



## MATERIAL SAFETY DATA SHEET

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### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Resistor Foil NCAS

**MANUFACTURER:**

Ticer Technologies  
2555 West Fairview St., Suite 101  
Chandler, AZ 85224, USA  
Customer Service: 480-223-0890

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### 2. COMPOSITION/INFORMATION ON INGREDIENTS

	<u>wt%</u>	<u>CAS Registry #</u>
Copper	>99.2	7440-50-8
Nickel metal	<.289	7440-02-0
Chrome metal	<.196	7440-47-3
Aluminum	<.021	7429-90-5
Silicon	<.001	7440-21-3
Zinc	<0.67	7440-66-6
Arsenic	<0.065	7440-38-2

**COMMENTS:**

Resistive layer is comprised of the following in descending order:

Ni>Cr>Al>Si

Copper, nickel and chrome dust have a P.E.L. of 1 mg/cubic meter.  
Aluminum, zinc and silicon dust have a P.E.L. of 15 mg/cubic meter.

Note: The resistive material is deposited on copper foil for PWB.

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### 3. HAZARDS IDENTIFICATION

**POTENTIAL HEALTH EFFECT**

**SKIN:**

Nickel compounds have been known to cause "nickel itch". Wash skin with soapy water.

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#### **4. FIRST AID MEASURES**

**COMMENTS:**

No specific treatment is necessary since this material is not likely to be hazardous by inhalation. If exposed to excessive levels of dust, remove to fresh air and get medical attention if cough or other symptoms develop.

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#### **5. FIRE FIGHTING MEASURES**

**COMMENTS:**

Material is a metal and noncombustible.

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#### **6. ACCIDENTAL RELEASE MEASURES**

**COMMENTS:**

N/A

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#### **7. HANDLING AND STORAGE**

**GENERAL PROCEDURES:**

The use of gloves is recommended.

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#### **8. EXPOSURE CONDITIONS/PERSONAL PROTECTION**

**ENGINEERING CONTROLS:**

If user operations generate dust, use ventilation to keep exposure to airborne contaminants below the exposure limit.

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#### **9. PHYSICAL AND CHEMICAL PROPERTIES**

Physical State: Solid

Odor: No odor

Appearance: Metal foil is a light grey on side; yellow on the opposite side.

Boiling Point: 2567°C

Melting Point: 1084°C

Density: 8.96 g/cubic cm.

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**10. STABILITY AND REACTIVITY**

STABLE: Yes Note: Copper reacts with nitric acid to form noxious NO<sub>x</sub> gas.

HAZARDOUS POLYMERIZATION: No

HAZARDOUS DECOMPOSITION:

If material is sanded, the copper dust produced will react violently with substances such as ammonium nitrate, chlorates and bromates.

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**11. TOXICOLOGICAL INFORMATION**

GENERAL COMMENTS:

Not applicable.

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**12. ECOLOGICOL INFORMATION**

GENERAL COMMENTS:

No information available.

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**13. DISPOSAL CONSIDERATIONS**

DISPOSAL METHOD:

Scrap metal can be reclaimed.

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**14. TRANSPORT INFORMATION**

SPECIAL SHIPPING NOTES:

Unrestricted.

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**15. REGULATORY INFORMATION**

**UNITED STATES**

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

Title III Notes: Copper and nickel are reportable under SARA Title III.



The threshold Form R level as stated in the regulations for both metals are:

Manufactured 25,000 lbs.  
Processed 25,000 lbs.  
Otherwise used 10,000 lbs.

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA Regulatory: Copper is a CERCLA listed material with an RQ value of 5000 lbs.

Nickel is a CERCLA listed material with an RQ value of 100 lbs.

Zinc is a CERCLA listed material with an RQ value of 1000 lbs.

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA Regulatory: All metals are listed on the TSCA list.

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## 16. OTHER INFORMATION

### MANUFACTURE DISCLAIMER:

**Ticer Technologies provides this information in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Ticer Technologies will not be responsible for damages resulting from the use of or reliance upon this information.**

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