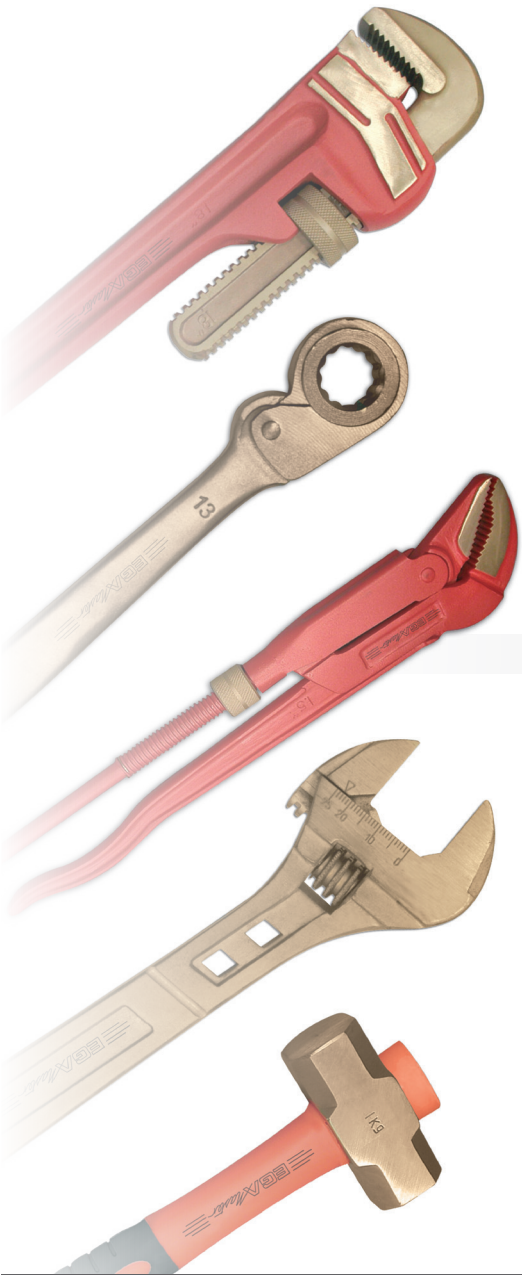
NON-SPARKING TOOLS

EGA Master Non-Sparking Tools are the best alternative for non-sparking application purposes in potentially explosive environments. We incorporate to our non-sparking tools all our knowledge of decades designing and manufacturing hand tools, making the most ergonomic and nicest design for them.

All EGA Master Tools are manufactured according to the strict control of ISO 9001-200, certified by the most prestigious institution for hand tool manufacturing, TÜV-Rheindland/Germany.



MATERIALS

COPPER-BERYLIUM ALLOY			ALUMINIUM-BRONZE ALLOY		
Composition	Be	1.8%-2%	Composition	Al	10%-12%
				Ni	4%-6%
	Ni+Co	0.2%-1.2%		Fe+Mn	<5.8%
	Rest	Cu		Rest	Cu
Hardness	283-365 Brinell		Hardness	229-291 Brinell	
Tensile Strength	1250 N/mm²		Tensile Strength	800 N/mm²	

PROPERTIES AND FEATURES

Non-sparking: Appropriate for explosive potential environments.
Non-magnetic safety: Essential for equipments that require complete non-magnetic safety.
Corrosion resistant : Specially well suited for applications in corrosive environments like encountered in marine works or fire-fighting applications.
Forged after casting: Provides higher mechanical properties and better finishing.
Ergonomic designs: The use of bi-material anti-slippery handles, dipping anti-slippery handles, totally ergonomic designs make operations easier, more comfortable and master.

TABLE OF RISKS OF EXPLOSION AND MAXIMUM TEMPERATURE

Explosion group	Class of temperature (maximum surface temperature allowed)					
Temperature of ignition	T1 (450 °C)	T2 (300°C)	T3 (200 °C)	T4 (135 °C)	T5 (100 °C)	T6 (85 °C)
	450 °C	300 - 450 °C	200 - 300 °C	135 - 300 °C	100 - 135 °C	85 - 100 °C
I	Methane					
IIA (Energy of ignition higher than 0.18 mJ)	Acetone	i-amyl acetate	Amyl alcohol	Acetaldehyde		
	Ammonia	n- butane	Gasolines			
	Benzene	n- butanol	Gas-oil			
	Ethylacetate	1-butene	Heating oil			
		Propylacetate	n-hexane			
	Methanol	i-propanol				
	Propane	Vinylchloride				
	Toluene					
IIB (Energy of ignition between 0.06 and 0.18 mJ)	Hydrogen cyanide	1.3-butadiene	Dimethyl ether	Diethyleter		
		1.4-dioxane	Ethyl glycol			
	Coal gas (lighting gas)	Ethylene	Hydrogen sulphide			
		Ethylene oxide				
IIC (Energy of ignition less than 0.06 mJ)	Hydrogen	Acetylene			Carbon disulphide	
	Water gas (CO+H2)				Ethyl nitrate	

Tools made of **Cu-Be alloy can be used in all groups (I, IIA, IIB, IIC)** in a safe way, always respecting the maximum surface temperature allowed, with the only exception of acetylene, with which copper might react and create highly explosive acetylite gases.

Tools made of **Al-Bronze alloy can be used** in a safe way, always respecting the maximum surface temperature allowed, **except for the IIC group** (Hydrogen, gas of water, acetylene, bisulphide of carbon, Ethyl nitrate).

