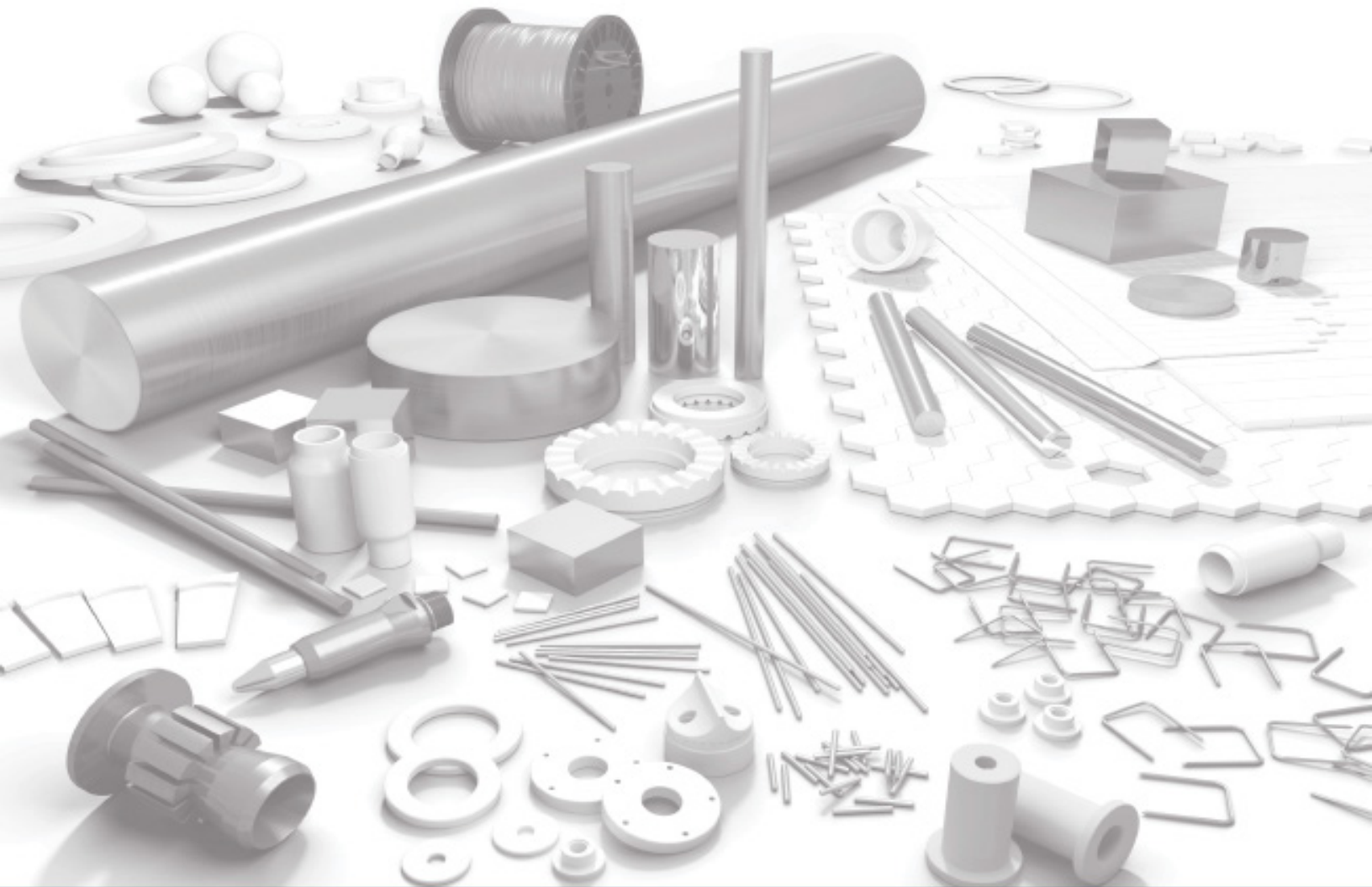


# WELDSTONE

COMPONENTS GROUP



## WELDSTONE

WELDSTONE is the exclusive provider of ANVILOY® and TUCOMET® Tungsten Heavy Alloys in The Americas. WELDSTONE Components serves Europe, Asia, Africa, and Australia. ANVILOY® Tungsten Heavy Alloys are sourced from our sister company The Weldstone Group. The WELDSTONE group is located in China and also owned by the IBG Group. WELDSTONE grew rapidly from a mid-size tungsten electrode production company to the market leader in TIG-electrodes expanding the business scope to other tungsten related markets such as tungsten heavy metal, tungsten-copper and specialty tungsten alloys. Today, WELDSTONE Components Group is the leading manufacturer of tungsten products and serves the most demanding industries such as automotive, aerospace, medical, measuring devices, and others.

## ABICOR GROUP®

WELDSTONE is a member of the ABICOR GROUP, which also includes IBG Industrie-Beteiligungs-Gesellschaft mbH & Co KG companies ABICOR BINZEL, Thermacut, HERR Industry System, PT Photonic Tools, and Cantesco.



## IBG GROUP



The IBG group consists of more than 2,500 employees in 75 subsidiaries spread across 50 countries worldwide and can now look back on a hundred years of company history. In addition to IBG Industrie-Beteiligungs-Gesellschaft mbH & Co. KG as the parent company, the Cologne-based holding company comprises a large number of affiliated companies that represent the globally oriented operating activities.

