













**SECTION 7: Handling and storage**

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- 7.2 Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
- 7.3 Specific end use(s)**
- Recommendations** : Not available.
- Industrial sector specific solutions** : Not available.

**SECTION 8: Exposure controls/personal protection**

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s). (Applicable when exposure scenario is available.)

**8.1 Control parameters****Occupational exposure limits**

Product/ingredient name	Exposure limit values
<b>Europe</b>	
 (2-Butoxyethoxy)ethanol.	<b>EU OEL (Europe, 4/2006). Notes: Indicative</b> Short term limit value: 101,2 mg/m <sup>3</sup> 15 minutes. Short term limit value: 15 ppm 15 minutes. Limit value: 67,5 mg/m <sup>3</sup> 8 hours. Limit value: 10 ppm 8 hours.
2,2',2''-nitrilotriethanol	<b>ACGIH TLV (United States, 1/2009).</b> TWA: 5 mg/m <sup>3</sup> 8 hours.
2-aminoethanol	<b>EU OEL (Europe, 4/2006). Absorbed through skin. Notes: Indicative</b> Short term limit value: 7,6 mg/m <sup>3</sup> 15 minutes. Short term limit value: 3 ppm 15 minutes. Limit value: 2,5 mg/m <sup>3</sup> 8 hours. Limit value: 1 ppm 8 hours.
<b>Austria</b>	
 (2-Butoxyethoxy)ethanol.	<b>GKV_MAK (Austria, 9/2007).</b> STEL: 101,2 mg/m <sup>3</sup> , 4 times per shift, 15 minutes. STEL: 15 ppm, 4 times per shift, 15 minutes. TWA: 67,5 mg/m <sup>3</sup> 8 hours. TWA: 10 ppm 8 hours.
2,2',2''-nitrilotriethanol	<b>GKV_MAK (Austria, 9/2007). Skin sensitizer.</b> STEL: 10 mg/m <sup>3</sup> , 4 times per shift, 15 minutes. Form: inhalable fraction STEL: 1,6 ppm, 4 times per shift, 15 minutes. Form: inhalable

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2-aminoethanol	fraction TWA: 5 mg/m <sup>3</sup> 8 hours. Form: inhalable fraction TWA: 0,8 ppm 8 hours. Form: inhalable fraction <b>GKV_MAK (Austria, 9/2007). Absorbed through skin.</b> STEL: 7,6 mg/m <sup>3</sup> , 4 times per shift, 15 minutes. STEL: 3 ppm, 4 times per shift, 15 minutes. TWA: 2,5 mg/m <sup>3</sup> 8 hours. TWA: 1 ppm 8 hours.
pyridine-2-thiol 1-oxide, sodium salt	<b>GKV_MAK (Austria, 9/2007). Absorbed through skin.</b> TWA: 1 mg/m <sup>3</sup> 8 hours. PEAK: 4 mg/m <sup>3</sup> , 4 times per shift, 15 minutes.
<b>Belgium</b> 2-(2-Butoxyethoxy)ethanol.	<b>Lijst Grenswaarden / Valeurs Limites (Belgium, 6/2009).</b> STEL: 15 ppm 15 minutes. TWA: 10 ppm 8 hours. TWA: 67,5 mg/m <sup>3</sup> 8 hours. STEL: 101,2 mg/m <sup>3</sup> 15 minutes.
2,2',2''-nitrilotriethanol	<b>Lijst Grenswaarden / Valeurs Limites (Belgium, 6/2009).</b> TWA: 5 mg/m <sup>3</sup> 8 hours.
2-aminoethanol	<b>Lijst Grenswaarden / Valeurs Limites (Belgium, 6/2009). Absorbed through skin.</b> STEL: 7,6 mg/m <sup>3</sup> 15 minutes. STEL: 3 ppm 15 minutes. TWA: 2,5 mg/m <sup>3</sup> 8 hours. TWA: 1 ppm 8 hours.
<b>Bulgaria</b> 2-(2-Butoxyethoxy)ethanol.	<b>РБ МТСП и МЗ Наредба №13/2003 (Bulgaria, 8/2007).</b> Limit value 8 hours: 67,5 mg/m <sup>3</sup> 8 hours. Limit value 15 min: 101,2 mg/m <sup>3</sup> 15 minutes.
2-aminoethanol	<b>РБ МТСП и МЗ Наредба №13/2003 (Bulgaria, 8/2007). Absorbed through skin.</b> Limit value 8 hours: 2,5 mg/m <sup>3</sup> 8 hours. Limit value 15 min: 7,6 mg/m <sup>3</sup> 15 minutes.
<b>Croatia</b> 2-(2-Butoxyethoxy)ethanol.	<b>EU OEL (Europe, 4/2006). Notes: Indicative</b> Short term limit value: 101,2 mg/m <sup>3</sup> 15 minutes. Short term limit value: 15 ppm 15 minutes. Limit value: 67,5 mg/m <sup>3</sup> 8 hours. Limit value: 10 ppm 8 hours.
2-aminoethanol	<b>EU OEL (Europe, 4/2006). Absorbed through skin. Notes: Indicative</b> Short term limit value: 7,6 mg/m <sup>3</sup> 15 minutes. Short term limit value: 3 ppm 15 minutes. Limit value: 2,5 mg/m <sup>3</sup> 8 hours. Limit value: 1 ppm 8 hours.
<b>Czech Republic</b> 2-(2-Butoxyethoxy)ethanol.	<b>178/2001 (Czech Republic, 12/2007).</b> STEL: 100 mg/m <sup>3</sup> 15 minutes. STEL: 15,1 ppm 15 minutes. TWA: 70 mg/m <sup>3</sup> 8 hours. TWA: 10,57 ppm 8 hours.
2,2',2''-nitrilotriethanol	<b>178/2001 (Czech Republic, 12/2007).</b> STEL: 10 mg/m <sup>3</sup> 15 minutes. STEL: 1,64 ppm 15 minutes. TWA: 5 mg/m <sup>3</sup> 8 hours. TWA: 0,82 ppm 8 hours.
2-aminoethanol	<b>178/2001 (Czech Republic, 12/2007). Absorbed through skin.</b> STEL: 7,5 mg/m <sup>3</sup> 15 minutes. STEL: 3,0075 ppm 15 minutes. TWA: 2,5 mg/m <sup>3</sup> 8 hours.

