

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-Rheinland/Germany.



MATERIALS

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

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.

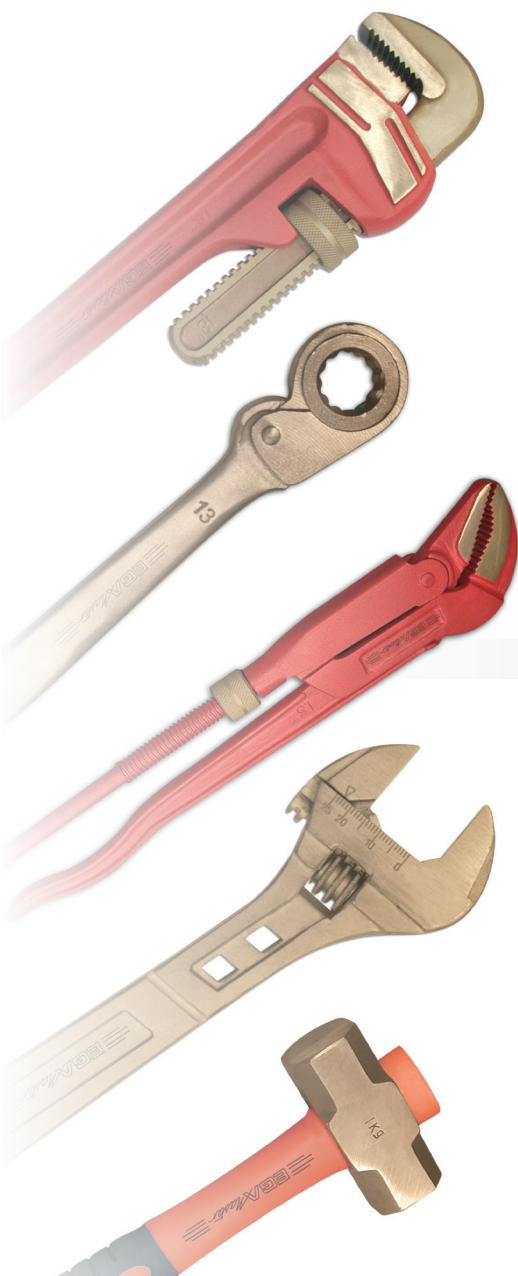


TABLE OF RISKS OF EXPLOSION AND MAXIMUM TEMPERATURE

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-buta-diene	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 acetylide 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 appropriate 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

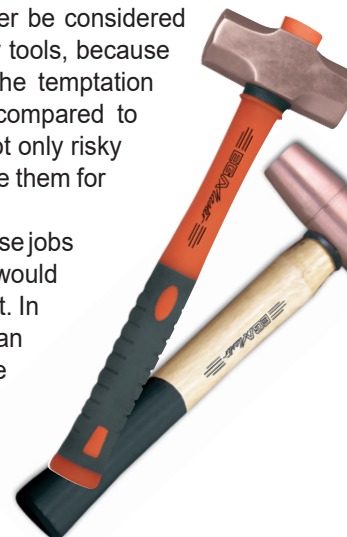
Petrochemicals
 Refineries
 Oil Companies
 Gas & oil pipe lines
 Power Stations
 Paint Manufacturing
 Plastic manufacturing
 Pharmaceutical Industry
 Fireworks Industry
 Chemical Industry
 Paper making Industries
 Flour silos and mills
 Breweries
 Alcohol processing industries
 Distilleries
 Fire-fighters
 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 committed to find new innovative solutions that will increase safety, has developed the ACETILEX alloy, 100% safe to be used in acetylene 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.



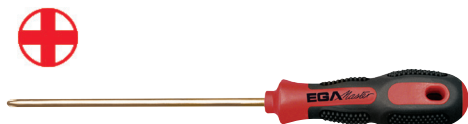
ELECTRICIAN SCREWDRIVERS



Cu-Be					
RS Components	EGA Master				gr.
1230298	71581	50	3	75	50
1230299	71582	100	4		70
1230300	71583	150			80
1230301	71584	100	6	95	100
1230302	71585	150	8	105	200
1230303	71586	200	10		
1230304	71587	300			300

Al-Bron					
RS Components	EGA Master				gr.
1230305	71588	50	3	75	50
1230306	71589	100	4		70
1230307	71590	150			80
1230308	71591	100	6	95	100
1230309	71592	150	8	105	200
1230310	71593	200	10		
1230311	71594	300			300

PHILIPS SCREWDRIVERS



Cu-Be					
RS Components	EGA Master				gr.
1230312	72909	PH-0	60	75	40
1230314	71595	PH-1	80		50
1230315	71596	PH-2	100	95	70
1230316	71597	PH-3	150	105	80
1230317	71598	PH-4	200		100

Al-Bron					
RS Components	EGA Master				gr.
1230313	72910	PH-0	60	75	40
1230318	71599	PH-1	80		50
1230319	71600	PH-2	100	95	70
1230320	71601	PH-3	150	105	80
1230321	71602	PH-4	200		100

POZIDRIV SCREWDRIVERS



Cu-Be					
RS Components	EGA Master				gr.
1230322	74336	PZ-0	50	82	35
1230324	74347	PZ-1	75		40
1230327	72247	PZ-2	100	112	80
1230329	72249	PZ-3	150		135
1230330	74365	PZ-4	200		210

Al-Bron					
RS Components	EGA Master				gr.
1230323	74337	PZ-0	50	82	35
1230325	74348	PZ-1	75		40
1230326	72246	PZ-2	100	112	80
1230328	72248	PZ-3	150		135
1230331	74366	PZ-4	200		210