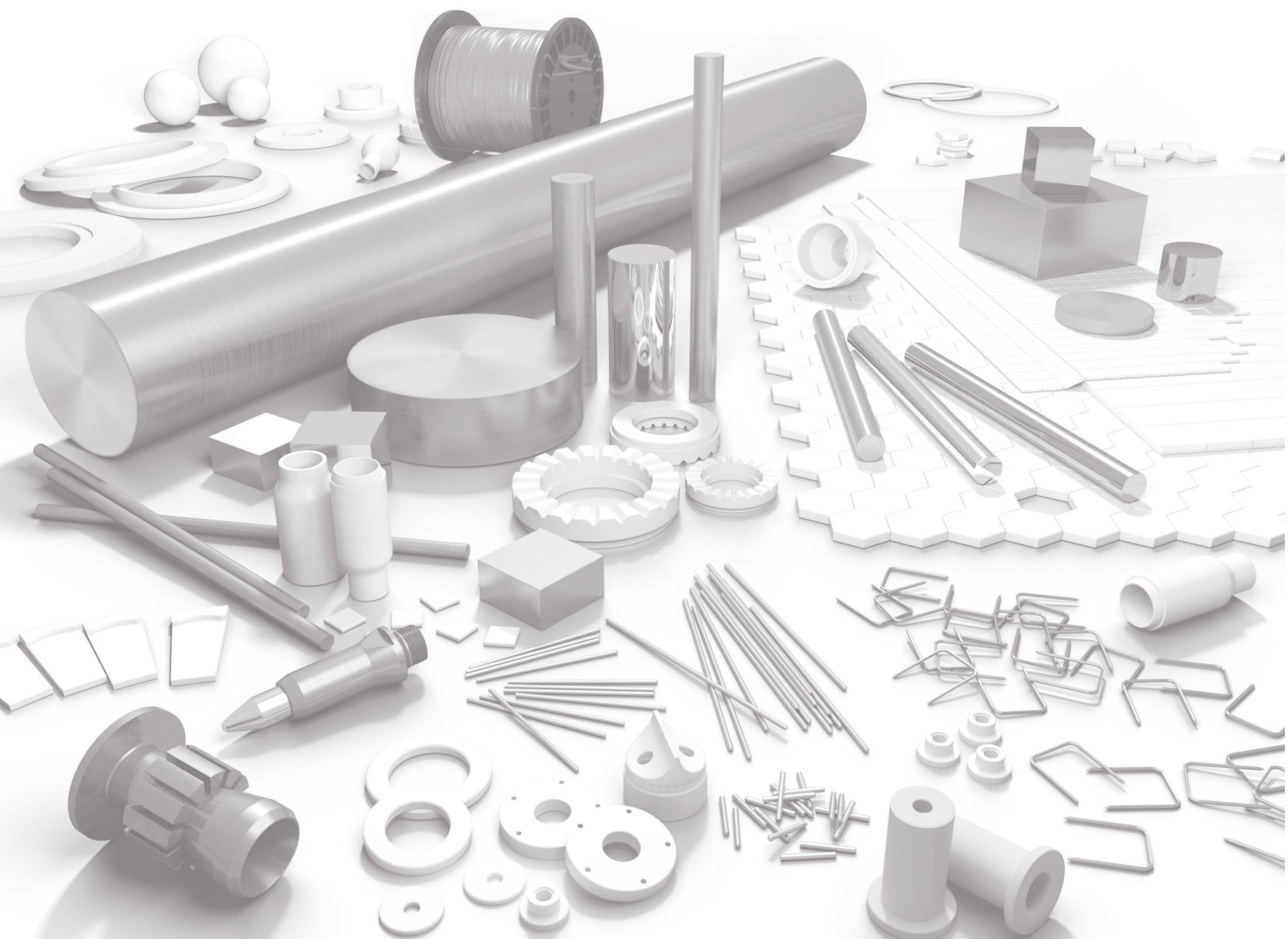
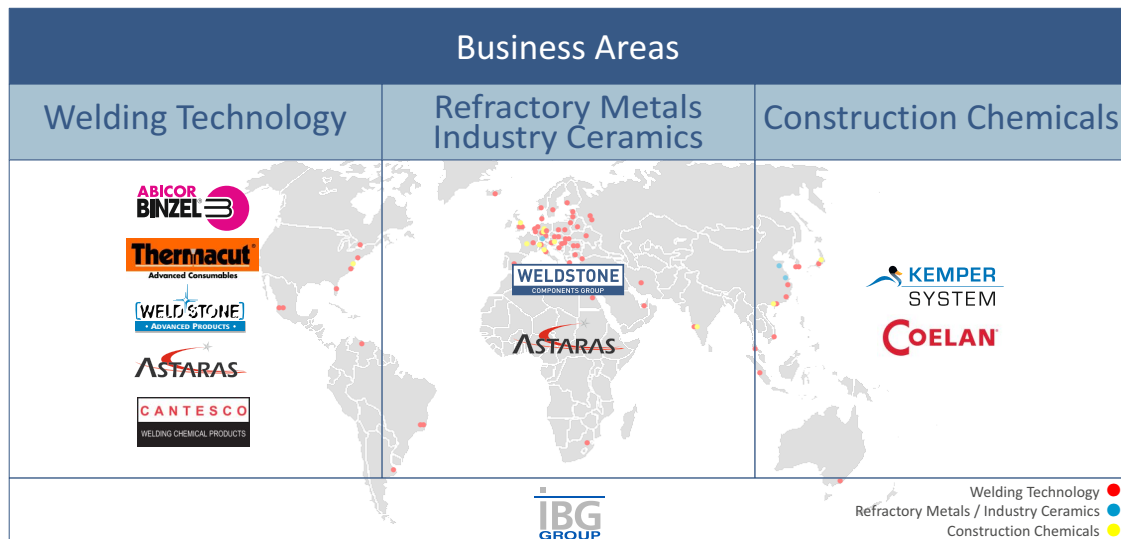


