Your Dreams, Our Challenge

# Safety Data Sheet

## Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

### 1.1 Product identifier

**Product Name** • **Mercurywave ® 9350 Copper Clad Laminate**

**Synonyms** • Mercurywave® Copper Clad Laminate

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified use(s)** • Laminate for consumer and industrial electronics.

**Use(s) advised against** • Consumer goods in direct contact with food stuffs, potable water, or continuous skin contact

### 1.3 Details of the supplier of the safety data sheet

| | North America | Asia | Europe |
|---|---|---|---|
| **Manufacturer** | AGC Multi Material America, Inc. | AGC Multi Material Singapore PTE, Ltd | AGC Multi Material Europe S.A. |
| | 1420 W. 12th Place<br>Tempe, AZ 85281<br>United States | 4 Gul Crescent<br>Jurong, Singapore 629520 | Route des Usines, BP25<br>65303, Lannemezan,<br>Cedex, France |
| | www.agc-multimaterial.com<br>agc-ml.rf-po@agc.com | | |

### 1.4 Emergency telephone number

| | | |
|---|---|---|
| 1-480-967-5600- (8AM - 5PM CST) M-F | +65 6861 7117 - Asia | +33-5-62-98-52-90- Europe (8AM-4PM M-F) |
| 1-800-424-9300 - CHEMTREC (US and Canada only) | | |

## Section 2: Hazards Identification

**EU/EEC**

**According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]**

**According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)**

## 2.1 Classification of the substance or mixture

**CLP** • Not Classified

**DSD/DPD** • Not Classified

## 2.2 Label Elements

**CLP**

**Hazard statements** • No label element(s) required.

**DSD/DPD**

**Risk phrases** • No label element(s) required.

## 2.3 Other Hazards

**CLP** • This material is exempt from CLP/REACH obligations as an article as specified in REACH (1907/2006) and related ECHA guidance.

**DSD/DPD** • Under European Directive 1999/45/EC these product(s) are exempt and considered manufactured article(s) under stated normal conditions of use.

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# United States (US)

**According to: OSHA 29 CFR 1910.1200 HCS**

## 2.1 Classification of the substance or mixture

**OSHA HCS 2012** • Not Classified

## 2.2 Label elements

**OSHA HCS 2012**

**Hazard statements** • No label element(s) required.

## 2.3 Other hazards

**OSHA HCS 2012** • Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), these product(s) are exempt and considered manufactured article(s) under stated normal use conditions.

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# Canada

**According to: WHMIS**

## 2.1 Classification of the substance or mixture

**WHMIS** • Not classified

## 2.2 Label elements

**WHMIS** • No label element(s) required

## 2.3 Other hazards

**WHMIS** • Under Canadian regulations (Workplace Hazardous Materials Information System (WHMIS) – Hazardous Products Act (HPA), Section 11 (1)), these product(s) are exempt and considered manufactured article(s) under stated normal conditions of use.

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## Section 3 - Composition/Information on Ingredients

### 3.1 Substances

- Material does not meet the criteria of a substance.

### 3.2 Mixtures

| Composition | | |
|---|---|---|
| **Chemical Name** | **Identifiers** | **%** |
| 2-Butanone | **CAS:**78-93-3<br>**EC Number:**201-159-0<br>**EU Index:**606-002-00-3 | <0.1% |
| Formamide, N,N-dimethyl- | **CAS:**68-12-2<br>**EC Number:**200-679-5<br>**EU Index:**616-001-00-X | <0.1% |
| Silica, amorphous | **CAS:**7631-86-9<br>**EC Number:**231-545-4 | 4% TO 8% |
| Cured epoxy resin mixture | **CAS:**NA<br>**EC Number:**NA | 10% TO 30% |
| Glass, oxide, chemicals | **CAS:**65997-17-3<br>**EC Number:**266-046-0 | 15% TO 35% |
| Copper | **CAS:**7440-50-8<br>**EC Number:**231-159-6 | 30% TO 70% |

## Section 4 - First Aid Measures

### 4.1 Description of first aid measures

**Inhalation**
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If signs/symptoms develop, move victim to fresh air. Administer oxygen if breathing is difficult. If signs/symptoms continue, get medical attention. Give artificial respiration if victim is not breathing.

**Skin**
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. In case of contact with substance, flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing. Wash skin with soap and water. If irritation develops and persists, get medical attention.

**Eye**
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

**Ingestion**
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Obtain medical attention immediately if ingested.

### 4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

### 4.3 Indication of any immediate medical attention and special treatment needed

**Notes to Physician**
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

## Section 5 - Firefighting Measures

### 5.1 Extinguishing media

**Suitable Extinguishing Media**
- LARGE FIRES: Water spray, fog or alcohol-resistant foam.
  SMALL FIRES: Dry chemical, CO2, water spray or alcohol-resistant foam.

**Unsuitable Extinguishing Media**
- Do not use straight streams.

### 5.2 Special hazards arising from the substance or mixture

**Unusual Fire and Explosion Hazards**
- Hazardous decomposition will occur at elevated temperatures

**Hazardous Combustion Products**
- Nitrous Oxides, Aldehydes, Carbon Monoxide, Various Acids.

### 5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible. Wear positive pressure self-contained breathing apparatus (SCBA).

## Section 6 - Accidental Release Measures

### 6.1 Personal precautions, protective equipment and emergency procedures

**Personal Precautions**
- No special precautions are expected to be necessary if material is used under ordinary conditions and as recommended. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Emergency Procedures**
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Ventilate closed spaces before entering.

### 6.2 Environmental precautions

- Avoid release to the environment.