**SECTION 8: Exposure controls/personal protection****Denmark**

 (2-Butoxyethoxy)ethanol.

2,2',2''-nitrilotriethanol

2-aminoethanol

pyridine-2-thiol 1-oxide, sodium salt

**Estonia**

 (2-Butoxyethoxy)ethanol.

2,2',2''-nitrilotriethanol

2-aminoethanol

**Finland**

 (2-Butoxyethoxy)ethanol.

2,2',2''-nitrilotriethanol

2-aminoethanol

**France**

 (2-Butoxyethoxy)ethanol.

2-aminoethanol

**Germany**

TWA: 1,0025 ppm 8 hours.

**Arbejdstilsynet (Denmark, 3/2008).**

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

TWA: 10 ppm 8 hours.

**Arbejdstilsynet (Denmark, 3/2008).**

TWA: 3,1 mg/m<sup>3</sup> 8 hours.

TWA: 0,5 ppm 8 hours.

**Arbejdstilsynet (Denmark, 3/2008). Absorbed through skin.**

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

TWA: 1 ppm 8 hours.

**Arbejdstilsynet (Denmark, 3/2008). Absorbed through skin.**

TWA: 1 mg/m<sup>3</sup> 8 hours.

**Sotsiaalminister (Estonia, 10/2007).**

TWA: 10 ppm 8 hours.

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

**Sotsiaalminister (Estonia, 10/2007). Skin sensitizer.**

STEL: 10 mg/m<sup>3</sup> 15 minutes.

TWA: 5 mg/m<sup>3</sup> 8 hours.

**Sotsiaalminister (Estonia, 10/2007). Absorbed through skin.**

STEL: 7,6 mg/m<sup>3</sup> 15 minutes.

STEL: 3 ppm 15 minutes.

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

TWA: 1 ppm 8 hours.

**Työterveyslaitos, Sosiaali- ja terveysministeriö (Finland, 7/2009).**

TWA: 10 ppm 8 hours.

TWA: 68 mg/m<sup>3</sup> 8 hours.

**Työterveyslaitos, Sosiaali- ja terveysministeriö (Finland, 7/2009).**

TWA: 5 ppm 8 hours.

**Työterveyslaitos, Sosiaali- ja terveysministeriö (Finland, 7/2009). Absorbed through skin.**

STEL: 7,6 mg/m<sup>3</sup> 15 minutes.

STEL: 3 ppm 15 minutes.

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

TWA: 1 ppm 8 hours.

**INRS (France, 12/2007). Notes: Regulatory indicative exposure limits**

STEL: 101,2 mg/m<sup>3</sup> 15 minutes.

STEL: 15 ppm 15 minutes.

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

TWA: 10 ppm 8 hours.

**INRS (France, 12/2007). Absorbed through skin. Notes: Regulatory binding exposure limits**

TWA: 2,5 mg/m<sup>3</sup> 8 hours.


TWA: 1 ppm 8 hours.

STEL: 7,6 mg/m<sup>3</sup> 15 minutes.

STEL: 3 ppm 15 minutes.



