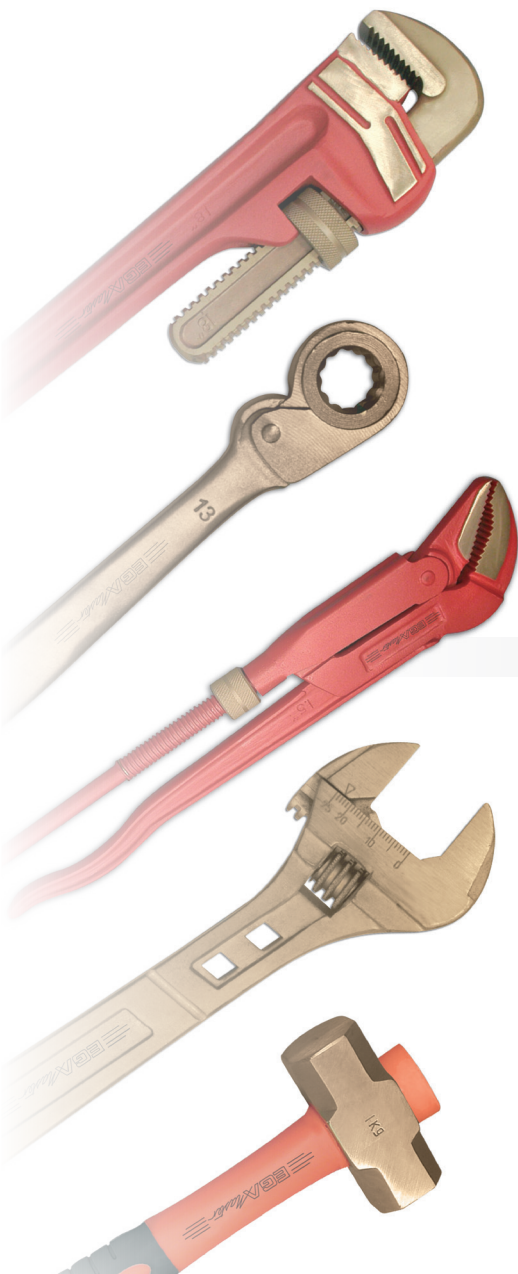


NON-SPARKING TOOLS

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)					
	T1 (450 °C)	T2 (300°C)	T3 (200 °C)	T4 (135 °C)	T5 (100 °C)	T6 (85 °C)
Temperature of ignition	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

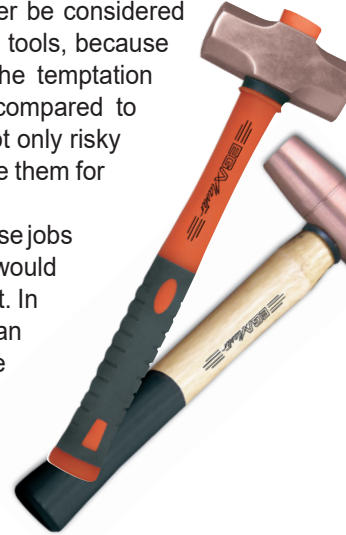
Petrochemicals
 Refineries
 Oil Companies
 Gas & oil pipe lines
 Power Stations
 Paint Manufacturing
 Plastic manufacturing
 Pharmaceutical Industry
 Fireworks Industry
 Chemical Industry
 Paper making Industries
 Flour silos and mills
 Breweries
 Alcohol processing industries
 Distilleries
 Fire-fighters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



OPEN-END WRENCHES



Cu-Be		AF	L mm	gr.
RS Components	EGA Master			
1229913	70140	9-10mm	105	70
1229914	70141	9-11mm	110	75
1229915	70142	10-11mm	115	85
1229916	70143	10-12mm	120	95
1229917	70144	10-14mm	125	115
1229889	75244	11-13mm		120
1229918	70145	11-14mm	125	125
1229919	70146	12-13mm	130	135
1229920	70147	12-14mm		145
1229921	70148	14-15mm	145	165
1229922	70149	14-17mm	150	180
1229923	70150	16-17mm	155	200
1229924	70151	16-18mm	165	210
1229925	70152	17-19mm	170	230
1229926	70153	17-22mm	175	270
1229927	70154	18-19mm	180	280
1229928	70155	19-22mm	185	330
1229929	70156	19-24mm		360
1229930	70157	20-22mm	195	370
1229931	70158	21-23mm	200	410
1229891	75246	22-23mm		440
1229932	70159	22-24mm	210	470
1229933	70160	22-27mm		500
1229894	75248	24-25mm	220	550
1229934	70161	24-26mm		650
1229935	70162	24-27mm	230	750
1229936	70163	25-28mm	240	
1229937	70164	27-29mm	250	1000
1229896	75250	27-30mm		1100
1229897	75251	28-30mm	260	1150
1229899	75253	30-31mm		1300
1229938	70165	30-32mm	300	1500
1229901	75255	32-34mm		1600
1229903	75257	32-35mm	320	
1229939	70166	32-36mm		
1229905	75259	33-35mm	340	
1229940	70167	34-36mm		
1229907	75261	35-36mm		
1229909	75263	36-38mm		
1229911	75265	38-42mm		

Al-Bron		AF	L mm	gr.
RS Components	EGA Master			
1229941	70554	9-10mm	105	70
1229942	70555	9-11mm	110	75
1229944	70556	10-11mm	115	85
1229945	70557	10-12mm	120	95
1229946	70558	10-14mm	125	115
1229890	75245	11-13mm		120
1229947	70559	11-14mm	125	125
1229948	70560	12-13mm	130	135
1229949	70561	12-14mm		145
1229950	70562	14-15mm	145	165
1229951	70563	14-17mm	150	180
1229952	70564	16-17mm	155	200
1229953	70565	16-18mm	165	210
1229954	70566	17-19mm	170	230
1229955	70567	17-22mm	175	270
1229956	70568	18-19mm	180	280
1229957	70569	19-22mm	185	330
1229958	70570	19-24mm		360
1229960	70571	20-22mm	195	370
1229961	70572	21-23mm	200	410
1229893	75247	22-23mm		440
1229962	70573	22-24mm	210	470
1229963	70574	22-27mm		500
1229895	75249	24-25mm	220	550
1229964	70575	24-26mm		650
1229966	70576	24-27mm	230	750
1229967	70577	25-28mm	240	
1229968	70578	27-29mm	250	1000
1229898	75252	28-30mm		1100
1229900	75254	30-31mm	260	1150
1229969	70579	30-32mm		1300
1229902	75256	32-34mm	300	1500
1229904	75258	32-35mm		
1229970	70580	32-36mm	320	
1229906	75260	33-35mm		
1229972	70581	34-36mm	340	
1229908	75262	35-36mm		
1229910	75264	36-38mm		
1229912	75266	38-42mm		