### 6.3 Methods and material for containment and cleaning up

**Containment/Clean-up Measures**
- Avoid generating dust.
  Carefully shovel or sweep up spilled material and place in suitable container.

### 6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

## Section 7 - Handling and Storage

### 7.1 Precautions for safe handling

**Handling**
- Avoid contact with heat and ignition sources. Minimize dust generation and accumulation. Use only with adequate ventilation. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe dust. Avoid contact with skin, eyes or clothing. Avoid breathing fumes generated during processing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

### 7.2 Conditions for safe storage, including any incompatibilities

**Storage**
- Keep away from heat, sparks and flame. Store in a well-ventilated place. Keep container tightly closed. Avoid generating dust. Store at 77ºF or below.

### 7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

## Section 8 - Exposure Controls/Personal Protection

### 8.1 Control parameters

| Exposure Limits/Guidelines | | | | | | |
|---|---|---|---|---|---|---|
| | **Result** | **ACGIH** | **Australia** | **Brazil** | **Canada Alberta** | **Canada British Columbia** |
| Silica, amorphous (7631-86-9) | TWAs | Not established | 2 mg/m3 TWA (respirable dust, listed under Fumed silica) | Not established | Not established | Not established |
| Formamide, N,N-dimethyl- (68-12-2) | TWAs | 10 ppm TWA | 10 ppm TWA; 30 mg/m3 TWA | 8 ppm TWA LT; 24 mg/m3 TWA LT | 10 ppm TWA; 30 mg/m3 TWA | 10 ppm TWA |
| 2-Butanone (78-93-3) | STELs | 300 ppm STEL | 300 ppm STEL; 890 mg/m3 STEL | Not established | 300 ppm STEL; 885 mg/m3 STEL | 100 ppm STEL |
| | TWAs | 200 ppm TWA | 150 ppm TWA; 445 mg/m3 TWA | 155 ppm TWA LT; 460 mg/m3 TWA LT | 200 ppm TWA; 590 mg/m3 TWA | 50 ppm TWA |
| Glass, oxide, chemicals as Glass wool fiber | TWAs | 1 fiber/cm3 TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* | 0.5 fibre/mL TWA (listed under Synthetic mineral fibres)<br><br>*as Glass wool fiber* | Not established | 1 fiber/cm3 TWA<br><br>*as Glass wool fiber* | 1 fiber/cm3 TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* |
| Copper as Copper compounds | TWAs | 0.2 mg/m3 TWA (fume) | 1 mg/m3 TWA (dust and mist); 0.2 mg/m3 TWA (fume) | | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) | 1 mg/m3 TWA (dust and mist); 0.2 mg/m3 TWA (fume) |

| Exposure Limits/Guidelines (Con't.) | | | | | | |
|---|---|---|---|---|---|---|
| | **Result** | **Canada Manitoba** | **Canada New Brunswick** | **Canada Northwest Territories** | **Canada Nova Scotia** | **Canada Nunavut** |
| Silica, amorphous (7631-86-9) | TWAs | Not established | Not established | 2 mg/m3 TWA (respirable mass); 5 mg/m3 TWA (total mass); 0.05 mg/m3 TWA (regulated under Silica flour, respirable mass); 0.15 mg/m3 TWA (total mass, regulated under Silica flour) | Not established | 2 mg/m3 TWA (respirable mass); 5 mg/m3 TWA (total mass); 0.05 mg/m3 TWA (regulated under Silica flour, respirable mass); 0.15 mg/m3 TWA (regulated under Silica flour, total mass) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Formamide, N,N-dimethyl- (68-12-2) | TWAs | 10 ppm TWA | 10 ppm TWA; 30 mg/m3 TWA | 10 ppm TWA; 30 mg/m3 TWA | 10 ppm TWA | 10 ppm TWA; 30 mg/m3 TWA |
| | STELs | Not established | Not established | 20 ppm STEL; 60 mg/m3 STEL | Not established | 20 ppm STEL; 60 mg/m3 STEL |
| 2-Butanone (78-93-3) | STELs | 300 ppm STEL | 300 ppm STEL; 885 mg/m3 STEL | 300 ppm STEL; 885 mg/m3 STEL | 300 ppm STEL | 300 ppm STEL; 885 mg/m3 STEL |
| | TWAs | 200 ppm TWA | 200 ppm TWA; 590 mg/m3 TWA | 200 ppm TWA; 590 mg/m3 TWA | 200 ppm TWA | 200 ppm TWA; 590 mg/m3 TWA |
| Glass, oxide, chemicals as Glass wool fiber | TWAs | 1 fiber/cm3 TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* | 1 fiber/cm3 TWA (fibers >5 µm with a diameter of <3 µm, aspect ratio >5:1)<br><br>*as Glass wool fiber* | 3 fiber/cm3 TWA (with a diameter of <=3.5 µm and a length >=10 µm); 5 mg/m3 TWA (total mass)<br><br>*as Glass wool fiber* | 1 fiber/cm3 TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* | 3 fiber/cm3 TWA (with a diameter of <=3.5 µm and a length >=10 µm); 5 mg/m3 TWA (total mass)<br><br>*as Glass wool fiber* |
| Copper as Copper compounds | TWAs | 0.2 mg/m3 TWA (fume) | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) | 0.2 mg/m3 TWA (fume) | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) |
| | STELs | Not established | Not established | 0.6 mg/m3 STEL (fume); 2 mg/m3 STEL (dust and mist) | Not established | 0.6 mg/m3 STEL (fume); 2 mg/m3 STEL (dust and mist) |