**SECTION 8: Exposure controls/personal protection**

 (2-Butoxyethoxy)ethanol.

2-aminoethanol

pyridine-2-thiol 1-oxide, sodium salt

**Greece**

 (2-Butoxyethoxy)ethanol.

2-aminoethanol

**Hungary**

 (2-Butoxyethoxy)ethanol.

2-aminoethanol

**Ireland**

 (2-Butoxyethoxy)ethanol.

2,2',2''-nitrilotriethanol

2-aminoethanol

**Italy**

 (2-Butoxyethoxy)ethanol.

2-aminoethanol

**Latvia**

**TRGS900 AGW (Germany, 7/2009).**

PEAK: 100 mg/m<sup>3</sup> 15 minutes.

TWA: 100 mg/m<sup>3</sup> 8 hours.

**TRGS900 AGW (Germany, 7/2009). Absorbed through skin.**

PEAK: 10,2 mg/m<sup>3</sup> 15 minutes.

PEAK: 4 ppm 15 minutes.

TWA: 5,1 mg/m<sup>3</sup> 8 hours.

TWA: 2 ppm 8 hours.

**TRGS900 AGW (Germany, 8/2010). Absorbed through skin.**

TWA: 1 mg/m<sup>3</sup> 8 hours.

PEAK: 2 mg/m<sup>3</sup> 15 minutes.

**PD 90/1999 (Greece, 8/2007).**

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

TWA: 10 ppm 8 hours.

STEL: 101,2 mg/m<sup>3</sup> 15 minutes.

STEL: 15 ppm 15 minutes.

**PD 90/1999 (Greece, 8/2007). Absorbed through skin.**

STEL: 7,6 mg/m<sup>3</sup> 15 minutes.

STEL: 3 ppm 15 minutes.

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

TWA: 1 ppm 8 hours.

**EüM-SzCsM (Hungary, 12/2007).**

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

PEAK: 101,2 mg/m<sup>3</sup> 15 minutes.

**EüM-SzCsM (Hungary, 12/2007). Absorbed through skin.**

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

PEAK: 7,6 mg/m<sup>3</sup> 15 minutes.

**NAOSH (Ireland, 8/2007).**

OELV-8hr: 10 ppm 8 hours.

OELV-8hr: 101,2 f/ml 8 hours.

OELV-8hr: 67,5 mg/m<sup>3</sup> 8 hours.

**NAOSH (Ireland, 8/2007).**

OELV-8hr: 5 mg/m<sup>3</sup> 8 hours.

**NAOSH (Ireland, 8/2007).**

OELV-15min: 15 mg/m<sup>3</sup> 15 minutes.

OELV-15min: 6 ppm 15 minutes.

OELV-8hr: 8 mg/m<sup>3</sup> 8 hours.

OELV-8hr: 3 ppm 8 hours.

**Ministero della Salute (Italy, 4/2008).**

TWA: 10 ppm 8 hours.

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

STEL: 15 ppm 15 minutes.

STEL: 101,2 mg/m<sup>3</sup> 15 minutes.


**Ministero della Salute (Italy, 4/2008). Absorbed through skin.**

TWA: 1 ppm 8 hours.

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

STEL: 3 ppm 15 minutes.

STEL: 7,6 mg/m<sup>3</sup> 15 minutes.

**SECTION 8: Exposure controls/personal protection** (2-Butoxyethoxy)ethanol.**LV Nat. Standardisation and Meterological Centre (Latvia, 5/2007).**STEL: 101,2 mg/m<sup>3</sup> 15 minutes.

TWA: 10 ppm 8 hours.

STEL: 15 ppm 15 minutes.

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

2-aminoethanol

**LV Nat. Standardisation and Meterological Centre (Latvia, 5/2007). Absorbed through skin.**TWA: 0,5 mg/m<sup>3</sup> 8 hours.

TWA: 0,2 ppm 8 hours.

STEL: 3 ppm 15 minutes.

STEL: 7,6 mg/m<sup>3</sup> 15 minutes.**Lithuania** (2-Butoxyethoxy)ethanol.**Del Lietuvos Higienos Normos (Lithuania, 10/2007).**STEL: 200 mg/m<sup>3</sup> 15 minutes.

STEL: 30 ppm 15 minutes.

TWA: 100 mg/m<sup>3</sup> 8 hours.

TWA: 15 ppm 8 hours.

2,2',2''-nitrilotriethanol

**Del Lietuvos Higienos Normos (Lithuania, 10/2007). Skin sensitizer.**STEL: 10 mg/m<sup>3</sup> 15 minutes.TWA: 5 mg/m<sup>3</sup> 8 hours.