ASTARAS



Astaras, Inc

Astaras is a member of the German based IBG-Group. With more than 50 international affiliated companies IBG has gained over the last 30 years leading positions in the fields of welding, tungsten and ceramic components as well as in the construction chemicals. Currently the group employs 2,000 people around the world.



Weldstone and Astaras grew rapidly from a mid-size tungsten electrode production company to the market leader in TIG-electrodes. Together, they expanded the business scope to other tungsten related markets such as tungsten heavy metal, tungsten-copper and specialty tungsten alloys.

Today, Weldstone and Astaras are leading manufacturers of tungsten products and serves the most demanding industries such as automotive, aerospace, medical, measuring devices and others.



INDUSTRIES

Applications of our products are found in many different industries



Die Casting



Welding



Machines



Aerospace



Automotive



Spark Erosion



Cutting



Measuring



Injection
Molding



Medical



Electronic



Coating



Furnance



Oil



Gas



Glass



Sports



Defense

FOCUS

In comparison to other suppliers, Astaras and Weldstone have the advantage of owning many manufacturing facilities and has a broad network of global service companies. This makes us independent and guarantees you best possible product and service quality. Weldstone also focuses on their core values in everyday business. This includes treating not only the environment respectfully, but must importantly respectful and ethical dealings with our clients.



Own
Production Sites



High
Innovation



Reliable
Quality



Professional
Consulting



Ethics



Environment



MATERIALS

Basics

Our products are mainly based of tungsten and molybdenum. By alloying and/or doping with other elements, special materials, or alloys, are created with extraordinary characteristics.

H Hydrogen																	He Helium	
Li Lithium	Be Beryllium											B Boron	C Carbon	N Nitrogen	O Oxygen	F Fluorine	Ne Neon	
Na Sodium	Mg Magnesium											Al Aluminium	Si Silicon	P Phosphorus	S Sulfur	Cl Chlorine	Ar Argon	
K Potassium	Ca Calcium	Sc Scandium	Ti Titanium	V Vanadium	Cr Chromium	Mn Manganese	Fe Iron	Co Cobalt	Ni Nickel	Cu Copper	Zn Zinc	Ga Gallium	Ge Germanium	As Arsenic	Se Selenium	Br Bromine	Kr Krypton	
Rb Rubidium	Sr Strontium	Y Yttrium	Zr Zirconium	Nb Niobium	Mo Molybdenum	Tc Technetium	Ru Ruthenium	Rh Rhodium	Pd Palladium	Ag Silver	Cd Cadmium	In Indium	Sn Tin	Sb Antimony	Te Tellurium	I Iodine	Xe Xenon	
Cs Cesium	Ba Barium	Lanthanides	Hf Hafnium	Ta Tantalum	W Tungsten	Re Rhenium	Os Osmium	Ir Iridium	Pt Platinum	Au Gold	Hg Mercury	Tl Thallium	Pb Lead	Bi Bismuth	Po Polonium	At Astatine	Rn Radon	
Fr Francium	Ra Radium	Actinides	Rf Rutherfordium	Db Dubnium	Sg Seaborgium	Bh Bohrium	Hs Hassium	Mt Meitnerium	Ds Darmstadtium	Rg Roentgenium	Cn Copernitium	Uut Ununtrium	Fl Flerovium	Uup Ununpentium	Lv Livermorium	Uus Ununseptium	Uuo Ununoctium	
		La Lanthanum	Ce Cerium	Pr Praseodym	Nd Neodymium	Pm Promethium	Sm Samarium	Eu Europium	Gd Gadolinium	Tb Terbium	Dy Dysprosium	Ho Holmium	Er Erbium	Tm Thulium	Yb Ytterbium	Lu Lutetium		
		A Actinium	Th Thorium	Pa Protaktinium	U Uranium	Np Neptunium	Pu Plutonium	Am Americium	Cm Curium	Bk Berkelium	Cf Californium	Es Einsteinium	Fm Fermium	Md Mendelevium	No Nobelium	Lr Lawrencium		

Characteristics

The outstanding characteristics of tungsten and molybdenum are high density, strength and stiffness even under the highest temperatures.



