

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.

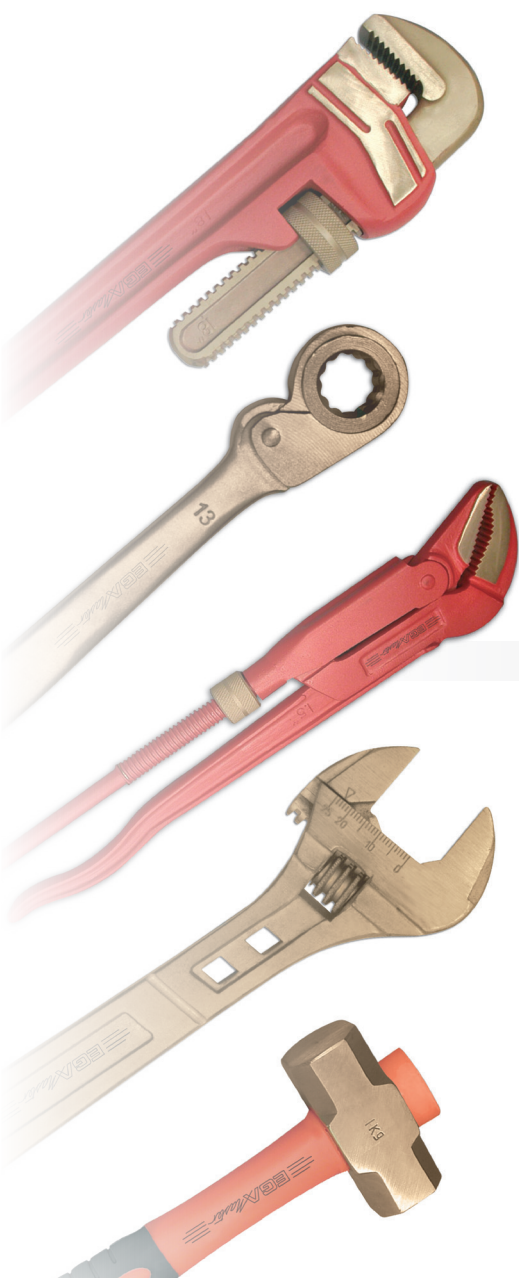


TABLE OF RISKS OF EXPLOSION AND MAXIMUM TEMPERATURE

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

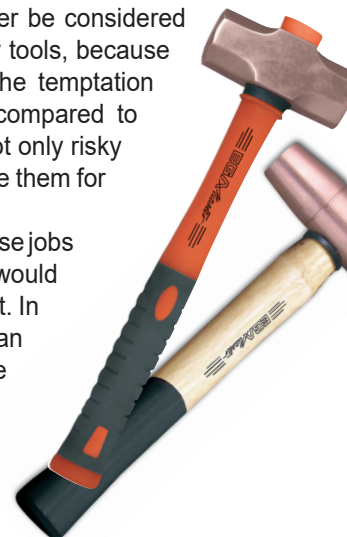
Petrochemicals
 Refineries
 Oil Companies
 Gas & oil pipe lines
 Power Stations
 Paint Manufacturing
 Plastic manufacturing
 Pharmaceutical Industry
 Fireworks Industry
 Chemical Industry
 Paper making Industries
 Flour silos and mills
 Breweries
 Alcohol processing industries
 Distilleries
 Fire-fighters
 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.

COMBINATION WRENCHES



Cu-Be		AF	L mm	gr.
RS Components	EGA Master			
1229973	70173	9mm	130	60
1229974	70174	10mm	135	65
1229975	70175	11mm	140	70
1229976	70176	12mm	145	85
1229977	70177	13mm	155	95
1229978	70178	14mm	165	100
1229979	70179	15mm	175	110
1229980	70180	16mm	185	150
1229981	70181	17mm	195	160
1229982	70182	18mm	200	190
1229983	70183	19mm	210	210
1229984	70184	20mm	220	240
1229985	70185	21mm	230	260
1229986	70186	22mm	240	280
1229988	70187	23mm	250	350
1229989	70188	24mm	260	380
1229990	70189	25mm	270	400
1229991	70190	26mm		420
1229992	70191	27mm	280	480
1229994	70192	28mm	290	500
1229995	70193	29mm	300	650
1229996	70194	30mm	310	700
1229997	70195	31mm	320	750
1229998	70196	32mm	330	
1229999	70197	35mm	340	950
1230000	70198	36mm		
1230001	70199	38mm	350	1100
1230002	70200	40mm		
1230003	70201	41mm	370	1200
1230004	70202	42mm		
1230005	70203	46mm	400	1550
1230006	70204	50mm	420	1750

Al-Bron		AF	L mm	gr.
RS Components	EGA Master			
1230007	70685	9mm	130	60
1230008	70686	10mm	135	65
1230009	70687	11mm	140	70
1230010	70688	12mm	145	85
1230011	70689	13mm	155	95
1230012	70690	14mm	165	100
1230013	70691	15mm	175	110
1230014	70692	16mm	185	150
1230015	70693	17mm	195	160
1230017	70694	18mm	200	190
1230018	70695	19mm	210	210
1230019	70696	20mm	220	240
1230020	70697	21mm	230	260
1230021	70698	22mm	240	280
1230022	70699	23mm	250	350
1230023	70700	24mm	260	380
1230024	70701	25mm	270	400
1230025	70702	26mm		420
1230026	70703	27mm	280	480
1230027	70704	28mm	290	500
1230028	70705	29mm	300	650
1230029	70706	30mm	310	700
1230030	70707	31mm	320	750
1230031	70708	32mm	330	
1230032	70709	35mm	340	950
1230033	70710	36mm		
1230034	70711	38mm	350	1100
1230035	70712	40mm		
1230036	70713	41mm	370	1200
1230037	70714	42mm		
1230039	70715	46mm	400	1550
1230040	70716	50mm	420	1750