

- Slightly irritating to the skin. Absorbed through skin. Moderately irritating to eyes. Inhalation and ingestion may cause drowsiness, dizziness, incoordination and other effects of intoxication. May cause loss of consciousness/coma and death . Medical conditions aggravated by overexposure: liver kidneys gastrointestinal tract respiratory system cardiovascular system and central nervous system .
- 4) Propan-2-ol
May cause irritation of respiratory tract, coughing, shortness of breath. Slightly irritating to the skin. Absorbed through skin. Moderately irritating to eyes. Ingestion : Exposure can cause nausea, headache and vomiting. Inhalation and Ingestion : Can cause CNS depression. Can cause dizziness, lightheadedness, headache, nausea and blurred vision. May cause loss of consciousness/coma and death . Repeated or prolonged contact with irritants may cause dermatitis.
- 5) Ethyl acetate
May cause irritation of respiratory tract, coughing, shortness of breath. Slightly irritating to the skin. Absorbed through skin. Moderately irritating to eyes. Inhalation and Ingestion : Can cause CNS depression. Can cause dizziness, lightheadedness, headache, nausea and blurred vision. May cause loss of consciousness/coma . Repeated or prolonged contact with irritants may cause dermatitis. Defatting to the skin.

4. FIRST AID MEASURES

- Inhalation** : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Obtain medical attention.
- Ingestion** : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
- Skin contact** : Wash with soap and water. Get medical attention if irritation develops.
- Eye contact** : In case of contact, immediately flush eyes with a copious amount of water for at least 15 minutes. Obtain medical attention immediately.

5. FIRE-FIGHTING MEASURES

- Extinguishing media** : In case of fire, use water spray (fog), foam, dry chemical or CO₂ extinguisher or spray.
- Special fire-fighting procedures** : Highly flammable liquid and vapour. Vapour may cause flash fire. Vapours may accumulate in low or confined areas, travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
- Unusual fire/explosion Hazards** : This material is harmful to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...). Some metallic oxides.
- Protection of fire-fighters** : Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions** : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Do not touch or walk through spilled material.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion proof means to transfer material to a sealed, appropriate container for disposal. For large spills dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

7. HANDLING AND STORAGE

- Handling** : Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. The engineering controls also need to keep gas, vapour or dust concentrations below any explosive limits. Avoid contact of spilled material and runoff with soil and surface waterways. Use suitable protective equipment (Section 8).
- Storage** : Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).
- Packaging materials** : Use original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