2-aminoethanol

**Del Lietuvos Higienos Normos (Lithuania, 10/2007). Absorbed through skin.**STEL: 15 mg/m<sup>3</sup> 15 minutes.

STEL: 6 ppm 15 minutes.

TWA: 8 mg/m<sup>3</sup> 8 hours.

TWA: 3 ppm 8 hours.

**Netherlands** (2-Butoxyethoxy)ethanol.**MinSZW Wettelijke Grenswaarden (Netherlands, 4/2008).****Absorbed through skin. Notes: Legal indicates a statutory value, Administrative indicates an administrative value that is not legally binding (see background).**MAC-TGG, 8 uur: 50 mg/m<sup>3</sup> 8 hours.**MinSZW Wettelijke Grenswaarden (Netherlands, 4/2008).****Absorbed through skin.**MAC-TGG, 15 min.: 100 mg/m<sup>3</sup> 15 minutes.

2-aminoethanol

**MinSZW Wettelijke Grenswaarden (Netherlands, 4/2008).****Absorbed through skin. Notes: Administrative**MAC-TGG, 15 min.: 7,6 mg/m<sup>3</sup> 15 minutes.MAC-TGG, 8 uur: 2,5 mg/m<sup>3</sup> 8 hours.**Norway** (2-Butoxyethoxy)ethanol.**Arbeidstilsynet (Norway, 3/2009).**

TWA: 10 ppm 8 hours.

TWA: 68 mg/m<sup>3</sup> 8 hours.

2,2',2''-nitrilotriethanol

**Arbeidstilsynet (Norway, 3/2009).**TWA: 5 mg/m<sup>3</sup> 8 hours.

2-aminoethanol

**Arbeidstilsynet (Norway, 3/2009). Absorbed through skin.**TWA: 2,5 mg/m<sup>3</sup> 8 hours.


TWA: 1 ppm 8 hours.

**Poland** (2-Butoxyethoxy)ethanol.**Ministra Pracy i Polityki Społecznej (Poland, 7/2009).**TWA: 67 mg/m<sup>3</sup> 8 hours.STEL: 100 mg/m<sup>3</sup> 15 minutes.

2-aminoethanol

**Ministra Pracy i Polityki Społecznej (Poland, 7/2009).**STEL: 7,5 mg/m<sup>3</sup> 15 minutes.TWA: 2,5 mg/m<sup>3</sup> 8 hours.**Portugal**

**SECTION 8: Exposure controls/personal protection**

 (2-Butoxyethoxy)ethanol.

2,2',2''-nitrilotriethanol

2-aminoethanol

**Romania**

 (2-Butoxyethoxy)ethanol.

2-aminoethanol

**Slovakia**

 (2-Butoxyethoxy)ethanol.

2-aminoethanol

**Slovenia**

 (2-Butoxyethoxy)ethanol.

2,2',2''-nitrilotriethanol

2-aminoethanol

pyridine-2-thiol 1-oxide, sodium salt

**Spain**

 (2-Butoxyethoxy)ethanol.

2,2',2''-nitrilotriethanol

2-aminoethanol

**Sweden****EU OEL (Europe, 4/2006). Notes: Indicative**

Short term limit value: 101,2 mg/m<sup>3</sup> 15 minutes.

Short term limit value: 15 ppm 15 minutes.

Limit value: 67,5 mg/m<sup>3</sup> 8 hours.

Limit value: 10 ppm 8 hours.

**Instituto Português da Qualidade (Portugal, 3/2007).**

TWA: 5 mg/m<sup>3</sup> 8 hours.

**Instituto Português da Qualidade (Portugal, 3/2007).**

STEL: 6 ppm 15 minutes.

TWA: 3 ppm 8 hours.

**Ministry of Social Assistance and Family Policies and Ministry of Public Health (Romania, 10/2006).**

VLA: 150 mg/m<sup>3</sup> 8 hours.

Short term: 250 mg/m<sup>3</sup> 15 minutes.

**Ministry of Social Assistance and Family Policies and Ministry of Public Health (Romania, 10/2006). Absorbed through skin.**

VLA: 2,5 mg/m<sup>3</sup> 8 hours.

VLA: 1 ppm 8 hours.

Short term: 7,6 mg/m<sup>3</sup> 15 minutes.

Short term: 3 ppm 15 minutes.

**Nariadenie vlády Slovenskej republiky (Slovakia, 6/2007).**

CEIL: 101,2 mg/m<sup>3</sup>

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

TWA: 10 ppm 8 hours.

**Nariadenie vlády Slovenskej republiky (Slovakia, 6/2007).****Absorbed through skin.**

CEIL: 7,6 mg/m<sup>3</sup>

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

TWA: 1 ppm 8 hours.

**Uradni list Republike Slovenije (Slovenia, 6/2007).**

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

TWA: 10 ppm 8 hours.

