

**Benzene / Toluene Mixture - Kingwood**

Version 1.3

Revision Date 2016-11-11

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product information**

Product Name : Benzene / Toluene Mixture - Kingwood

**Company** : Chevron Phillips Chemical Company LP  
10001 Six Pines Drive  
The Woodlands, TX 77380

**Local** : Chevron Phillips Chemicals International N.V.  
Airport Plaza (Stockholm Building)  
Leonardo Da Vincilaan 19  
1831 Diegem  
Belgium

SDS Requests: (800) 852-5530  
Technical Information: (832) 813-4862  
Responsible Party: Product Safety Group  
Email:sds@cpchem.com

**Emergency telephone:****Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group  
E-mail address : SDS@CPChem.com  
Website : www.CPChem.com

**SECTION 2: Hazards identification****Classification of the substance or mixture  
REGULATION (EC) No 1272/2008**

Flammable liquids, Category 2

H225:  
Highly flammable liquid and vapor.

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|                                                                                               |                                                                          |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Skin irritation, Category 2                                                                   | H315:<br>Causes skin irritation.                                         |
| Eye irritation, Category 2                                                                    | H319:<br>Causes serious eye irritation.                                  |
| Germ cell mutagenicity, Category 1B                                                           | H340:<br>May cause genetic defects.                                      |
| Carcinogenicity, Category 1A                                                                  | H350:<br>May cause cancer.                                               |
| Reproductive toxicity, Category 2                                                             | H361d:<br>Suspected of damaging the unborn child.                        |
| Specific target organ systemic toxicity - single exposure, Category 3, Central nervous system | H336:<br>May cause drowsiness or dizziness.                              |
| Specific target organ systemic toxicity - repeated exposure, Category 1                       | H372:<br>Causes damage to organs through prolonged or repeated exposure. |
| Aspiration hazard, Category 1                                                                 | H304:<br>May be fatal if swallowed and enters airways.                   |
| Chronic aquatic toxicity, Category 3                                                          | H412:<br>Harmful to aquatic life with long lasting effects.              |

**Label elements****Labeling (REGULATION (EC) No 1272/2008)**

Hazard pictograms

:



Signal Word

: Danger

Hazard Statements

:

|       |                                                                 |
|-------|-----------------------------------------------------------------|
| H225  | Highly flammable liquid and vapor.                              |
| H304  | May be fatal if swallowed and enters airways.                   |
| H315  | Causes skin irritation.                                         |
| H319  | Causes serious eye irritation.                                  |
| H336  | May cause drowsiness or dizziness.                              |
| H340  | May cause genetic defects.                                      |
| H350  | May cause cancer.                                               |
| H361d | Suspected of damaging the unborn child.                         |
| H372  | Causes damage to organs through prolonged or repeated exposure. |
| H412  | Harmful to aquatic life with long lasting effects.              |

Precautionary Statements

:

|                    |                                                                               |
|--------------------|-------------------------------------------------------------------------------|
| <b>Prevention:</b> |                                                                               |
| P201               | Obtain special instructions before use.                                       |
| P210               | Keep away from heat/sparks/open flames/hot surfaces. No smoking.              |
| P260               | Do not breathe dust/fume/gas/mist/vapor/spray.                                |
| P280               | Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| <b>Response:</b>   |                                                                               |
| P301 + P310        | IF SWALLOWED: Immediately call a POISON CENTER/doctor.                        |
| P308 + P313        | IF exposed or concerned: Get medical advice/ attention.                       |

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P331 Do NOT induce vomiting.  
 P362 + P364 Take off contaminated clothing and wash it before reuse.  
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Hazardous ingredients which must be listed on the label:

- 64741-63-5 Naphtha (petroleum), light catalytic reformed
- 71-43-2 Benzene
- 108-88-3 Toluene

**Additional Labeling:**

Restricted to professional users.

**SECTION 3: Composition/information on ingredients**

Synonyms : None Established

Molecular formula : UVCB

**Mixtures****Hazardous ingredients**

| Chemical name                                        | CAS-No.<br>EC-No.<br>Index No.                        | Classification<br>(REGULATION (EC) No<br>1272/2008)                                                                                                                                               | Concentration<br>[wt%] |
|------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| <b>Naphtha (petroleum), light catalytic reformed</b> | <b>64741-63-5</b><br><b>265-065-1</b><br>649-299-00-5 | Flam. Liq. 2; H225<br>Skin Irrit. 2; H315<br>Eye Irrit. 2; H319<br>Muta. 1B; H340<br>Carc. 1B; H350<br>Asp. Tox. 1; H304                                                                          | 90 - 100               |
| Benzene                                              | 71-43-2<br>200-753-7<br>601-020-00-8                  | Flam. Liq. 2; H225<br>Skin Irrit. 2; H315<br>Eye Irrit. 2; H319<br>Muta. 1B; H340<br>Carc. 1A; H350<br>Aquatic Chronic 3; H412<br>STOT RE 1; H372<br>Asp. Tox. 1; H304<br>Aquatic Chronic 3; H412 | 50 - 70                |
| Toluene                                              | 108-88-3<br>203-625-9<br>601-021-00-3                 | Flam. Liq. 2; H225<br>Skin Irrit. 2; H315<br>Repr. 2; H361d<br>STOT SE 3; H336<br>STOT RE 2; H373<br>Asp. Tox. 1; H304<br>Aquatic Chronic 3; H412                                                 | 20 - 30                |
| Benzene, dimethyl-                                   | 1330-20-7<br>215-535-7<br>601-022-00-9                | Flam. Liq. 3; H226<br>Acute Tox. 4; H332<br>Acute Tox. 4; H312                                                                                                                                    | 1 - 10                 |

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|  |  |                                                                                                      |  |
|--|--|------------------------------------------------------------------------------------------------------|--|
|  |  | Skin Irrit. 2; H315<br>Eye Irrit. 2; H319<br>STOT SE 3; H335<br>STOT RE 2; H373<br>Asp. Tox. 1; H304 |  |
|--|--|------------------------------------------------------------------------------------------------------|--|

For the full text of the H-Statements mentioned in this Section, see Section 16.

