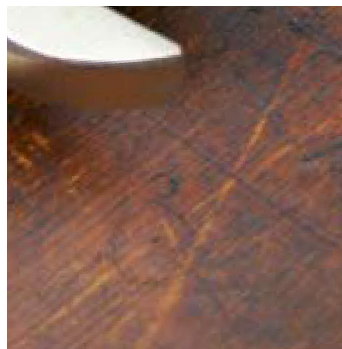
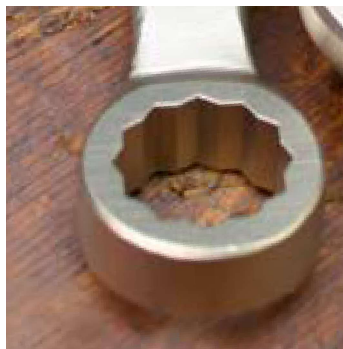
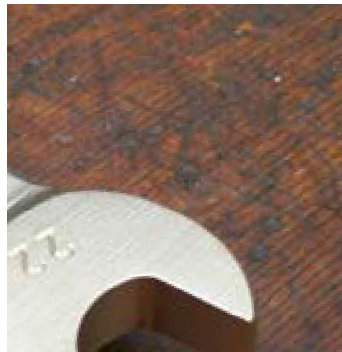
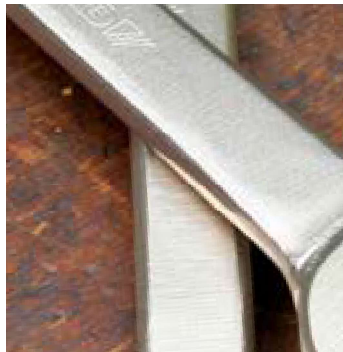


GEDORE
TOOLS FOR LIFE



Safe working with non-sparking tools **2019**

***non-sparking** 



* non-sparking

Why the need for non-sparking tools?

- The recommendation is to use GEDORE non-sparking tools in all areas where combustible or easily ignitable vapours, liquids and dusts are on hand and everywhere where there is a potential fire and explosion risk from sparks.

Characteristics of GEDORE non-sparking tools:

- Made either from proven, low-sparking special bronze and copper/beryllium alloys or from other non-spark inducing materials (e.g. wood or electrically conducting plastics)
- The spanners are cast and not forged for your own safety.
- Corrosion-resistant - even against salt water.
- Copper/beryllium tools are anti-magnetic!

Why the need for the casting process ?

- In contrast to the usual steel tools, the forging process is not the optimum manufacturing one as far as non-sparking tools are concerned. Whilst forged, non-sparking tools may have an elegant appearance, their drawback is one of suddenly breaking in instances of overloading.
- Casting these materials, in contrast, results in them bending rather than breaking when subject to overloading.
- As cast, non-sparking spanners are of a stronger material cross-section, they ensure uniform transfer of torque forces.
- We guarantee that GEDORE non-sparking spanners are manufactured from a pure melt without the addition of scrap.
- Advantages: Improved elasticity, reduced brittleness and uniform material properties





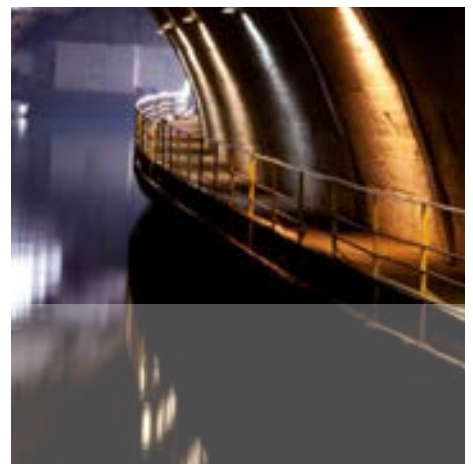
i Info

- The harder a material, the greater the risk of sparks developing and explosions occurring.
- As only a cold spark, if at all, develops, the iron share in special bronze is not of a critical nature.
- The use of non-sparking tools is a step:
 - to avoid explosions
 - to avoid incipient fires
 - to avoid and keep away sources of ignition (sparks forming) which might arise when hand tools are in use (e.g. hammer and chisel)
- The talk usually is of „non-sparking“ or „anti-spark“ tools.
- From the physics angle, it would be more accurate to refer to „low-spark“ since ignitable sparks cannot be 100 % prevented even when these tools are used.

➡ Notes on use

CAUTION!

- As in applications non-sparking tools are not as hard as conventional ones, they must be used with particular care.
- Any over-loading is to be avoided.
- Using non-sparking tools must not be the only protective step taken in areas at risk from fire and explosions.
- For a comprehensive protection of both people and facilities, do follow the relevant safety guidelines of the various institutions, e.g. those of the industry associations, employers' instructions as well as the statutory specifications of the country in question.