## INDUSTRIES

Applications of our products are found in many different industries



Die Casting



Welding



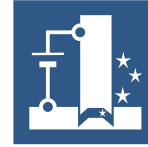
Machines



Aerospace



Automotive



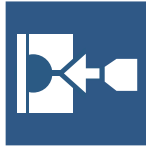
Spark Erosion



Cutting



Measuring



Injection  
Molding



Medical



Electronic



Coating



Furnance



Oil



Gas



Glass



Sports



Defense

## FOCUS

In comparison to other suppliers, WELDSTONE has 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 Site



High  
Innovation



Reliable  
Quality



Professional  
Consulting



Ethics



Environment



# MATERIALS

Our products are mainly based on 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	Lanthanid	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



# 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® tungsten heavy alloys are also very corrosion and temperature resistant and, at the same time, offer 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® tungsten heavy 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 Die 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. 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 presintered 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 a long 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 Weldstone's 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 show superior performance compared to all other electrodes available today. E3® electrodes are trendsetters 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, production processes which implement plasticized materials, are increasingly used.

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

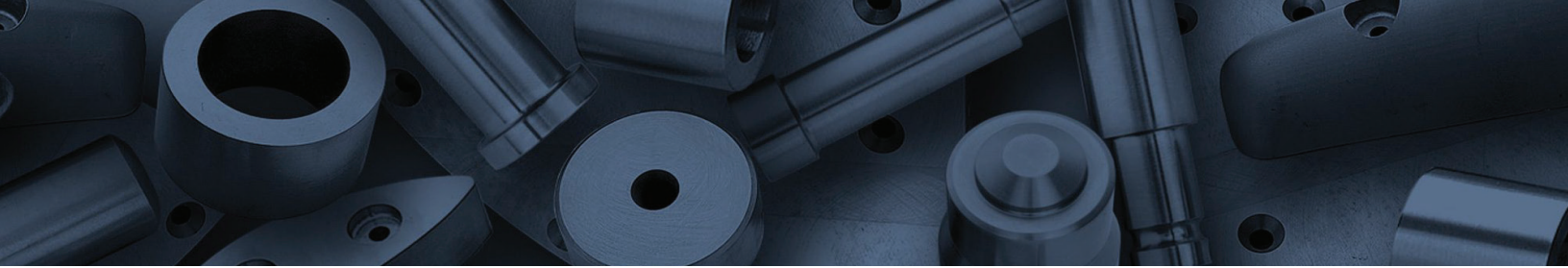
#### CERAMIC MATERIALS

- Al<sub>2</sub>O<sub>3</sub> 92%
- Al<sub>2</sub>O<sub>3</sub> 94%
- Al<sub>2</sub>O<sub>3</sub> 96%
- Al<sub>2</sub>O<sub>3</sub> 98%

#### CERAMIC PRODUCTS

- Gasnozzles
- Sealing rings
- Wear resistance components
- FCP-components





**This and additional brochures can be downloaded at**

**www.anviloy.com**



**ANVILOY® WELD ROD**

**Anviloy® Weld Rod**  
enhancement of existing rods made from hot work steels with a 1.8% Ni (A 13) or higher of Ni, Al, and lower levels of tungsten alloys

Anviloy® Weld Rod  
Anviloy® is a tungsten based TiC welding filler metal suitable for shield metal arc.

Available to the following materials:  

- Hot work steels such as 52100 / A521
- Longmen Alloys

Major Applications:  

- Repair of cracked or broken dies
- Reconstruction of cracked and worn dies
- Welding of long life or special wear resistant steel inserts to be withdrawn
- Welding of long life or special wear resistant to high erosion or corrosion

Advantages:  

- Increase the resistance to thermal wear and heat checking
- Reduce erosion and/or corrosion resistance
- Reducing the tendency to cracking
- Reduce hot tear from the casting components

Available European Standard Sizes (over 1 inch)			
3/8" (9.525)	1/2" (12.7)	3/4" (19.05)	1" (25.4)
1 1/8" (28.575)	1 1/2" (38.1)	1 3/4" (44.45)	2" (50.8)
2 1/2" (63.5)	3" (76.2)	3 1/2" (88.9)	4" (101.6)

IBG

**ANVILOY® AEROSPACE**

**ANVILOY® high density alloys for Aerospace applications**

ANVILOY® High Density and Shimming Components  
ANVILOY® is a group of tungsten-copper alloys with densities of up to 18.5g/cm<sup>3</sup>. ANVILOY® is suitable for highly magnetic and nonmagnetic applications. For the detailed system please contact your distributor and your local representative.

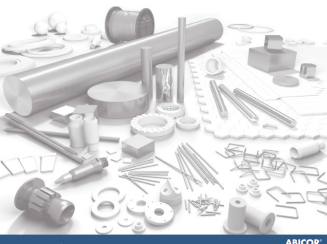
Key Characteristics of ANVILOY® Products:  

- Extremely High Density
- Very good mechanical properties
- Excellent chemical resistance
- Outstanding thermal expansion
- Dimensionally Stable



IBG

**WELDSTONE**  
COMPONENTS GROUP



ANVILOY® ABICOR GROUP

**ANVILOY® PRODUCTS**

**SPECIAL PRODUCTS FOR DIE CASTING**




ABICOR GROUP

**TUCOMET™ PRODUCTS**

**WELDSTONE**  
TUNGSTEN COMPONENTS

TUCOMET™ TUNGSTEN-COPPER



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**WELDSTONE**  
COMPONENTS GROUP

**Americas**

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