

# NON-SPARKING 1/2" SOCKET WRENCH SET - 9 PCS

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## NON-SPARKING TOOLS

1ZONES 1, 2 (gas) & 21, 22 (dust)

1/2" Non-sparking Socket Wrench Set (12 points), made of Copper-Beryllium (Cu-Be) or Aluminium-Bronze (Al-Bron) alloys, suitable for use in hazardous areas.

The Non-sparking tools that compose this set are certified by the BAM Certification Body, stating that the materials from which they are made are suitable for use in potentially explosive atmospheres, in zones 1 and/or 21 of all explosion groups (I, IIA, IIB and IIC).

- 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.

- To avoid damage being caused to both tool and fastener, it is necessary to always ensure that the correctly sized spanner/wrench/screwdriver is selected. Due to the reduced strength and wear resistance of non-sparking Alloys selecting the correctly sized tool becomes essential to avoid premature wear and early deterioration of the tool.

- 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.



### COPPER-BERYLLIUM ALLOY

Non ferrous substance in the composition makes it safer when non-magnetic applications are required.

### ALUMINIUM-BRONZE ALLOY

Minimum ferrous component makes them not 100% non-magnetic, although its low magnetism make it appropriate for non critical non-magnetic applications.

### COPPER-BERYLLIUM ALLOY

| Designation:               | Item No.: | Designation:                | Item No.: | Weight: | Item No.: |
|----------------------------|-----------|-----------------------------|-----------|---------|-----------|
| Socket wrench 1/2" - 10mm  | 11A74452  | Socket wrench 1/2" - 17mm   | 11A74459  | 1,4 kg  | 11A74263  |
| Socket wrench 1/2" - 11mm  | 11A74453  | Socket wrench 1/2" - 19mm   | 11A74461  |         |           |
| Socket wrench 1/2" - 12mm  | 11A74454  | Socket wrench 1/2" - 22mm   | 11A74464  |         |           |
| Socket wrench 1/2" - 14mm  | 11A74456  | Socket wrench 1/2" - 24mm   | 11A74466  |         |           |
| Offset handle 230mm, 400g  |           |                             | 11A72410  | 1,4 kg  | 11A35810  |
| Socket wrench 1/2" - 3/8"  | 11A74504  | Socket wrench 1/2" - 11/16" | 11A74510  |         |           |
| Socket wrench 1/2" - 7/16" | 11A74505  | Socket wrench 1/2" - 3/4"   | 11A74511  |         |           |
| Socket wrench 1/2" - 1/2"  | 11A74506  | Socket wrench 1/2" - 7/8"   | 11A74514  |         |           |
| Socket wrench 1/2" - 5/8"  | 11A74509  | Socket wrench 1/2" - 15/16" | 11A74515  | 1,4 kg  | 11A72410  |
| Offset handle 230mm, 400g  |           |                             | 11A72410  |         |           |

### ALUMINIUM-BRONZE ALLOY

| Designation:               | Item No.: | Designation:                | Item No.: | Weight: | Item No.: |
|----------------------------|-----------|-----------------------------|-----------|---------|-----------|
| Socket wrench 1/2" - 10mm  | 11A74479  | Socket wrench 1/2" - 17mm   | 11A74486  | 1,4 kg  | 11A74264  |
| Socket wrench 1/2" - 11mm  | 11A74480  | Socket wrench 1/2" - 19mm   | 11A74488  |         |           |
| Socket wrench 1/2" - 12mm  | 11A74481  | Socket wrench 1/2" - 22mm   | 11A74491  |         |           |
| Socket wrench 1/2" - 14mm  | 11A74483  | Socket wrench 1/2" - 24mm   | 11A74493  |         |           |
| Offset handle 230mm, 400g  |           |                             | 11A72411  | 1,4 kg  | 11A35819  |
| Socket wrench 1/2" - 3/8"  | 11A74522  | Socket wrench 1/2" - 11/16" | 11A74528  |         |           |
| Socket wrench 1/2" - 7/16" | 11A74523  | Socket wrench 1/2" - 3/4"   | 11A74529  |         |           |
| Socket wrench 1/2" - 1/2"  | 11A74524  | Socket wrench 1/2" - 7/8"   | 11A74532  |         |           |
| Socket wrench 1/2" - 5/8"  | 11A74527  | Socket wrench 1/2" - 15/16" | 11A74533  | 1,4 kg  | 11A72411  |
| Offset handle 230mm, 400g  |           |                             | 11A72411  |         |           |

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NON-SPARKING TOOLS

| MATERIALS              |                        |               |
|------------------------|------------------------|---------------|
| Copper-Beryllium Alloy |                        |               |
| Composition:           | Be                     | 1.8 % - 2 %   |
|                        | Ni+Co                  | 0.2 % - 1.2 % |
|                        | Otros                  | <0.5 %        |
|                        | Resto                  | Cu            |
| Hardness:              | 283-365 Brinell        |               |
| Tensile Strength:      | 1250 N/mm <sup>2</sup> |               |
| Aluminium-Bronze Alloy |                        |               |
| Composition:           | Al                     | 10 % - 12 %   |
|                        | Ni                     | 4 % - 6 %     |
|                        | Fe+Mn                  | <5.8 %        |
|                        | Otros                  | <0.5 %        |
|                        | Resto                  | Cu            |
| Hardness:              | 229-291 Brinell        |               |
| Tensile Strength:      | 800 N/mm <sup>2</sup>  |               |

| PROPERTIES AND FEATURES   |   |
|---|---|
| Property:   | Aplication or benefits:   |
| 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  | Provide 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. |
| <b>CAUTION:</b><br>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. |   |

| DIFFERENCES AND HOW TO MAKE THE CORRECT CHOICE |  |  |
|--|--|--|
| Concept:                                       | COPPER-BERYLLIUM Cu-Be   | ALUMINIUM-BRONZE Al-Bron   |
| Hardness:                                      | 283-365 Brinell.   | 229-291 Brinell.   |
| 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.   | Significantly lower price.   |

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