| <u>Chemical name</u> | <u>Occupational exposure limits</u> |
|--|---|
| 1) 2-Butanone | 1) Belgium Lijst Grenswaarden / Valeurs Limites STEL 15 minutes 300 ppm (2003) 2) Belgium Lijst Grenswaarden / Valeurs Limites TWA 8 hours 200 ppm (2002) 3) Switzerland SUVA STEL 15 minutes 1 200 ppm (Skin) (2003) 4) Switzerland SUVA TWA 8 hours 200 ppm (Skin) (2003) 5) Germany TRGS900 MAK STEL 15 minutes 1 200 ppm (2000) 6) Germany TRGS900 MAK TRGS TWA 8 hours 200 ppm (Skin) (2004) 7) Denmark Arbejdstilsynet TWA 8 hours 50 ppm (Skin) (2002) 8) Spain INSHT STEL 15 minutes 300 ppm (2004) 9) Spain INSHT TWA 8 hours 200 ppm (2004) 10) European Union EU OEL STEL 15 minutes 300 ppm (2000) 11) European Union EU OEL TWA 8 hours 200 ppm (2000) 12) Finland Työterveyslaitos STEL 15 minutes 100 ppm (2002) 13) France INRS TWA (VME) 8 hours 200 ppm (2003) 14) United Kingdom (UK) EH40-OES STEL 15 minutes 300 ppm (Skin) (2003) 15) United Kingdom (UK) EH40-OES TWA 8 hours 200 ppm (Skin) (2003) 16) Ireland NAOSH STEL 15 minutes 300 ppm (Skin) (2002) 17) Ireland NAOSH TWA 8 hours 200 ppm (Skin) (2002) 18) Italy Ministero della Salute STEL 15 minutes 300 ppm (2004) 19) Italy Ministero della Salute TWA 8 hours 200 ppm (2004) 20) Netherlands Nationale MAC-lijst MAC TWA (TGG) 8 hours 100 ppm (Skin) (2004) 21) Netherlands Nationale MAC-lijst STEL 15 minutes 200 ppm (Skin) (2004) 22) Norway Arbejdstilsynet TLV 8 hours 75 ppm (2003) 23) Portugal STEL 15 minutes 300 ppm (2001) 24) Portugal TWA 8 hours 200 ppm (2001) 25) Sweden AFS KTV 15 minutes 100 ppm (2000) 26) Sweden AFS NGV 8 hours 50 ppm (200) |
| 2) Colourant, Organometallic Compound, Chromium III, (6% Cr) | 1) Switzerland SUVA TWA 8 hours 0.5 mg/m ³ (2003) 2) Finland Työterveyslaitos TWA 8 hours 0.5 mg/m ³ (2002) 3) Ireland NAOSH TWA 8 hours 0.5 mg/m ³ (2002) 4) Italy Ministero della Salute TWA 8 hours 0.5 mg/m ³ (2004) 5) Netherlands Nationale MAC-lijst TWA 8 hours 0.5 mg/m ³ (2004) 6) Norway Arbejdstilsynet TWA 8 hours 0.5 mg/m ³ (2003) 7) Sweden AFS TWA 8 hours 0.5 mg/m ³ (2000) 8) United Kingdom (UK) EH40-OES TWA 8 hours 0.5 mg/m ³ (2003) |
| 3) Ethanol | 1) Belgium Lijst Grenswaarden / Valeurs Limites TWA 8 hours 1000 ppm (2002) 2) Switzerland SUVA STEL 15 minutes 1000 ppm (2003) 3) Switzerland SUVA TWA 8 hours 500 ppm (2003) 4) Germany TRGS900 MAK STEL 8 hours 4 2000 ppm (2004) 5) Germany TRGS900 MAK TWA 8 hours 500 ppm (2004) 6) Spain INSHT VLA-ED 8 hours 1000 ppm (2004) 7) Finland Työterveyslaitos STEL 15 minutes 1300 ppm (2002) 8) Finland Työterveyslaitos TWA 8 hours 1000 ppm (2002) |

