1. Substance/preparation and company name

CAC (Copper – Aluminium – Copper), CSC (Copper - Steel - Copper)

Company:

Gould Electronics GmbH
Hauptstr. 3 **Postfach 20**
D-79356 Eichstetten **D-79354 Eichstetten**
Tel: **0049 / 7663 / 62 - 0** Fax: **0049 / 7663 / 62 - 247**

Informations by: **0049 / 7663 / 62 - 142 / Joachim Räuber**
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Emergency Information: **0049/7663 / 62 - 0**

2. Composition / information on ingredients

Identificationnummer(s):
CAS-Nr. **7429-90-5 (Al) / 7440-50-8 (Cu) / 7439-89-6 (Fe)**

Chemical characterisation: **Steel or Aluminium-Sheets with copperfoil on one or both sides.The copperfoil is fixed with the shinyside by adhesive lines on steel. The adhesive lines are inert epoxy.**

Hazardous ingredients: **none**

3. Possible hazards

- cuts are possible
- do not inhalate dust from copper (MAK=1mg/m³) or Aluminium (MAK=10mg/m³)
(MAK= germany´s maximum working concentration (2000; still actual]))
- dust from aluminium could be explosive

4. First aid measures

advice for doctor:
take care, if person is allergical against copper or steel

5. Fire fighting measures

suitable extinguishing media:
> in case of dust from steel or aluminium: sand or metall extinguishing media
> otherwise: no exclusion

6. Accidental release measures

none

7. Handling and storage

The following advices are only valid for the application area of laminates; if you use the foil for other purposes please contact us (see Nr. 1 of this MSDS)

- use gloves to avoid cuts
- store dry in original packing
- store separat from corrosive material

8. Exposure controls and personal protection

- at work do not drink or eat
- use protective gloves

9. Physical and chemical properties

1. Aluminium

Form:	**solid**
Colour:	**grey, silverlike**
Odour:	**none**
	value/range
Change in physical state:	
Soldification temperature:	**482 to 649 °C** depending on composition
Boiling point :	**n.a.**
Flashpoint:	**n.a.**
Ignition temperature:	**n.a.**
Danger of explosion:	**none**
Density:	**2,7 g/cm³**
solubility in water:	**not**
pH-value:	**6-8 (Eluat)** T= 20°C

2. Copper

Form:	**solid**
Colour:	**yellow - redish grey**
Odour:	**none**
Change in physical state:	
(1) Soldification temperature:	**1083 °C**
(2) Boiling point :	**2595 °C**
Flashpoint:	**not applicable (n.a.)**
Ignition temperature:	**n.a.**
Danger of explosion:	**only dust explosions are possible**
Vapour pressure:	**n.a.**
Density:	**8,96 g/cm³**
solubility in water:	**not**
pH-value:	**6-8 (Eluat) T= 20°C**
Viscosity	**n.a.**

3. steel

Form:	**solid**
Colour:	**grey, silverlike**
Odour:	**none**

Change in physical state:

(1) Soldification temperature:	**~1500 °C depending on composition**
(2) Boiling point :	**~ 3000 °C**
Flashpoint:	**n.a.**
Ignition temperature:	**n.a.**
Danger of explosion:	**n.a.**
Vapour pressure:	**n.a.**
Density:	**7,87 g/cm³**
solubility in water:	**not**
pH-value:	**6-8 (Eluat) T= 20°C**
Viscosity	**n.a.**

10. Stability and reactivity

- avoid contact to acids, caustic solution or other corrosive materials (=>explosive hydrogen gas)
- small particles of aluminium can react with water to hydrogen gas (explosive)

11. Toxicological informationeangaben

Inhalation from vapours or smoke from smelted copper can provoce so called metall fever.

12. Ecological information

Elimination information: **give to recycling process**

Behaviour and invironmental fate:
corrosive attack by air and water

Ecotoxic effects: **Copper ions in high concentrations in water it can be harmful to fish**

Further ecological information:
a negative influence on the biological waste water treatment could not be excluded

general remark: **Copper is an essentiall trace element. An daily incorporation from 0,05-0,5mg / kg bodyweight is unobjectionable for human beings.**

13. Disposal considerations

give to recycling process, best if aluminium, copper and steel are seperated

14. Transport information

no dangerous good

15. Regulatory information

none

16. other information

The copperfoil contains traces of arsenic. In the etching process the arsenic concentration of the etching solution can accumulate to toxic concentrations. The etching solution is then to treat as a toxic chemical and the waste as dangerous waste.