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GEDORE safety tools Reworking

- The alloy from which the tool is made needs to be clearly established at the outset before GEDORE safety tools can be effectively and properly reworked.
- Tools made of special bronze have a yellow colour (the surface colour may vary from the effects of atmosphere, chemicals and heating) whilst those of copper/beryllium display a red tone and are usually stamped with the alloying name e.g. "CuBe".
- Tools made from GEDORE non-ferrous metal can be reworked through forging, regenerating welding and machining.
- This reworking should preferably be carried out in our plant as following work relating to the "a" and "b" items below a hardness test - if not even tool hardening itself - must take place.
 - a) Forging is done at temperatures between 785 °C and 900 °C; the most favourable forging temperature is around 880 °C. Temperature limits are to be precisely followed. As for the rest, no special arrangements need to be made. Even so, the parts must not be cooled by quenching but, instead, left to slowly cool in the air.
 - b) Welding filler metals - which are the same as the materials - are used for welding build-up and repair welding work.
 - c) Even with reworking involving cutting, no special precautionary steps need to be kept to. The same processing tools and devices as for the steel hand tools can be used. Effective forms of cooling (e.g. water) are to be on hand for any re-grinding work.
- Considerable precision and care is required when reworking CuBe tools. In particular, it is to be borne in mind that copper/beryllium dust or vapour is toxic and can damage one's health. Moreover, copper can very easily lose its alloying properties - if not in their entirety under certain conditions - from over-heating. The result then is that the material only displays the properties of ordinary copper.
 - a) Our recommendation is not to re-forge CuBe tools or parts of them - all the more so since extensive experience is needed for forging in conjunction with secondary heat treatment. Do ask us if forging in certain circumstances is implementable.
 - b) In machining and with grinding, in particular, cooling must be carefully carried out and heating to over 250 °C is to be avoided at all circumstances. If processing is undertaken in the cured state, a cutting angle of around 0 ° is needed for the processing tools.



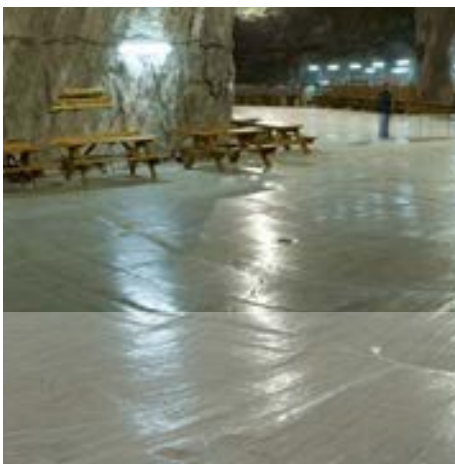


Important information

- ✔ for regrounding GEDORE copper/beryllium safety tools:
- ✔ Beryllium is a metal which according to the Materials Ordinance is considered to be toxic !
- ✔ This very much concerns dusts and vapours which may arise where smelting, grinding and welding is undertaken.
- ✔ There is no risk, however, when grinding, in particular, is of the wet variety!
- ✔ **Should this not be possible in exceptional circumstances, then the following steps need to be noted:**

1. Do not inhale any dust (wear a face mask)
2. Avoid one's skin and eyes coming into contact with them
3. Wear protective clothing
4. Wear breathing apparatus should dust and smoke develop

nonsparking



Non-sparking material analysis

Material	Copper-Beryllium			
Analysis	Be	Ni	Co	Cu
min. in %	1,8	0,1	0,4	96,5
max. in %	2,3	0,5	0,7	97,7
Mechanical properties				
Strength N/mm²	1117 - 1326			
Yield point N/mm²	840 - 880			
Hardness Brinell	280/365			

Material	Special Bronze (Aluminium-multicomponent-bronze)				
Analysis	Cu	Al	Ni	Fe	Mn
min. in %	76	8	4	4	-
max. in %	84	10,5	6	5,5	1,33
Mechanical properties	cured		untreated		
Strength N/mm²	780 - 989		600 - 670		
Yield point N/mm²	450 - 550		250 - 270		
Hardness Brinell	230 - 290		140 - 180		