Density



Thermal Strength



Mechanical Strength



Shielding



Thermal Conductivity



Electrical Conductivity



PRODUCTS

ANVILOY® Tungsten Heavy Alloys

ANVILOY® is an internationally recognized brand which represents a product group comprising of tungsten heavy alloys.

Due to the high melting point of tungsten, ANVILOY® Products are produced in a powdered-metallurgical process. In these alloys, many of the outstanding characteristics of tungsten remain. That is the reason why these materials are very high in density. The high density is often directly applied like in vibration dampening weights or counter balance weights.

In shielding applications, the density is indirectly used due to its high absorption cross-section. ANVILOY® alloys are also very corrosion and temperature resistant and offer at the same time good electrical and thermal conductivity.

These properties are particularly used in high temperature applications, welding and die casting processes.

The high stiffness is the reason why ANVILOY® alloys are also used to dampen vibrations in precision tool holders.

ANVILOY® Tungsten Heavy Alloy Materials

magnetic

- ANVILOY® 170F
- ANVILOY® 175F
- ANVILOY® 173M
- ANVILOY® 180F
- ANVILOY® 185F

non-magnetic

- ANVILOY® 170C
- ANVILOY® 175C
- ANVILOY® 180C
- ANVILOY® 185C

special alloys for dies casting

- ANVILOY® 1050
- ANVILOY® 1150
- ANVILOY® 1350
- ANVILOY® Weld Rod

ANVILOY® products

- Counterbalance weights for crank shafts
- Aerospace components
- Tool holders
- Medical components
- Components for die casting molds and tools
- Shielding parts for measuring devices
- Furnace components
- Engine parts
- Weld rods
- Schweißstäbe

Further materials and products on request





TUCOMET® is the newest member in the Weldstone brand family and stands for a wide range of extraordinary tungsten-copper products. For example, some examples include resistance welding electrodes, spark erosion, plasma spraying, contacts and heat sinks.

Tungsten-Copper materials are often produced by infiltration of a pressed or a pre-sintered tungsten body with copper. These new materials show the hardness and thermal resistance of tungsten combined with the thermal and electrical conductivity of copper. As tungsten does not get dissolved in copper due to its high melting point its specific conductivity remains.

These material's hardness mechanism are not temperature related and therefore TUCOMET® Tungsten-Copper is very tempering resistant. These materials can be called tungsten alloys and therefore can be machined easily.

The material combination of tungsten and copper are not only available as alloys bodies in micro binding but also macro binding. A special connecting process guarantees best possible contact and heat transfer at very high strength and temperature resistance. By this process the high hardness and minimum of energy loss provide long a lifetime and performance for resistance welding. Another reason for improved performance of TUCOMET® materials is that due to the high melting point, soldering between electrode and work piece is minimized.

