BAM
Bundesanstalt für Materialforschung und -prüfung

CERTIFICATE

BAM/ZBF/002/24 1st version

Hereby it is confirmed by the BAM Certification Body, that the material

Copper-Beryllium-Alloy of the manufacturer **Endres Tools GmbH** **Am Eichholz 12** **42897 Remscheid** **Germany**			
for impacts against	☐ ☒	**steel** **concrete**	
with a maximal impact energy of	**31**	**Nm**	
in potentially explosive atmospheres with the fuel gases	☒ ☒ ☒	of explosion groups I, IIA, IIB acetylene of explosion group IIC	Explosion groups according to DIN EN ISO/IEC 80079-20-1:2020-09

meets the requirements of **BAM Standard operating procedure StAA-GAS-005 „StAA zur Schlagfunkenprüfung von Werkstoffpaarungen“** approved April 2023 and thus non-sparking tools made of this material are appropriate for use in potentially explosive atmospheres of zone 1 and/or 21 (in accordance with the European Directive 1999/92/EC) for the fuel gases listed above, if the terms and conditions set out in the annex to this certificate are complied with.

The certification is based on certification contract **BAM-ZBF-0002-2024-ENDRES** dated 8th May 2024 and comprises according to standard DIN EN ISO/IEC 17065:2013 a design-type test with the manufacturer's declaration of conformity (BAM Certification system I).

The materials certified by BAM may be labelled with the certification mark "BAM Design-type tested" and/or "BAM Baumustergeprüft".

The certificate is valid until December 31st, 2028.

BAM test report 23036023-II and procedure No. BZS-GS/029/23 are a constituent part of this certificate.

Bundesanstalt für Materialforschung und -prüfung (BAM)
Unter den Eichen 87, 12205 Berlin, **June 13th, 2024**

13.06.2024

By order
Dr. J. Sunderkötter
BAM Certification Officer

Bundesanstalt für Materialforschung und -prüfung (BAM) BAM

By order
Dr. M. Schmidt
BAM Assessor

Please check this certificate's validity in our Certification Register:
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Certificate No. BAM/ZBF/002/24, Annex 1 from June 13th, 2024

Conditions for use of the certified material

The certification of the material **Copper-Beryllium-Alloy** is only valid if the following terms and conditions are met.

Already smallest modifications of the properties of the material and the impact partner can alter fundamentally the spark pattern and thus the ignition probability. Thus, it is not possible to transfer the test results to other materials.

Certified material pairing

Material: Copper-Beryllium-Alloy

The properties of this material shall comply with the material composition of the tested sample, namely:

- Material composition: 1,86 % Be; 0,35 % Pb, 0,24 % Ni+Co, 0,27 % Ni+Co+Fe; rest Cu
- Hardness: 80HR30T
- Reference: Letter from Endres Tools GmbH material composition and degree of hardness ("copper-beryllium-alloy") dated February 23rd,2024

Impact Partner: Screed concrete, reinforced

- Material recipe: Cement E290, flux material 5,8 %, gravel 0,1-4 mm; corundum 5 %, steel reinforced wire, recipe according to BAM Certification Scheme BZS-ZP/2.8 and test report 23036023-II dated June 7th, 2024

Use of the tools made of the certified material

During a possible impact of the tools on the above-mentioned impact partner the **maximum absorption of mechanical energy must not exceed 31 Nm**.

This corresponds to a falling height of 10 metres of a tool with a maximum weight of approximately **300 g**.