**Exposure Limits/Guidelines (Con't.)**

| | Result | Canada Ontario | Canada Quebec | Canada Saskatchewan | Canada Yukon | China |
|---|---|---|---|---|---|---|
| Silica, amorphous (7631-86-9) | TWAs | Not established | Not established | Not established | 300 particle/mL TWA (as measured by Konimeter instrumentation, listed under Silica); 20 mppcf TWA (as measured by Impinger instrumentation, listed under Silica); 2 mg/m3 TWA (respirable mass, listed under Silica) | Not established |
| Formamide, N,N-dimethyl- (68-12-2) | STELs | Not established | Not established | 15 ppm STEL | 20 ppm STEL; 60 mg/m3 STEL | 40 mg/m3 STEL |
| | TWAs | 10 ppm TWA | 10 ppm TWAEV; 30 mg/m3 TWAEV | 10 ppm TWA | 10 ppm TWA; 30 mg/m3 TWA | 20 mg/m3 TWA |
| 2-Butanone (78-93-3) | STELs | 300 ppm STEL | 100 ppm STEV; 300 mg/m3 STEV | 300 ppm STEL | 250 ppm STEL; 740 mg/m3 STEL | 600 mg/m3 STEL |

| | | | | | | |
|---|---|---|---|---|---|---|
| | TWAs | 200 ppm TWA | 50 ppm TWAEV; 150 mg/m3 TWAEV | 200 ppm TWA | 200 ppm TWA; 590 mg/m3 TWA | 300 mg/m3 TWA |
| Glass, oxide, chemicals as Glass wool fiber | TWAs | 1 fiber/cm3 TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* | 1 fibre/cm3 TWAEV (respirable, listed under Fibres-Artificial Vitreous Mineral Fibres)<br><br>*as Glass wool fiber* | 1 fiber/cm3 TWA (respirable fibers, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* | 30 mppcf TWA (dust or fiberous); 10 mg/m3 TWA (dust or fiberous)<br><br>*as Glass wool fiber* | Not established |
| Copper as Copper compounds | STELs | Not established | Not established | Not established | Not established | 2.5 mg/m3 STEL (dust); 0.6 mg/m3 STEL (fume) |
| | TWAs | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) | 0.2 mg/m3 TWAEV (fume); 1 mg/m3 TWAEV (dust and mist) | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) | 1 mg/m3 TWA (dust); 0.2 mg/m3 TWA (fume) |
| | Ceilings | Not established | Not established | Not established | Not established | Not established |

**Exposure Limits/Guidelines (Con't.)**

| | Result | Czech Republic | Denmark | France | Germany DFG | Germany TRGS |
|---|---|---|---|---|---|---|
| Silica, amorphous (7631-86-9) | TWAs | 0.1 mg/m3 TWA (respirable fraction); 4.0 mg/m3 TWA (as amorphous SiO2) | Not established | Not established | Not established | 4 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, inhalable fraction) |
| | MAKs | Not established | Not established | Not established | 4 mg/m3 TWA MAK (inhalable fraction) | Not established |
| Formamide, N,N-dimethyl- | Ceilings | 30 mg/m3 Ceiling | Not established | Not established | 10 ppm Peak; 30 mg/m3 Peak | Not established |

| | | | | | | |
|---|---|---|---|---|---|---|
| (68-12-2) | TWAs | 15 mg/m3 TWA | 5 ppm TWA; 15 mg/m3 TWA | 5 ppm TWA [VME] (restrictive limit); 15 mg/m3 TWA [VME] (restrictive limit) | Not established | 5 ppm TWA AGW (The risk of damage to the embryo or fetus cannot be excluded even when AGW and BGW values are observed, exposure factor 2); 15 mg/m3 TWA AGW (The risk of damage to the embryo or fetus cannot be excluded even when AGW and BGW values are observed, exposure factor 2) |
| | STELs | Not established | Not established | 30 mg/m3 STEL [VLCT] (restrictive limit); 10 ppm STEL [VLCT] (restrictive limit) | Not established | Not established |
| | MAKs | Not established | Not established | Not established | 5 ppm TWA MAK; 15 mg/m3 TWA MAK | Not established |
| 2-Butanone (78-93-3) | Ceilings | 900 mg/m3 Ceiling | Not established | Not established | 200 ppm Peak; 600 mg/m3 Peak | Not established |
| | TWAs | 600 mg/m3 TWA | 50 ppm TWA; 145 mg/m3 TWA | 200 ppm TWA [VME] (restrictive limit); 600 mg/m3 TWA [VME] (restrictive limit) | Not established | 200 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 1); 600 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 1) |
| | STELs | Not established | Not established | 300 ppm STEL [VLCT] (restrictive limit); 900 mg/m3 STEL [VLCT] (restrictive limit) | Not established | Not established |
| | MAKs | Not established | Not established | Not established | 200 ppm TWA MAK; 600 mg/m3 TWA MAK | Not established |
| Glass, oxide, chemicals as Glass wool fiber | TWAs | Not established | 1 fiber/cm3 TWA<br>*as Glass wool fiber* | Not established | Not established | Not established |
| Copper as Copper | STELs | Not established | Not established | 2 mg/m3 STEL | Not established | Not established |

| | | | | | | |
|---|---|---|---|---|---|---|
| compounds | | | | [VLCT] (dust, as Cu) | | |
| | TWAs | 1 mg/m3 TWA (dust); 0.1 mg/m3 TWA (fume) | 1.0 mg/m3 TWA (dust and powder); 0.1 mg/m3 TWA (fume) | 0.2 mg/m3 TWA [VME] (fume); 1 mg/m3 TWA [VME] (dust as Cu) | Not established | Not established |
| | Ceilings | 2 mg/m3 Ceiling (dust); 0.2 mg/m3 Ceiling (fume) | Not established | Not established | 0.02 mg/m3 Peak (respirable fraction) | Not established |
| | MAKs | Not established | Not established | Not established | 0.01 mg/m3 TWA MAK (including inorganic copper compounds, respirable fraction) | Not established |