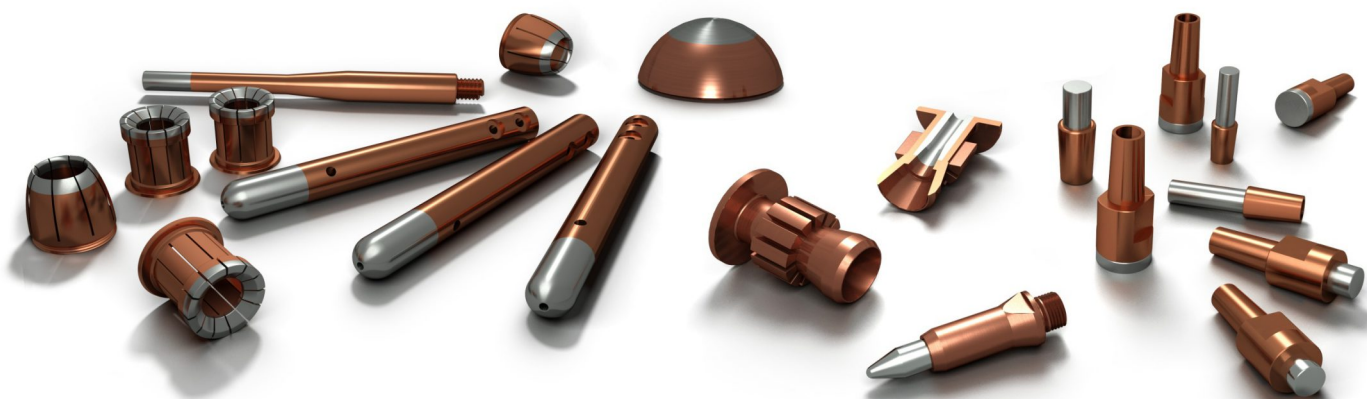
TUCOMET™ materials

- TUCOMET™ 70
- TUCOMET™ 75
- TUCOMET™ 80
- TUCOMET™ 90

TUCOMET™ products

- Spot welding
- Projection welding
- Resistance seam welding
- Resistance butt welding
- Capacitor discharge welding
- Stud welding
- Flash butt welding

Further materials and products on request



E3® TIG- electrodes have been exclusively developed with a team of welding engineers from the sister company Abicor Binzel in cooperation with its top clients and Weldstone metallurgical experts and production engineers. For already quite some time E3® electrodes substitute the formerly popular radioactive WT20 TIG-electrodes in the welding departments of leading companies.

E3® TIG- electrodes are not only radiation free and environmentally friendly, but often also shows superior performance compared to all other electrodes available today. E3® electrodes are trend-setters regarding safety and reliability and will influence the TIG-welding world significantly in the future.



E3® TIG electrodes

- TIG-electrodes
- Orbital welding electrodes
- Inserts for plasma electrodes
- Arc-Source for ANVILOY® Weld Rods

Industrial Ceramics

Similar to the high-melting refractory metals, Tungsten and Molybdenum and also Ceramic products are produced from prepared powder mixtures. Besides pressing of powder, also production processes, which implement plasticized materials, are increasingly used.

Through alloying with lower melting phases, bodies with high density can be created with temperatures less than 2,000°C. Depending on the application, the sintered products are then treated through grinding processes.

Ceramic materials

- Al₂O₃ 92%
- Al₂O₃ 94%
- Al₂O₃ 96%
- Al₂O₃ 98%

Ceramic products

- gasnozzles
- sealing rings
- wearresistance components
- FCP-components

Further materials and products on request





This and additional brochures can be downloaded at www.astaras.com and www.weldstone.com



ANVILOY® WELD ROD

Anviloy® Weld Rod
enhancement of casting tools made from hot work steels such as L2342 / H13 or repair of tools, dies and inserts made of tungsten alloys

Anviloy® Weld Rod
Anviloy® is a tungsten based TIG welding filler metal available in rod or wire.

Applicable to the following materials

- Hot work steels such as L2342 / H13
- Tungsten alloys

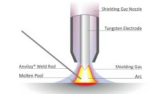

Major Applications

- Repair of cracked or broken dies
- Reconstruction of outflows and seals
- Forming dies and punch dies where heat transfer needs to be enhanced
- Areas of strength or wear areas exposed to high stresses or corrosion

Advantages

- Increase the resistance to thermal wear and heat checking
- Increase erosion and/or corrosion resistance
- Reducing the tendency to soldering
- Remove heat faster from the casting components

Available European Standard Sizes (mm / inch)																
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4.0 3/16"	4.0 3/16"	4.0 3/16"	4.0 3/16"													
5.0 3/8"	5.0 3/8"	5.0 3/8"	5.0 3/8"													
6.0 1/2"	6.0 1/2"	6.0 1/2"	6.0 1/2"													

IBG

ANVILOY® Weld Rod


ANVILOY® AEROSPACE

ANVILOY® high density alloys for Aerospace applications

ANVILOY® Weights and Shielding Components
ANVILOY® is a group of Tungsten Heavy Alloys with densities of up to 18.5g/cm³. ANVILOY® is available in highly magnetic and non-magnetic composition. It can be supplied in various precision machined shapes and sizes and even coated applications.

Key Characteristics of ANVILOY® Products

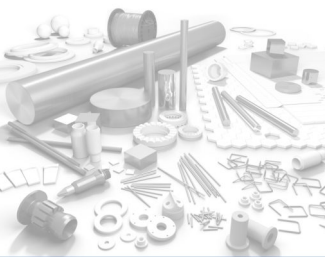
- Excellent high density
- Very good mechanical resistance
- Excellent chemical resistance
- Outstanding thermal resistance
- Electromagnetic friendly



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ANVILOY® Aerospace

WELDSTONE
COMPONENTS GROUP



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Weldstone

ANVILOY® PRODUCTS

WELDSTONE
TUNGSTEN COMPONENTS

SPECIAL PRODUCTS FOR DIECASTING




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ANVILOY® Die Casting

TUCOMET™ PRODUCTS

WELDSTONE
TUNGSTEN COMPONENTS

TUCOMET™ TUNGSTEN-COPPER



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TUCOMET™ Tungsten-Copper



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