- 9) France INRS VLE (STEL) 15 minutes 5000 ppm (2003)
 - 10) France INRS VME (TWA) 8 hours 1000 ppm (2003)
 - 11) United Kingdom (UK) EH40-OES TWA 8 hours 1000 ppm (2003)
 - 12) Ireland NAOSH OEL (TWA) 8 hours 1000 ppm (2002)
 - 13) Italy Ministero della Salute TWA 8 hours 1000 ppm (2004)
 - 14) Netherlands Nationale MAC-lijst MAC TWA (TGG) 8 hours 500 ppm (2004)
 - 15) Norway Arbeidstilsynet TLV 8 hours 500 ppm (2003)
 - 16) Sweden AFS KTV 15 minutes 1000 ppm (2000)
 - 17) Sweden AFS NGV 8 hours 500 ppm (2000)
 - 18) Denmark Arbejdstilsynet TWA 8 hours 1000 ppm (2002)
- 4) Propan-2-ol
- 1) Denmark DK-Arbejdstilsynet TWA 8 hours 200 ppm (2002)
 - 2) Belgium TWA 8 hours 400 ppm (2002)
 - 3) Belgium STEL 15 minutes 500 ppm (2002)
 - 4) France INRS VLE 8 hours 400 ppm (2003)
 - 5) Germany BAUA MAK (TWA) 8 hours 200 ppm (2000)
 - 6) Ireland TWA 8 hours 400 ppm (Skin) (2002)
 - 7) Ireland STEL 15 minutes 500 ppm (Skin) (2002)
 - 8) Italy TWA 8 hours 200 ppm (2004)
 - 9) Italy STEL 15 minutes 400 ppm (2004)
 - 10) Netherlands Arbeidsinspectie MAC-TGG (TWA) 8 hours 250 ppm (Skin) (2004)
 - 11) Norway N-Arbeidstilsynet TWA 8 hours 100 ppm (2003)
 - 12) Spain VLA-ED (TWA) 8 hours 400 ppm (2004)
 - 13) Spain VLA-EC 15 minutes 500 ppm (2004)
 - 14) Sweden AFS NGV (TWA) 8 hours 150 ppm (2000)
 - 15) Sweden AFS KTV (STEL) 15 minutes 250 ppm (2000)
 - 16) Switzerland SUVA MAK-W (TWA) 8 hours 200 ppm (2003)
 - 17) Switzerland SUVA KZG-W (STEL) 15 minutes 400 ppm (2003)
 - 18) Finland Työterveyslaitos TWA 8 hours 200 ppm (2002)
 - 19) Finland Työterveyslaitos STEL 15 minutes 250 ppm (2002)
 - 20) United Kingdom (UK) EH40-OES TWA 8 hours 400 ppm (2002)
 - 21) United Kingdom (UK) EH40-OES STEL 15 minutes 500 ppm (2002)
 - 22) Germany TRGS900 MAK STEL 15 minutes 4 800 ppm (2000)
- 5) Ethyl acetate
- 1) Belgium TWA 8 hours 400 ppm (2002)
 - 2) Switzerland SUVA KZG-W (STEL) 15 minutes 800 ppm (2003)
 - 3) Switzerland SUVA MAK-W (TWA) 8 hours 400 ppm (2003)
 - 4) Germany BAUA MAK (TWA) 8 hours 400 ppm (2000)
 - 5) Denmark DK-Arbejdstilsynet TWA 8 hours 150 ppm (2002)
 - 6) Finland Työterveyslaitos STEL 15 minutes 500 ppm (2002)
 - 7) Finland Työterveyslaitos TWA 8 hours 300 ppm (2002)
 - 8) France INRS VME (TWA) 8 hours 400 ppm (2003)
 - 9) Hungary STEL 15 minutes 1200 mg/m³ (1993)
 - 10) Hungary TWA 8 hours 400 mg/m³ (1993)
 - 11) Ireland TWA 8 hours 400 ppm (2002)
 - 12) Italy TWA 8 hours 400 ppm (2004)
 - 13) Netherlands Arbeidsinspectie MAC-STEL 15 minutes 300 ppm (2004)
 - 14) Netherlands Arbeidsinspectie MAC-TWA 8 hours 150 ppm (2004)
 - 15) Norway N-Arbeidstilsynet TWA 8 hours 150 ppm (2003)
 - 16) Poland MAC (STEL) 15 minutes 600 mg/m³ (1999)
 - 17) Poland MAC(TWA) 8 hours 200 mg/m³ (1999)
 - 18) Sweden AFS KTV(STEL) 15 minutes 300 ppm (2000)
 - 19) Sweden AFS NGV (TWA) 8 hours 150 ppm (2000)
 - 20) Spain INSHT TWA 8 hours 400 ppm (2004)
 - 21) United Kingdom (UK) EH40-OES TWA 8 hours 200 ppm (2002)
 - 22) United Kingdom (UK) EH40-OES STEL 15 minutes 400 ppm (2002)

Engineering controls : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

| | |
|---------------------------|---|
| Respiratory system | : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. |
| Skin and body | : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. |
| Hands | : Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. |
| Eyes | : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| Physical state and appearance | : Liquid. |
| Colour | : Black |
| Odour threshold | : The highest known value is 100 ppm. Weighted average: 12 ppm. |
| Boiling point | : The lowest known value is 77 °C. Weighted average: 83 °C. |
| Melting point | : May start to solidify at -83 °C. Weighted average: -87 °C. |
| Specific gravity | : 0.86 (Water = 1) |
| Vapour density | : The highest known value is 3.0. The lowest known value is 1.6. (Air = 1) |
| Vapor pressure | : The highest known value is 73 mm Hg at 20°C. Weighted average: 68 mm Hg at 20°C. |
| Evaporation rate (butyl acetate = 1) | : The highest known value is 7.1. Weighted average: 6.7. |
| Solubility | : Easily soluble in methanol, diethyl ether, n-octanol, acetone. Insoluble in cold water, hot water. |
| Octanol/water partition coefficient | : The product is much more soluble in octanol. |
| pH | : Not applicable. |
| Flash point | : -6 °C. |
| Autoignition temperature | : The lowest known value is 250 °C. Weighted average: 489 °C. |
| Flammable limits | : The lowest known value is 2.0%. The highest known value is 19.0%. |
| Volatility (w/w) | : 76 %. |
| VOC Volatility (w/w) | : 76 %. |