**Exposure Limits/Guidelines (Con't.)**

| | Result | Greece | India | Israel | Italy | Japan |
|---|---|---|---|---|---|---|
| Silica, amorphous (7631-86-9) | TWAs | Not established | 10 mg/m3 TWA (total dust) | 0.3 mg/m3 TWA (airborne dust no otherwise classified); 0.1 mg/m3 TWA (respirable dust) | Not established | Not established |
| Formamide, N,N-dimethyl- (68-12-2) | TWAs | 5 ppm TWA; 15 mg/m3 TWA | Not established | 10 ppm TWA | 5 ppm TWA; 15 mg/m3 TWA | 10 ppm OEL; 30 mg/m3 OEL |
| | STELs | 10 ppm STEL; 30 mg/m3 STEL | Not established | Not established | 10 ppm STEL Breve termine; 30 mg/m3 STEL Breve termine | Not established |
| 2-Butanone (78-93-3) | TWAs | 200 ppm TWA; 600 mg/m3 TWA | 200 ppm TWA; 590 mg/m3 TWA | 200 ppm TWA | 200 ppm TWA; 600 mg/m3 TWA | 200 ppm OEL; 590 mg/m3 OEL |
| | STELs | 300 ppm STEL; 900 mg/m3 STEL | 300 ppm STEL; 885 mg/m3 STEL | 300 ppm STEL | 300 ppm STEL Breve termine; 900 mg/m3 STEL Breve termine | Not established |
| Glass, oxide, chemicals as Glass wool fiber | TWAs | Not established | Not established | 1 fiber/cm3 TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, except asbestiform minerals, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* | Not established | 1 fiber/cm3 OEL<br><br>*as Glass wool fiber* |
| Copper as Copper compounds | TWAs | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust) | 0.2 mg/m3 TWA (fume) | 0.2 mg/m3 TWA (fume) | Not established | Not established |
| | STELs | 2 mg/m3 STEL (dust) | Not established | Not established | Not established | Not established |

**Exposure Limits/Guidelines (Con't.)**

| | Result | Korea | Malaysia | Netherlands | NIOSH | OSHA |
|---|---|---|---|---|---|---|
| Silica, amorphous (7631-86-9) | TWAs | Not established | Not established | Not established | 6 mg/m3 TWA | Not established |
| Formamide, N,N-dimethyl- (68-12-2) | TWAs | 10 ppm TWA (Serial No. 077); 30 mg/m3 TWA (Serial No. 077) | 10 ppm TWA; 30 mg/m3 TWA | 15 mg/m3 TWA | 10 ppm TWA; 30 mg/m3 TWA | 10 ppm TWA; 30 mg/m3 TWA |
| | STELs | Not established | Not established | 30 mg/m3 STEL | Not established | Not established |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2-Butanone (78-93-3) | TWAs | 200 ppm TWA (Serial No. 228); 590 mg/m3 TWA (Serial No. 228) | 200 ppm TWA; 590 mg/m3 TWA | 590 mg/m3 TWA | 200 ppm TWA; 590 mg/m3 TWA | 200 ppm TWA; 590 mg/m3 TWA |
| | STELs | 300 ppm STEL (Serial No. 228); 885 mg/m3 STEL (Serial No. 228) | Not established | 900 mg/m3 STEL | 300 ppm STEL; 885 mg/m3 STEL | Not established |
| Glass, oxide, chemicals | TWAs | 10 mg/m3 TWA (Serial No. 007)<br><br>*as Glass wool fiber* | 1 fiber/cm3 TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* | 2 fibers/cm3 MAC-TGG<br><br>*as Glass wool fiber* | 3 fiber/cm3 TWA (fibers <= 3.5 µm in diameter and >= 10 µm in length); 5 mg/m3 TWA (total)<br><br>*as Glass wool fiber* | Not established |
| Copper as Copper compounds | TWAs | 1 mg/m3 TWA (dust and mist, as Cu, Serial No. 010); 0.1 mg/m3 TWA (fume, as Cu, Serial No. 011) | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) | 0.1 mg/m3 TWA (inhalable fraction) | 1 mg/m3 TWA (dust and mist); 0.1 mg/m3 TWA (fume) | 0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist) |
| | STELs | 2 mg/m3 STEL (dust and mist, as Cu, Serial No. 010) | Not established | Not established | Not established | Not established |

**Exposure Limits/Guidelines (Con't.)**

| | Result | Singapore | South Africa | Spain |
|---|---|---|---|---|
| Silica, amorphous (7631-86-9) | TWAs | Not established | 6 mg/m3 TWA (total inhalable dust); 3 mg/m3 TWA (respirable dust) | Not established |
| Formamide, N,N-dimethyl- (68-12-2) | TWAs | 10 ppm PEL; 30 mg/m3 PEL | 10 ppm TWA; 30 mg/m3 TWA | 5 ppm TWA [VLA-ED] (indicative limit value); 15 mg/m3 TWA [VLA-ED] (indicative limit value) |
| | STELs | Not established | 20 ppm STEL; 60 mg/m3 STEL | 10 ppm STEL [VLA-EC]; 30 mg/m3 STEL [VLA-EC] |
| | Biological Limit Values (BLV) | Not established | Not established | 15 mg/L urine end of shift N-Methylformamide (2); 40 mg/L urine start of last shift of workweek N-Acetyl-S-(N-methylcarbamoyl) cysteine (5,S) |
| 2-Butanone (78-93-3) | STELs | 300 ppm STEL; 885 mg/m3 STEL | 300 ppm STEL; 885 mg/m3 STEL | 300 ppm STEL [VLA-EC]; 900 mg/m3 STEL [VLA-EC] |
| | TWAs | 200 ppm PEL; 590 mg/m3 PEL | 200 ppm TWA; 590 mg/m3 TWA | 200 ppm TWA [VLA-ED] (indicative limit value); 600 mg/m3 TWA [VLA-ED] (indicative limit value) |
| Glass, oxide, chemicals | TWAs | 10 mg/m3 PEL | Not established | 1 fiber/cm3 TWA [VLA-ED] (Fibers with a random orientation, with a content in |