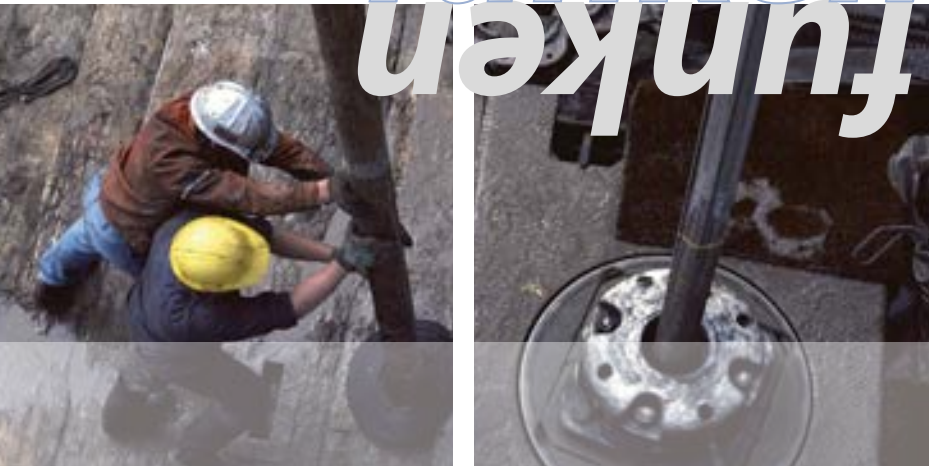
- Since special bronze would involve over rapid and excessive wear of all tools with mechanical movements, cutting functions and tip stresses (such as pliers, ratchets and adjustable spanners), they are manufactured from the harder CuBe.
- Spanners are mostly manufactured from special bronze.

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Notes on use

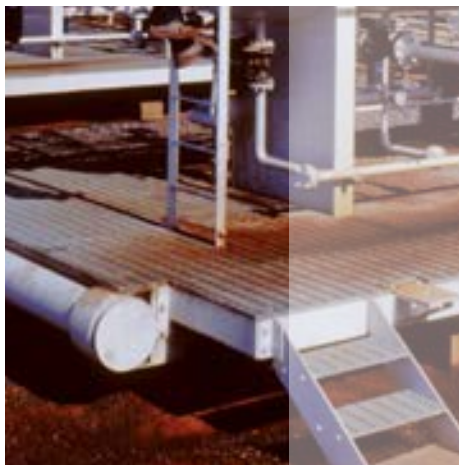
- The softer the tool the lower the probability of sparks forming. Selection is at all times to be for that lowest tool hardness which just suffices for the work on hand. This is something that through our knowledge of tools we have already dealt for you. We use the optimum possible material for each and every tool. Tools subject to concentrated loads are manufactured from the harder CuBe.

The letter at the end of the Article No. stands for the material:
GEDXXXXXXXXS = tool made of special bronze
GEDXXXXXXXXC = tool made of CuBe (copper beryllium)



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*non-sparking 



Dictionary of the EX zones

Explosion protection acc. to ATEX = Explosive atmosphere

- ATEX 137 (118) also designated as Guideline 99/2/EC covers the safety of people employed in the installation, operation and maintenance of facilities at risk from explosions.
- Since July 2003 only operating equipment in compliance with this guideline may be commercially used. The ATEX 99/92/EC specification is such that GEDORE tools may be used in the EX zones.

INFO:

- The ATEX instruction covers products falling under the CE instruction - e.g. electrical products - where a spark could arise from their use. Hand tools do not fall within the scope of the ATEX instruction. Hand tools do not fall within the scope of the ATEX product instruction. Only products for which a CE identification is prescribed fall within the scope of the ATEX instruction (e.g. lamps)
- EX zones refer to areas at risk from explosions as a function of the frequency and duration of the emergence of hazardous, explosive atmospheres.

The following zones apply to areas with the risk of explosions present from combustible gases, vapour or mists:

Zone 0

- is an area where a hazardous, explosive atmosphere as a mix of air and combustible gases, vapours and mists prevail either constantly, for lengthy periods or frequently.

Zone 1

- is an area where under normal operations a hazardous, explosive atmosphere as a mix of air and combustible gases, vapours and mists can occasionally form.

Zone 2

- is an area where under normal operations a hazardous, explosive atmosphere as a mix of air and combustible gases, vapours and mists usually does not arise or, if it does, then only briefly.

The following zones apply to areas at risk from explosions occasioned by combustible dusts:

Zone 20

- is an area where hazardous, explosive atmospheres in the form of a cloud made up of combustible dusts from the air prevail either constantly, for lengthy periods or frequently.

Zone 21

- is an area where under normal operations a hazardous, explosive atmosphere in the form of a cloud made up of combustible dusts from the air can occasionally form.

Zone 22

- is an area where under normal operations a hazardous, explosive atmosphere in the form of a cloud made up of combustible dust from the air usually does not arise or, if it does, then only briefly.

Remarks:

- The "frequency" label is to be used in the sense of "being predominant over time".
- Normal operation describes the condition whereby facilities can be used within their design parameters.
- Many experts look upon the "for a short time" term to mean a maximum of 30 minutes.
- Consideration is to be given to layers, deposits and accumulations of combustible dust which - as with any other cause - may lead to the formation of a hazardous, explosive atmosphere.
- These definitions as to zones apply equally in all the EC member states on the basis of Guideline 1999/92/EC
Source - BG RCI (Raw materials and chemical industry)