10. STABILITY AND REACTIVITY

| | |
|--|--|
| Stability | : The product is stable. |
| Conditions and materials to avoid | : Not available. |
| Hazardous reactions | : Slightly reactive to reactive with oxidising agents, reducing agents, acids, alkalis. |
| Hazardous decomposition products | : These products are carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂ ...). Some metallic oxides. |

11. TOXICOLOGICAL INFORMATION

| <u>Chemical name</u> | <u>Toxicological information</u> |
|--|--|
| 1) 2-Butanone | 1) LD50 Oral Rat: 2737 mg/kg 2) LD50 Oral Mouse: 2190 mg/kg 3) LD50 Oral Mouse: 4050 mg/kg 4) LD50 Dermal Rabbit: 6480 mg/kg 5) LC50 Inhalation vapour Rat: 23500 mg/m ³ 8 hours 6) LCLo Inhalation vapour Female Rat Foetotoxicity and developmental abnormalities (homeostasis) in rats.: 1000 ppm 1 hours |
| 2) Colourant, Organometallic Compound, Chromium III, (6% Cr) | 1) LD50 Oral Rat: 5000 mg/kg 2) LD50 Dermal Rabbit: 2000 mg/kg |
| 3) Ethanol | 1) LD50 Oral Rat: 7060 mg/kg |

Continued on Next Page

- 2) LD50 Oral Mouse: 3450 mg/kg
 3) LD50 Oral Rabbit: 6300 mg/kg
 4) LC50 Inhalation vapour Rat: 20000 ppm 10 hours
 5) LCLo Inhalation vapour Dog: 5500 ppm hours
 6) LCLo Inhalation vapour Guinea pig: 21900 ppm hours
- 4) Propan-2-ol
 1) LD50 Oral Rat: 5045 mg/kg
 2) LD50 Oral Rabbit: 6410 mg/kg
 3) LD50 Oral Mouse: 3600 mg/kg
 4) LD50 Dermal Rabbit: 12800 mg/kg
- 5) Ethyl acetate
 1) LD50 Oral Rat: 5620 mg/kg
 2) LD50 Oral Rabbit: 4935 mg/kg
 3) LD50 Oral Mouse: 4100 mg/kg
 4) LD50 Dermal Rabbit: 16000 mg/kg
 5) LC50 Inhalation vapour Mouse: 45000 mg/m³ 2 hours

12. ECOLOGICAL INFORMATION

- Persistence/degradability** : Not available.
Ecotoxicity : Not available.
Germany water class (WGK) : Wassergefährdungsklasse = 2


13. DISPOSAL CONSIDERATIONS

- Disposal methods** : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

14. TRANSPORT INFORMATION

- UN number** : UN1210
Proper shipping name : Printing Ink
ADR/RID class : 3
Packing group : II

15. REGULATORY INFORMATION

- Hazard Symbol(s)** : 
- Classification** : Highly flammable, Irritant
 F; R11
 Xi; R36
 R66, 67
 R52/53
- Risk phrases** : R11- Highly flammable.
 R36- Irritating to eyes.
 R66- Repeated exposure may cause skin dryness or cracking.
 R67- Vapours may cause drowsiness and dizziness.
 R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- Safety phrases** : Not applicable.
- Other EU Regulations**
- Child protection** : Not applicable.
Tactile warning of danger : Not applicable.
- National Regulations**
 Not available.
- Other Information**
- Tariff Code - harmonized system** : 3215.11 Printing ink: Black.
 USA ...00.60
 EU ...00.00

16. OTHER INFORMATION

Date of issue : April 19, 2005
Prepared by : Garth Studebaker, CSP
Version : 5

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