| | | | | |
|---|---|---|---|---|
| | | *as Glass wool fiber* | | Alkaline and Alkali-earth oxide [Na2O+K2O+CaO+MgO+BaO] above 18% in weight; manufacturing, commercialization, and use restrictions under REACH. Respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers)<br><br>*as Glass wool fiber* |
| Copper as Copper compounds | TWAs | 0.2 mg/m3 PEL (fume); 1 mg/m3 PEL (dust and mist) | 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist, as Cu) | 0.2 mg/m3 TWA [VLA-ED] (fume); 1 mg/m3 TWA [VLA-ED] (dust and mist, as Cu) |
| | STELs | Not established | 2 mg/m3 STEL (dust and mist, as Cu) | Not established |

## Exposure Control Notations

**China**

•Formamide, N,N-dimethyl- (68-12-2): **Skin:** (Skin notation)

**Czech Republic**

•Formamide, N,N-dimethyl- (68-12-2): **Skin:** (Potential for cutaneous absorption)

**Denmark**

•Formamide, N,N-dimethyl- (68-12-2): **Skin Notations:** (Potential for cutaneous absorption)

•2-Butanone (78-93-3): **Skin Notations:** (Potential for cutaneous absorption)

**Greece**

•Formamide, N,N-dimethyl- (68-12-2): **Skin:** (skin - potential for cutaneous absorption)

**Italy**

•Formamide, N,N-dimethyl- (68-12-2): **Skin:** (skin - potential for cutaneous absorption)

**Netherlands**

•Formamide, N,N-dimethyl- (68-12-2): **Skin:** (skin notation)

•2-Butanone (78-93-3): **Skin:** (skin notation)

**Canada Ontario**

•Formamide, N,N-dimethyl- (68-12-2): **Skin:** (Absorption through skin, eyes, or mucous membranes)

**Canada Quebec**

•Formamide, N,N-dimethyl- (68-12-2): **Skin:** (Skin designation)

**France**

•Formamide, N,N-dimethyl- (68-12-2): **Reproductive Toxins:** (Reproductive Toxin category 1B)

**Spain**

•Formamide, N,N-dimethyl- (68-12-2): **Reproductive Toxins:** (known or suspected human reproductive toxin with classification from animal data) | **Skin:** (skin - potential for cutaneous exposure)

**ACGIH**

•Formamide, N,N-dimethyl- (68-12-2): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen) | **Skin:** (Skin - potential significant contribution to overall exposure by the cutaneous route)

**Germany TRGS**

•Formamide, N,N-dimethyl- (68-12-2): **Skin:** (skin notation)

•2-Butanone (78-93-3): **Skin:** (skin notation)

**Germany DFG**

•Copper (7440-50-8): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

•Formamide, N,N-dimethyl- (68-12-2): **Pregnancy:** (risk to embryo/fetus probable) | **Skin:** (skin notation)

•2-Butanone (78-93-3): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to) | **Skin:** (skin notation)

•Silica, amorphous (7631-86-9): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

## Exposure Limits Supplemental

**Czech Republic**

•Formamide, N,N-dimethyl- (68-12-2): **Substances with Potential Chronic Health Effects:** (Potential chronic health effects)

**OSHA**

•Silica, amorphous (7631-86-9): **Mineral Dusts:** (20 mppcf TWA; (80)/(% SiO2) mg/m3 TWA)

**ACGIH**

•Copper (7440-50-8): **TLV Basis-Critical Effects:** (metal fume fever (fume))

•Copper as Copper compounds: **TLV Basis-Critical Effects:** (gastrointestinal (dust and mist); irritation (dust and mist))

•Formamide, N,N-dimethyl- (68-12-2): **BEIs:** (15 mg/L Medium: urine Time: end of shift Parameter: N-Methylformamide; 40 mg/L Medium: urine Time: prior to last shift of workweek Parameter: N-Acetyl-S-(N-methylcarbamoyl) cysteine (semi-quantitative)) | **TLV Basis - Critical Effects:** (liver damage)

•2-Butanone (78-93-3): **BEIs:** (2 mg/L Medium: urine Time: end of shift Parameter: MEK (nonspecific)) | **TLV Basis - Critical Effects:** (CNS and PNS impairment; upper respiratory tract irritation)

**Germany TRGS**

•Formamide, N,N-dimethyl- (68-12-2): **BELs:** (35 mg/L Medium: urine Time: end of shift Parameter: N,N-Methylformamide plus N-Hydroxymethyl-N-methylformamide)

•2-Butanone (78-93-3): **BELs:** (5 mg/L Medium: urine Time: end of shift Parameter: 2-Butanone)

## 8.2 Exposure controls

**Engineering Measures/Controls**

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof electrical/ventilating/lighting/equipment.

**Personal Protective Equipment**

**Respiratory**

- In case of insufficient ventilation, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

**Eye/Face**

- Wear chemical splash safety goggles.

**Skin/Body**

- Wear appropriate gloves. Wear long sleeves and/or protective coveralls.