**Uradni list Republike Slovenije (Slovenia, 6/2007).**

TWA: 5 mg/m<sup>3</sup> 8 hours. Form: inhalable fraction

**Uradni list Republike Slovenije (Slovenia, 6/2007). Absorbed through skin.**

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

TWA: 1 ppm 8 hours.

**Uradni list Republike Slovenije (Slovenia, 6/2007). Absorbed through skin.**

TWA: 1 mg/m<sup>3</sup> 8 hours.

KTV: 4 mg/m<sup>3</sup>, 4 times per shift, 15 minutes.

**INSHT (Spain, 2/2009).**

TWA: 67,5 mg/m<sup>3</sup> 8 hours.

TWA: 10 ppm 8 hours.

STEL: 15 ppm 15 minutes.

STEL: 101,2 mg/m<sup>3</sup> 15 minutes.

**INSHT (Spain, 2/2009).**

TWA: 5 mg/m<sup>3</sup> 8 hours.

**INSHT (Spain, 2/2009). Absorbed through skin.**

STEL: 7,5 mg/m<sup>3</sup> 15 minutes.

STEL: 3 ppm 15 minutes.

TWA: 2,5 mg/m<sup>3</sup> 8 hours.

TWA: 1 ppm 8 hours.

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2-(2-Butoxyethoxy)ethanol.	<b>AFS 2005:17 (Sweden, 6/2007).</b> STEL: 200 mg/m <sup>3</sup> 15 minutes. STEL: 30 ppm 15 minutes. TWA: 100 mg/m <sup>3</sup> 8 hours. TWA: 15 ppm 8 hours.
2,2',2''-nitrilotriethanol	<b>AFS 2005:17 (Sweden, 6/2007).</b> STEL: 10 mg/m <sup>3</sup> 15 minutes. TWA: 5 mg/m <sup>3</sup> 8 hours.
2-aminoethanol	<b>AFS 2005:17 (Sweden, 6/2007). Absorbed through skin.</b> STEL: 15 mg/m <sup>3</sup> 15 minutes. STEL: 6 ppm 15 minutes. TWA: 8 mg/m <sup>3</sup> 8 hours. TWA: 3 ppm 8 hours.
<b>Switzerland</b>	
2-(2-Butoxyethoxy)ethanol.	<b>SUVA (Switzerland, 1/2009). Notes: not temporary</b> STEL: 101,2 mg/m <sup>3</sup> 15 minutes. TWA: 67 mg/m <sup>3</sup> 8 hours.
2-aminoethanol	<b>SUVA (Switzerland, 1/2009).</b> STEL: 15 ppm 15 minutes. TWA: 10 ppm 8 hours. <b>SUVA (Switzerland, 1/2009). Skin sensitizer. Notes: not temporary</b> STEL: 10 mg/m <sup>3</sup> 15 minutes. STEL: 4 ppm 15 minutes. TWA: 5 mg/m <sup>3</sup> 8 hours. TWA: 2 ppm 8 hours.
pyridine-2-thiol 1-oxide, sodium salt	<b>SUVA (Switzerland, 1/2009). Absorbed through skin.</b> TWA: 1 mg/m <sup>3</sup> 8 hours. Form: inhalable fraction STEL: 2 mg/m <sup>3</sup> 15 minutes. Form: inhalable fraction
<b>Turkey</b>	
2-(2-Butoxyethoxy)ethanol.	<b>TR ISGGM OEL (Turkey, 3/2008).</b> TWA: 67,5 mg/m <sup>3</sup> 8 hours. TWA: 10 ppm 8 hours. STEL: 101,2 mg/m <sup>3</sup> 15 minutes. STEL: 15 ppm 15 minutes.
2-aminoethanol	<b>TR ISGGM OEL (Turkey, 3/2008). Absorbed through skin.</b> TWA: 2,5 mg/m <sup>3</sup> 8 hours. TWA: 1 ppm 8 hours. STEL: 7,6 mg/m <sup>3</sup> 15 minutes. STEL: 3 ppm 15 minutes.
<b>United Kingdom (UK)</b>	
2-(2-Butoxyethoxy)ethanol.	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007).</b> TWA: 10 ppm 8 hours. STEL: 15 ppm 15 minutes. STEL: 15 mg/m <sup>3</sup> 15 minutes. TWA: 10 mg/m <sup>3</sup> 8 hours.
2-aminoethanol	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007).</b> STEL: 7,6 mg/m <sup>3</sup> 15 minutes. STEL: 3 ppm 15 minutes. TWA: 2,5 mg/m <sup>3</sup> 8 hours. TWA: 1 ppm 8 hours.

