron Scanning Microscope at 500 magnifications at our R&D Center. This is very important because it assures a superior bonding of the metal with the outstanding benefits during the different working phases, such as finish, ceramic firing, pre- and post-soldering, adjustment and final polishing.

The Thermal Expansion Coefficient (TEC) guarantees an excellent compatibility with the most important dental ceramics on the market. The oxidation colour does not affect the aesthetic component at all, assuring the usual adhesion with the opaque/dentin.



Potentiodynamic curve of the Keramit 450+ HV alloy

Corrosion	Eocp 92	Ep 799	I300 2.88	Ip 7.0
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