**Environmental Exposure Controls**

- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

**Key to abbreviations**

ACGIH = American Conference of Governmental Industrial Hygiene
BEI = Biological Exposure Indices
MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Level determined by the Occupational Safety and Health Administration (OSHA)
STEL = Short Term Exposure Limits are based on 15-minute exposures
STEV = Short Term Exposure Value
TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures
TWAEV = Time-Weighted Average Exposure Value

# Section 9 - Physical and Chemical Properties

## 9.1 Information on Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Material Description** | | | |
| Physical Form | Solid | Appearance/Description | Tan or light yellow, solid sheet. |
| Color | Tan or light yellow | Odor | None |
| Odor Threshold | Data lacking | | |
| **General Properties** | | | |
| Boiling Point | Not relevant | Melting Point | Data lacking |
| Decomposition Temperature | >200 C(392 F) | pH | Not relevant |
| Specific Gravity/Relative Density | 1.5-2.5 | Water Solubility | Negligible < 0.1 % |
| Viscosity | Data lacking | Explosive Properties | Data lacking |
| Oxidizing Properties: | Data lacking | | |
| **Volatility** | | | |

| | | | |
|---|---|---|---|
| Vapor Pressure | Not relevant | Vapor Density | Not relevant |
| Evaporation Rate | Not relevant | VOC (Wt.) | <0.2% |
| VOC (Vol.) | <0.2% | Volatiles (Wt.) | <0.2% |
| Volatiles (Vol.) | <0.2% | | |
| **Flammability** | | | |
| Flash Point | Not relevant | UEL | Data lacking |
| LEL | Data lacking | Autoignition | Data lacking |
| Flammability (solid, gas) | Data lacking | | |
| **Environmental** | | | |
| Octanol/Water Partition coefficient | Data lacking | | |

## 9.2 Other Information

- No additional physical and chemical parameters noted.

# Section 10: Stability and Reactivity

## 10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

## 10.2 Chemical stability

- Stable under normal temperatures and pressures.

## 10.3 Possibility of hazardous reactions

- Hazardous decomposition will occur at elevated temperatures.

## 10.4 Conditions to avoid

- Avoid exposure to excessive heat and flames, sparks, or other ignition sources.

## 10.5 Incompatible materials

- Strong acids, strong bases, strong oxidizers, amines.

## 10.6 Hazardous decomposition products

- Acrid vapors and fumes, aliphatic and aromatic hydrocarbons of variable composition, CO, CO2, NOx, HCN

# Section 11 - Toxicological Information

## 11.1 Information on toxicological effects

| Components | | |
|---|---|---|
| Formamide, N,N-dimethyl- (<0.1%) | 68-12-2 | **Acute Toxicity:** Ingestion/Oral-Rat LD50 • 2000 mg/kg; Inhalation-Rat LC50 • 1948 ppm 4 Hour(s); Skin-Rabbit LD50 • 4720 mg/kg;<br>**Irritation:** Eye-Rabbit • 100 mg-Rinse • Severe irritation; Skin-Human • 100 % 24 Hour(s) • Mild irritation;<br>**Multi-dose Toxicity:** Ingestion/Oral-Rat TDLo • 9 mL/kg 12 Week(s)-Intermittent; *Liver*:**Hepatitis (hepatocellular necrosis), diffuse**; *Liver*:**Changes in liver weight**; *Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels*:**Phosphatases**;<br>**Mutagen:** Cytogenetic analysis • Inhalation-Human • 12300 µg/m³ 1 Year(s);<br>**Reproductive:** Inhalation-Rat TCLo • 4 mg/m³ 4 Hour(s)(1-19D preg); *Reproductive Effects:Effects on Fertility*:**Pre-implantation mortality**; *Reproductive Effects:Effects on Embryo or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; *Reproductive Effects:Effects on Embryo or Fetus*:**Fetal death**;<br>**Tumorigen / Carcinogen:** Inhalation-Rat TCLo • 200 ppm 6 Hour(s) 104 Week(s)-Intermittent; *Liver*:**Tumors**; *Tumorigenic*:**Neoplastic by RTECS criteria** |
| 2-Butanone (< 0.1%) | 78-93-3 | **Acute Toxicity:** Ingestion/Oral-Rat LD50 • 2737 mg/kg; Inhalation-Rat LC50 • 23500 mg/m³ 8 Hour(s); Inhalation-Human TCLo • 1000 mg/m³; *Sense Organs and Special Senses:Eye*:**Conjunctive irritation**; *Lungs, Thorax, or Respiration*:**Cough**; Skin-Rabbit LD50 • 6480 mg/kg;<br>**Irritation:** Eye-Human • 350 ppm; Skin-Rabbit • 500 mg 24 Hour(s) • Moderate irritation;<br>**Reproductive:** Inhalation-Rat TCLo • 1000 ppm 7 Hour(s)(6-15D preg); *Reproductive Effects:Effects on Embryo* |

| | | |
|---|---|---|
| | | *or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; *Reproductive Effects:Specific Developmental Abnormalities*:**Musculoskeletal system** |
| Glass, oxide, chemicals (15% TO 35%) | 65997-17-3 | **Multi-dose Toxicity:** Inhalation-Rat TCLo • 16 mg/m³ 6 Hour(s) 13 Week(s)-Intermittent; *Lungs, Thorax, or Respiration*:**Other changes** |

### Potential Health Effects

#### Inhalation

**Acute (Immediate)**
- Processes such as cutting, grinding, crushing, or impact may result in generation of excessive amounts of airborne dusts in the workplace. Nuisance dust may affect the lungs but reactions are typically reversible.