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482

**SECTION 8: Exposure controls/personal protection**

(Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**Derived effect levels**

Product/ingredient name	Type	Exposure	Value	Population	Effects
2-aminoethanol	DNEL	Long term Dermal	1 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	3,3 mg/m <sup>3</sup>	Workers	Local
	DNEL	Long term Oral	3,75 mg/kg bw/day	Consumers	Local
	DNEL	Long term Dermal	0,24 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	2 mg/m <sup>3</sup>	Consumers	Local

**Predicted effect concentrations**

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
2-aminoethanol	PNEC	Fresh water	0,085 mg/l	-
	PNEC	Marine	0,0085 mg/l	-
	PNEC	Secondary Poisoning	0,025 mg/l	-
	PNEC	Fresh water sediment	0,425 mg/kg ww	-
	PNEC	Marine water sediment	0,0425 mg/kg ww	-
	PNEC	Soil	0,035 mg/kg ww	-
	PNEC	Sewage Treatment Plant	100 mg/l	-

**8.2 Exposure controls**

**Appropriate engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Individual protection measures**

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection** : 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. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

**Skin protection**

**Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): > 8 hours  
for example KCL (Material: article number (thickness in mm)):  
Natrulutex I: 0395 (1.0)  
Natrulutex II: 0706 (0.6), 0708 (0.5)  
Neoprene Nitril II: 0717 (-)  
neoprene (Polychloropene): 0720 (0.65)  
Nitrile I: 0730 (0.4), 0733 (0.5)

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Nitrile II: 0740 (0.11)

Nitrile III: 0743 (-)

Viton: 0890 (0.7)

Butyl II: 0897 (-)

Butyl: 0898 (0.7)

The above mentioned breakthrough times are based on KCL laboratory test results according to EN374 and are only applicable for these KCL gloves.

This recommendation is only for the product delivered by us and for its intended purpose. Should the worker be exposed to mixtures of the product with other ingredients or to other products, safety advice on gloves can be obtained with the supplier of CE-approved gloves (i.e. KCL GmbH, D-36124 Eichenzell, Tel. ++49 (0) 6659 87300, Fax: ++49 (0) 6659 87155, e-mail [vertrieb@kcl.de](mailto:vertrieb@kcl.de)).

- Body protection** : 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.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : 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.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****Appearance**

- Physical state** : Liquid.
- Color** : Colorless.
- Odor** : Characteristic.
- Odor threshold** : Not available.
- pH** : 9,6 [Conc. (% w/w): 2%]
- Melting point/freezing point** : Not available.
- Initial boiling point and boiling range** : 100°C
- Flash point** : Closed cup: >100°C
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Burning time** : Not applicable.
- Burning rate** : Not applicable.
- Upper/lower flammability or explosive limits** : Not available.
- Vapor pressure** : <1 kPa [room temperature]
- Vapor density** : Not available.
- Relative density** : Not available.
- Solubility(ies)** : Soluble in the following materials: cold water and hot water.
- Partition coefficient: n-octanol/ water** : Not available.
- Auto-ignition temperature** : Not available.

**SECTION 9: Physical and chemical properties**

- Decomposition temperature** : Not available.
- Viscosity** : Not available.
- Explosive properties** : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts, oxidizing materials, reducing materials, combustible materials, organic materials, metals, acids, alkalis and moisture.
- Oxidizing properties** : Not available.

**9.2 Other information**

No additional information.

**SECTION 10: Stability and reactivity**

- 10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- 10.2 Chemical stability** : The product is stable.
- 10.3 Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- 10.4 Conditions to avoid** : No specific data.
- 10.5 Incompatible materials** : No specific data.
- 10.6 Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	LC50 Inhalation Dusts and mists	Rat	0,37 mg/l	4 hours
2-(2-Butoxyethoxy)ethanol.	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	500 to 2000 m	-
2,2',2''-nitrilotriethanol	LD50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Oral	Rat	3384 mg/kg	-
2-aminoethanol	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Guinea pig	2200 mg/kg	-
	LD50 Oral	Mouse	5846 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
pyridine-2-thiol 1-oxide, sodium salt	LD50 Dermal	Rabbit	1000 to 1025 mg/kg	-
	LD50 Dermal	Rat	1000 mg/kg	-
	LD50 Oral	Rat	1090 mg/kg	-
pyridine-2-thiol 1-oxide, sodium salt	LC50 Inhalation Dusts and mists	Rat	2,7 mg/l	4 hours
	LD50 Dermal	Rabbit	1800 mg/kg	-
	LD50 Oral	Rat	1500 mg/kg	-

**Conclusion/Summary** : Not available.

**Acute toxicity estimates**

Not available.