DIFFERENCES AND HOW TO MAKE THE CORRECT CHOICE

CONCEPT	Cu-Be	Al-Bron
Hardness	283-365Brinell	229-291Brinell
Magnetism	Non ferrous substance in the composition makes it safer when non-magnetic applications are required	Minimum ferrous component makes them not 100% non-magnetic, although its low magnetism make it appropiate for non critical non-magnetic applications
Durability	Much higher due to the higher hardness and tensile strength. Higher efforts can be made	Not as much as Cu-Be
Price	Higher price due to the special raw material used	Around 30% lower price
Risk of explosion	Can be used in all groups (I, IIA, IIB, IIC)	Can be used in all groups except for the IIC group



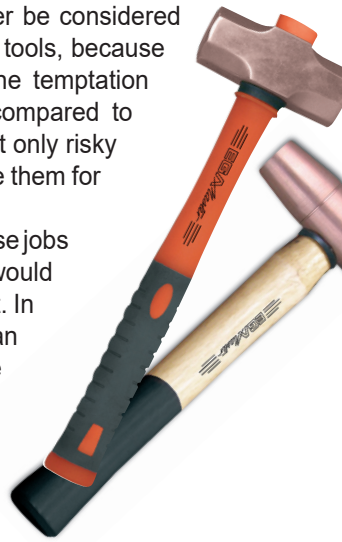

COPPER OR BRASS TOOLS

MAIN APPLICATION FIELDS

- Petrochemicals
- Refineries
- Oil Companies
- Gas & oil pipe lines
- Power Stations
- Paint Manufacturing
- Plastic manufacturing
- Pharmaceutical Industry
- Fireworks Industry
- Chemical Industry
- Paper making Industries
- Flour silos and mills
- Breweries
- Alcohol processing industries
- Distilleries
- Fire-fighters
- Mines
- Defence
- Air Forces
- Navy
- Weapon & ammunition fabrication
- Aerospace industry
- Automobile Industry

Copper or brass tools are safe in explosive environments.

EGA Master has available a complete range of copper and brass hammers and mallets made in both materials.
It is convenient to know that copper or brass tools can never be considered as alternatives to aluminum-bronze or copper-beryllium alloy tools, because their hardness is too low for most applications. There is the temptation to choose copper or brass tools due to their lower cost compared to aluminum-bronze or copper-beryllium ones. This choice is not only risky in itself, but in the short/mid term it will be necessary to replace them for new ones because they wear out fast.
For this reason, copper or brass tools should only be used in those jobs that have to be made in risky environments, if the same job would be made with copper or brass tools in a non-risky environment. In case you would use a steel tool in a non-risky environment, than you should choose for your safety and profitability tools made in aluminum-bronze or copper-beryllium to make the same job in a risky environment, never a copper or brass tool.



ACETILEX ALLOY

Items with copper composition higher than 65% should not be used in acetylene environments. Both aluminum bronze and copper-beryllium alloys do have copper compositions higher than 65%. The reason is not that copper beryllium can create a spark with enough energy to create the ignition of acetylene, but that copper reacts with acetylene creating highly explosive acetylides. For this reason, copper-beryllium or aluminum-bronze alloys should not be used in acetylene environments.

EGA Master, always commited to find new innovative solutions that will increase safety, has developed the ACETILEX alloy, 100% safe to be used in acethylene environments. Once again, pioneers in safety.

INSTRUCTIONS FOR USE & WARRANTY

Non-Sparking Tools cannot reach the hardness of conventional tools. For this reason the use of Non-Sparking Tools has to be carried out with special care, avoiding overstraining, heating, etc
The use of Non-Sparking Tools must not be the only preventive measure in areas which the items are designed for. Other items, clothes or present material must also be adequate for non-sparking purposes.
EGAMASTER, S.A Non-Sparking Tools are provided with lifetime warranty .In case an EGAMASTER, S.A.´s tool breaks or fails to perform under normal and correct use, it will be repaired or replaced free of cost.Any misuse, abuse or normal service wear is considered as an exception to the warranty.

CAUTION: These tools are not classified as anti-static because they do conduct electricity. Do not use high copper content tools (>65%) in direct contact with acetylene due to the possible formation of explosive acetylide, specially in the presence of moisture.

SOCKET WRENCHES 3/8”

Cu-Be		AF	L mm	gr.
RS Components	EGA Master			
1230362	75650	6mm	28	20
1230364	75652	7mm		
1230366	75654	8mm		
1230368	75656	9mm		
1230370	75658	10mm	32	35
1230372	75660	11mm		
1230374	75662	12mm		40
1230376	75664	13mm		
1230378	75666	14mm		
1230380	75668	15mm		45
1230382	75670	16mm		
1230384	75672	17mm		55
1230386	75674	19mm		60
1230388	75676	20mm		

Al-Bron		AF	L mm	gr.
RS Components	EGA Master			
1230363	75651	6mm	28	20
1230365	75653	7mm		
1230367	75655	8mm		
1230369	75657	9mm		
1230371	75659	10mm	32	35
1230373	75661	11mm		
1230375	75663	12mm		40
1230377	75665	13mm		
1230379	75667	14mm		
1230381	75669	15mm		45
1230383	75671	16mm		
1230385	75673	17mm		55
1230387	75675	19mm		60
1230389	75677	20mm		

REVERSIBLE RATCHET HANDLE 3/8”

Cu-Be			L mm	gr.
RS Components	EGA Master			
1230358	75700	3/8”	200	400

Al-Bron			L mm	gr.
RS Components	EGA Master			
1230359	75701	3/8”	200	400

EXTENSION 3/8”

Cu-Be			L mm	gr.
RS Components	EGA Master			
1230360	75704	3/8”	10”	500

Al-Bron			L mm	gr.
RS Components	EGA Master			
1230361	75705	3/8”	10”	500

Cu-Be cobre berilio Al-Bron aluminio bronce