**Chronic (Delayed)**
- No data available.

#### Skin

**Acute (Immediate)**
- May cause mild irritation.

**Chronic (Delayed)**
- No data available.

#### Eye

**Acute (Immediate)**
- May cause mild eye irritation (dust).

**Chronic (Delayed)**
- No data available.

#### Ingestion

**Acute (Immediate)**
- No data available.

**Chronic (Delayed)**
- No data available.

**Mutagenic Effects**
- No data available.

**Carcinogenic Effects**
- This product contains fibrous glass. Following a thorough review of all the medical-scientific data available at a meeting in October 2001, the IARC panel lowered the classification for fibrous glass from a Group 2B classification ("possibly carcinogenic to humans") to a Group 3 classification ("not classifiable as to carcinogenicity to humans"). According to IARC, there is "no evidence of increased risks of lung cancer from occupational exposures during manufacturing of these materials, and inadequate evidence overall of any cancer risk.

**Reproductive Effects**
- No data available.

**Key to abbreviations**

LC = Lethal Concentration
LD = Lethal Dose
TC = Toxic Concentration
TD = Toxic Dose

## Section 12 - Ecological Information

### 12.1 Toxicity

- Not expected to be harmful to aquatic life.

### 12.2 Persistence and degradability

- Material data lacking.

### 12.3 Bioaccumulative potential

- Material data lacking.

### 12.4 Mobility in Soil

- Material data lacking.

### 12.5 Results of PBT and vPvB assessment

- No PBT and vPvB assessment has been conducted.

### 12.6 Other adverse effects

- No studies have been found.

## Section 13 - Disposal Considerations

### 13.1 Waste treatment methods

**Product waste**
- DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN SDS SECTION 3: Composition Information. For UNUSED & UNCONTAMINATED PRODUCT, the preferred disposal option includes sending to a licensed, permitted waste handler and disposing with incinerator or other thermal destruction device.

**Packaging waste**
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## Section 14 - Transport Information

| | 14.1 UN number | 14.2 UN proper shipping name | 14.3 Transport hazard class(es) | 14.4 Packing group | 14.5 Environmental hazards |
|---|---|---|---|---|---|
| **DOT** | NA | Not Regulated | NA | NA | NDA |
| **TDG** | NA | Not Regulated | NA | NA | NDA |
| **IMO/IMDG** | NA | Not Regulated | NA | NA | NDA |
| **IATA/ICAO** | NA | Not Regulated | NA | NA | NDA |

**14.6 Special precautions for user**
- None specified.

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
- Material not supplied in bulk form.

## Section 15 - Regulatory Information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**SARA Hazard Classifications**
- Chronic

**State Right To Know**

| Component | CAS | MA | NJ | PA |
|---|---|---|---|---|
| 2-Butanone | 78-93-3 | Yes | Yes | Yes |
| Formamide, N,N-dimethyl- | 68-12-2 | Yes | Yes | Yes |
| Silica, amorphous | 7631-86-9 | Yes | Yes | Yes |
| Glass, oxide, chemicals | 65997-17-3 | Yes | No | Yes |
| Copper | 7440-50-8 | Yes | Yes | Yes |

| Inventory | | | | | | |
|---|---|---|---|---|---|---|
| Component | CAS | Canada DSL | Canada NDSL | China | EU EINECS | EU ELNICS |
| 2-Butanone | 78-93-3 | Yes | No | Yes | Yes | No |
| Formamide, N,N-dimethyl- | 68-12-2 | Yes | No | Yes | Yes | No |
| Silica, amorphous | 7631-86-9 | Yes | No | Yes | Yes | No |
| Glass, oxide, chemicals | 65997-17-3 | Yes | No | Yes | Yes | No |
| Copper | 7440-50-8 | Yes | No | Yes | Yes | No |

| Inventory (Con't.) | | | | |
|---|---|---|---|---|
| Component | CAS | Japan ENCS | Korea KECL | TSCA |
| 2-Butanone | 78-93-3 | Yes | Yes | Yes |
| Formamide, N,N-dimethyl- | 68-12-2 | Yes | Yes | Yes |
| Silica, amorphous | 7631-86-9 | Yes | Yes | Yes |
| Glass, oxide, chemicals | 65997-17-3 | Yes | Yes | Yes |
| Copper | 7440-50-8 | Yes | Yes | Yes |

## Australia

### Labor

**Australia - Work Health and Safety Regulations - Hazardous Substances Requiring Health Monitoring**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

**Australia - High Volume Industrial Chemicals List**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | |
| •Silica, amorphous | 7631-86-9 | |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | |

**Australia - List of Designated Hazardous Substances - Classification**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Xn, Xi Repr.Cat.2 R61, R20/21, R36 |
| •2-Butanone | 78-93-3 | F, Xi R11, R36, R66, R67 |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Self classification required (dust, fume, and mist) |

### Environment

**Australia - National Pollutant Inventory (NPI) Substance List**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | 10 tonne/yr Threshold category 1 |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | 10 tonne/yr Threshold category 1 (Copper and compounds); 2000 tonne/yr Threshold category 2b (Copper and compounds); 60000 MWH Threshold category 2b (Copper and compounds); 20 MW Threshold category 2b (Copper and compounds) |

**Australia - Ozone Protection Act - Scheduled Substances**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

**Australia - Priority Existing Chemical Program**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Candidate chemical |
| •2-Butanone | 78-93-3 | Candidate chemical |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

## Canada

### Labor

**Canada - WHMIS - Classifications of Substances**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | B2, D2B |
| •Silica, amorphous | 7631-86-9 | Uncontrolled product according to WHMIS classification criteria |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Uncontrolled product according to WHMIS classification criteria (listed under Glass wool); D2A (listed under Mineral wool fiber) |
| •Copper | 7440-50-8 | Uncontrolled product according to WHMIS classification criteria |