**Irritation/Corrosion**

**SECTION 11: Toxicological information**

Product/ingredient name	Result	Species	Score	Exposure	Observation
<input checked="" type="checkbox"/> -aminoethanol	Skin - Severe irritant Eyes - Irritant	Rabbit Rabbit	- -	- -	- -

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Specific target organ toxicity (single exposure)**

Not available.

**Specific target organ toxicity (repeated exposure)**

Not available.

**Aspiration hazard**

Not available.

**Information on the likely routes of exposure** : Not available.

**Potential acute health effects**

**Inhalation** :  Harmful by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

**Ingestion** :  No known significant effects or critical hazards.

**Skin contact** :  May cause sensitization by skin contact.

**Eye contact** :  Irritating to eyes.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation** : No specific data.

**Ingestion** : No specific data.

**Skin contact** : Adverse symptoms may include the following:  
irritation  
redness

**Eye contact** :  Adverse symptoms may include the following:  
irritation  
watering  
redness

**Delayed and immediate effects and also chronic effects from short and long term exposure****Short term exposure**

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

**Long term exposure**

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

**Potential chronic health effects**

Not available.



**SECTION 11: Toxicological information**

<b>Conclusion/Summary</b>	: Not available.
<b>General</b>	: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
<b>Carcinogenicity</b>	: No known significant effects or critical hazards.
<b>Mutagenicity</b>	: No known significant effects or critical hazards.
<b>Teratogenicity</b>	: No known significant effects or critical hazards.
<b>Developmental effects</b>	: No known significant effects or critical hazards.
<b>Fertility effects</b>	: No known significant effects or critical hazards.
<b>Other information</b>	: Not available.

**SECTION 12: Ecological information****12.1 Toxicity**

Product/ingredient name	Result	Species	Exposure
2,2',2''-(hexahydro-1,3,5-triazine-1,3,5-triyl)triethanol	Acute EC50 26,1 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >118 ppm Marine water	Fish - Cyprinodon variegatus	96 hours
2-(2-Butoxyethoxy)ethanol.	EC50 >100 mg/l	Algae - Scenedesmus subspicatus	96 hours
	Acute LC50 1300000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
2,2',2''-nitrioltriethanol	Acute EC50 609,98 to 658,3 mg/l Fresh water	Daphnia - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 >100000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
2-aminoethanol	Acute LC50 11800000 to 13000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	EC50 33 mg/l	Daphnia	48 hours
	LC50 125 mg/l	Fish	96 hours
	NOEC 1 mg/l	Crustaceans - Pseudikirchneriella subcapitata	72 hours
pyridine-2-thiol 1-oxide, sodium salt	Acute IC50 15 mg/l	Algae	72 hours
	Acute LC50 >100000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
	Chronic NOEC 0,85 mg/l	Daphnia - Daphnia magna	21 days
	Chronic NOEC 1,2 mg/l	Fish - Oryzias latipes	30 days
	Acute LC50 0,15 mg/l	Daphnia	48 hours
	Acute LC50 1300 mg/l	Fish	96 hours

**Conclusion/Summary** : Not available.

**12.2 Persistence and degradability**

**Conclusion/Summary** : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
2-(2-Butoxyethoxy)ethanol.	-	-	Readily
2-aminoethanol	-	-	Readily
pyridine-2-thiol 1-oxide, sodium salt	-	-	Readily

Product/ingredient name	BOD <sub>5</sub>	COD	ThOD
2-(2-butoxyethoxy)ethanol	-	2.05 mg/kg	-
2-aminoethanol	0.8 gO <sub>2</sub> /g	-	-

**12.3 Bioaccumulative potential**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
2-(2-Butoxyethoxy)ethanol.	0,29	-	low
2-aminoethanol	-1,91	-	low

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## SECTION 12: Ecological information

### 12.4 Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : Not available.

### 12.5 Results of PBT and vPvB assessment

**PBT** : Not applicable.

**vPvB** : Not applicable.

**12.6 Other adverse effects** : No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste treatment methods

#### Product

**Methods of disposal** : The generation of waste should be avoided or minimized wherever possible. Waste product residues should not be disposed of via the sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**Hazardous waste** : Yes.

#### European waste catalogue (EWC)

Waste code	Waste designation
16 03 05*	organic wastes containing dangerous substances

#### Packaging

**Methods of disposal** : The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

**Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## SECTION 14: Transport information

	ADR/RID	IMDG	IATA
<b>14.1 UN number</b>	Not regulated.	Not regulated.	Not regulated.
<b>14.2 UN proper shipping name</b>	-	-	-
<b>14.3 Transport hazard class(es)</b>	-	-	-

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**SECTION 14: Transport information**

<b>14.4 Packing group</b>	-	-	-
<b>14.5 Environmental hazards</b>	No.	No.	No.
<b>14.6 Special precautions for user</b>	<b>Transport within user's premises:</b> always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	<b>Transport within user's premises:</b> always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	<b>Transport within user's premises:</b> always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
<b>Additional information</b>	-	-	-

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** : Not available.