**Canada - WHMIS - Ingredient Disclosure List**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | 1 % |
| •2-Butanone | 78-93-3 | 1 % |
| •Silica, amorphous | 7631-86-9 | 1 % |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | 1 % |

### Environment

**Canada - CEPA - Priority Substances List**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Priority Substance List 2 (substance not considered |

| | | |
|---|---|---|
| | | toxic) |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

## Europe

### Other

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Xn; R20/21 Xi; R36 Repr.Cat.2; R61 |
| •2-Butanone | 78-93-3 | F; R11 Xi; R36 R66 R67 |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | T R:61-20/21-36 S:53-45 |
| •2-Butanone | 78-93-3 | F Xi R:11-36-66-67 S:(2)-9-16 |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | E |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | S:53-45 |
| •2-Butanone | 78-93-3 | S:(2)-9-16 |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

## Germany

### Environment

**Germany - TA Luft - Types and Classes**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Inorganic dust Substance: 5.2.2, Class III |

**Germany - TA Luft - Emission Limits for Carcinogenic Substances**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **Germany - TA Luft - Emission Limits for Fibers** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **Germany - TA Luft - Emission Limits for Inorganic Dusts** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | 5 g/h Mass flow (Class III); 1 mg/m3 Mass concentration (Class III) |
| **Germany - TA Luft - Emission Limits for Inorganic Gases** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **Germany - TA Luft - Emission Limits for Organic Substances** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **Germany - Water Classification (VwVwS) - Annex 1** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | ID Number 849, not considered hazardous to water |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | ID Number 1443, not considered hazardous to water |
| **Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | ID Number 83, hazard class 1 - low hazard to waters |
| •2-Butanone | 78-93-3 | ID Number 150, hazard class 1 - low hazard to waters |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **Germany - Water Classification (VwVwS) - Annex 3** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |

| | | |
|---|---|---|
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | ID Number 849, not considered hazardous to water |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

## United States

### Labor

**U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

**U.S. - OSHA - Specifically Regulated Chemicals**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

### Environment

**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | (listed under Dimethyl formamide) |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | (including mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers [or other mineral derived fibers] of average diameter 1 µm or less) |
| •Copper | 7440-50-8 | Not Listed |

**U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | 100 lb final RQ; 45.4 kg final RQ |
| •2-Butanone | 78-93-3 | 5000 lb final RQ; 2270 kg final RQ |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm) |

**U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - CERCLA/SARA - Section 313 - Emission Reporting** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | 1.0 % de minimis concentration |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | 1.0 % de minimis concentration |
| **U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Included in waste streams: F005, F039 |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| **U.S. - RCRA (Resource Conservation & Recovery Act) - Constituents for Detection Monitoring** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Copper | 7440-50-8 | (total) |
| **U.S. - RCRA (Resource Conservation & Recovery Act) - List for Hazardous Constituents** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | (total) |
| **U.S. - RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | 0.28 mg/L (wastewater); 36 |

| | | |
|---|---|---|
| | | mg/kg (nonwastewater) |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| **U.S. - RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Copper | 7440-50-8 | (total) |
| **U.S. - RCRA (Resource Conservation & Recovery Act) - U Series Wastes - Acutely Toxic Wastes & Other Hazardous Characteristics** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | waste number U159 (Ignitable waste, Toxic waste) |
| •Silica, amorphous | 7631-86-9 | Not Listed |

## United States - California

### Environment

| | | |
|---|---|---|
| **U.S. - California - Proposition 65 - Carcinogens List** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | carcinogen, initial date 7/1/90 (inhalable and biopersistent) |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - California - Proposition 65 - Developmental Toxicity** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - California - Proposition 65 - Reproductive Toxicity - Female** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |
| **U.S. - California - Proposition 65 - Reproductive Toxicity - Male** | | |
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |

| | | |
|---|---|---|
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Glass, oxide, chemicals as Glass wool fiber | | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

### United States - Pennsylvania

#### Labor

**U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Copper | 7440-50-8 | (dust and fume) |

**U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances**

| | | |
|---|---|---|
| •Formamide, N,N-dimethyl- | 68-12-2 | Not Listed |
| •2-Butanone | 78-93-3 | Not Listed |
| •Silica, amorphous | 7631-86-9 | Not Listed |
| •Glass, oxide, chemicals | 65997-17-3 | Not Listed |
| •Copper | 7440-50-8 | Not Listed |

## 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out.

## 15.3 Other Information

WARNING: This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

## Section 16 - Other Information

**Relevant Phrases (code & full text)**

- H226 - Flammable liquid and vapour
  H312 - Harmful in contact with skin
  H332 - Harmful if inhaled

  R10 - Flammable.
  R20/21 - Harmful by inhalation and in contact with skin.

**Last Revision Date**
- 09/July/2021

**Preparation Date**
- 30/May/2015

**Disclaimer/Statement of Liability**
- The information and recommendations contained in this Safety Data Sheet (SDS) are supplied pursuant to the Occupational Safety and Health Administration's Hazard Communication Standard as promulgated under 29 CFR 1910.1200 and the United States Environmental Protection Agency's Supplier Notification Rule as promulgated under 40 CFR 372.45. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in the proper procedures of safe chemical handling. The information contained herein is provided in good faith with no representation as to its comprehensiveness or accuracy. No representations or warranties, either express or implied, of merchantability, or fitness for a particular purpose or of any nature are made with respect to the material described in this Safety Data Sheet. Chemical additions or processing or otherwise altering this material may make the safety information presented in this Safety Data Sheet incomplete, inaccurate or otherwise inappropriate. The information listed above does not include all state, federal, and international regulations. The regulatory information supplied may change from time to time. It is the user's responsibility to keep advised of all applicable regulatory requirements.