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU Regulation (EC) No. 1907/2006 (REACH)****Annex XIV - List of substances subject to authorization****Substances of very high concern**

None of the components are listed.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : Not applicable.

**Other EU regulations**

**Europe inventory** :  Not determined.

**Black List Chemicals** : Not listed

**Priority List Chemicals** : Listed

**Integrated pollution prevention and control list (IPPC) - Air** : Not listed

**Integrated pollution prevention and control list (IPPC) - Water** : Not listed


**National regulations**

**Product registration** :  **Australia inventory (AICS):** At least one component is not listed.  
**China inventory (IECSC):** All components are listed or exempted.  
**Japan inventory:** At least one component is not listed.  
**Korea inventory:** At least one component is not listed.  
**Malaysia Inventory (EHS Register):** Not determined.  
**New Zealand Inventory of Chemicals (NZIoC):** All components are listed or exempted.  
**Philippines inventory (PICCS):** At least one component is not listed.  
**Taiwan inventory (CSNN):** All components are listed or exempted.  
**United States inventory (TSCA 8b):** At least one component is not listed.

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**SECTION 15: Regulatory information****Europe inventory:** All components are listed or exempted.**Canada inventory:** At least one component is not listed in DSL but all such components are listed in NDSL.**Denmark****MAL-code** : 5-6**Germany****Hazard class for water** : 2 Appendix No. 4**Chemical Weapons Convention List Schedule I Chemicals** : Not listed**Chemical Weapons Convention List Schedule II Chemicals** : Not listed**Chemical Weapons Convention List Schedule III Chemicals** : Listed**15.2 Chemical Safety Assessment** : This product contains substances for which Chemical Safety Assessments are still required.**SECTION 16: Other information**

 Indicates information that has changed from previously issued version.

**Abbreviations and acronyms** : ATE = Acute Toxicity Estimate  
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]  
 DNEL = Derived No Effect Level  
 EUH statement = CLP-specific Hazard statement  
 PNEC = Predicted No Effect Concentration  
 RRN = REACH Registration Number

**Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Classification	Justification
 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317	Expert judgment Expert judgment Expert judgment Expert judgment

**Full text of abbreviated H statements** :  H290 May be corrosive to metals.  
 H302 Harmful if swallowed.  
 H311 Toxic in contact with skin.  
 H312 Harmful in contact with skin.  
 H314 Causes severe skin burns and eye damage.  
 H315 Causes skin irritation.  
 H317 May cause an allergic skin reaction.  
 H318 Causes serious eye damage.  
 H319 Causes serious eye irritation.  
 H330 Fatal if inhaled.  
 H332 Harmful if inhaled.  
 H335 May cause respiratory irritation.  
 H400 Very toxic to aquatic life.

**SECTION 16: Other information**

**Full text of classifications [CLP/GHS]** : Acute Tox. 2, H330 ACUTE TOXICITY: INHALATION - Category 2  
 Acute Tox. 3, H311 ACUTE TOXICITY: SKIN - Category 3  
 Acute Tox. 4, H302 ACUTE TOXICITY: ORAL - Category 4  
 Acute Tox. 4, H312 ACUTE TOXICITY: SKIN - Category 4  
 Acute Tox. 4, H332 ACUTE TOXICITY: INHALATION - Category 4  
 Aquatic Acute 1, H400 AQUATIC TOXICITY (ACUTE) - Category 1  
 Eye Dam. 1, H318 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1  
 Eye Irrit. 2, H319 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2  
 Met. Corr. 1, H290 CORROSIVE TO METALS - Category 1  
 Skin Corr. 1B, H314 SKIN CORROSION/IRRITATION - Category 1B  
 Skin Irrit. 2, H315 SKIN CORROSION/IRRITATION - Category 2  
 Skin Sens. 1, H317 SKIN SENSITIZATION - Category 1  
 STOT SE 3, H335 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3

**Full text of abbreviated R phrases** : R23- Toxic by inhalation.  
 R20- Harmful by inhalation.  
 R22- Harmful if swallowed.  
 R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.  
 R34- Causes burns.  
 R36- Irritating to eyes.  
 R36/38- Irritating to eyes and skin.  
 R43- May cause sensitization by skin contact.  
 R50- Very toxic to aquatic organisms.

**Full text of classifications [DSD/DPD]** : T - Toxic  
 C - Corrosive  
 Xn - Harmful  
 Xi - Irritant  
 N - Dangerous for the environment

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**Notice to reader**

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.