**SECTION 4: First aid measures**

- |                         |   |                                                                                                                                                                                    |
|-------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General advice          | : | Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited. |
| If inhaled              | : | Consult a physician after significant exposure. If unconscious, place in recovery position and seek medical advice.                                                                |
| In case of skin contact | : | If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.                                                                   |
| In case of eye contact  | : | Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.    |
| If swallowed            | : | Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.                   |

**SECTION 5: Firefighting measures**

- |                                                |   |                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flash point                                    | : | -11 °C (12 °F)<br>Method: Tag closed cup                                                                                                                                                                                                                                                                                                                             |
| Autoignition temperature                       | : | 580 °C (1.076 °F)                                                                                                                                                                                                                                                                                                                                                    |
| Suitable extinguishing media                   | : | Alcohol-resistant foam. Carbon dioxide (CO <sub>2</sub> ). Dry chemical.                                                                                                                                                                                                                                                                                             |
| Unsuitable extinguishing media                 | : | High volume water jet.                                                                                                                                                                                                                                                                                                                                               |
| Specific hazards during fire fighting          | : | Do not allow run-off from fire fighting to enter drains or water courses.                                                                                                                                                                                                                                                                                            |
| Special protective equipment for fire-fighters | : | Wear self-contained breathing apparatus for firefighting if necessary.                                                                                                                                                                                                                                                                                               |
| Further information                            | : | Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers. |

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- Fire and explosion protection : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.
- Hazardous decomposition products : Carbon Dioxide. Carbon oxides.

**SECTION 6: Accidental release measures**

- Personal precautions : Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

**SECTION 7: Handling and storage****Handling**

- Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Container may be opened only under exhaust ventilation hood. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.  
Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary, but may not by themselves be sufficient. Review all operations, which have the potential to generating and accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106 "Flammable and Combustible Liquids"; National Fire Protection Association (NFPA 77), "Recommended Practice on Static Electricity"; and/or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising Out of Static, Lightning, and stray Currents".
- Advice on protection against fire and explosion : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use

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only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

**Storage**

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

**SECTION 8: Exposure controls/personal protection****Ingredients with workplace control parameters****SK**

| Zložka             | Podstata | Hodnota         | Kontrolné parametre            | Poznámka   |
|--------------------|----------|-----------------|--------------------------------|------------|
| Benzene            | SK OEL   | TSH             | 1 ppm, 3,25 mg/m <sup>3</sup>  | 1B, 1A, +, |
| Toluene            | SK OEL   | NPEL priemerný  | 50 ppm, 192 mg/m <sup>3</sup>  | K,         |
|                    | SK OEL   | NPEL krátkodobý | 100 ppm, 384 mg/m <sup>3</sup> | K,         |
| Benzene, dimethyl- | SK OEL   | NPEL priemerný  | 50 ppm, 221 mg/m <sup>3</sup>  | K,         |
|                    | SK OEL   | NPEL krátkodobý | 100 ppm, 442 mg/m <sup>3</sup> | K,         |

- + Prienik cez pokožku: Niektoré látky môžu prenikat' ľahko cez pokožku a spôsobovat' smrteľné otravy, často bez varovných príznakov (napr. anilín, nitrobenzén, nitroglykol, fenoly a pod.).
- 1A Kategória 1A - Dokázaný karcinogén pre ľudí
- 1B Kategória 1B - Mutagén cicavčích zárodočných buniek
- K Znamená, že faktor môže byť ľahko absorbovaný kožou. Niektoré faktory, ktoré ľahko prenikajú kožou, môžu spôsobovat' až smrteľné otravy, často bez varovných príznakov (napr. anilín, nitrobenzén, nitroglykol, fenoly a pod.). Pri látkach s významným prienikom cez kožu, či už v podobe kvapalín alebo pár, je osobitne dôležité zabrániť kožnému kontaktu.

**SI**

| Sestavine          | Osnova | Vrednost | Parametri nadzora             | Pripomba                   |
|--------------------|--------|----------|-------------------------------|----------------------------|
| Benzene            | SI OEL | MV       | 1 ppm, 3,25 mg/m <sup>3</sup> | 1A, EU0, K, EKA, BAT, TDK, |
| Toluene            | SI OEL | MV       | 50 ppm, 192 mg/m <sup>3</sup> | EU**, K, BAT,              |
| Benzene, dimethyl- | SI OEL | MV       | 50 ppm, 221 mg/m <sup>3</sup> | EU*, K, BAT,               |

- 1A Rakotvorne snovi - kategorija 1A
- BAT Biološka mejna vrednost - določena je biološka mejna vrednost, ki pomeni opozorilno raven nevarne kemične snovi in njenih metabolitov v tkivih, telesnih tekočinah ali izdihanem zraku, ne glede na to, ali je nevarna kemična snov vnesena v organizem z vdihavanjem, zaužitjem ali skozi kožo.
- EKA Zveza med koncentracijo rakotvornih snovi v zraku na delovnem mestu in količino snovi in/ali njenih metabolitov v organizmu - podana za rakotvorne snovi (rakotvorne snovi)
- EU\* Mejna vrednost, določena z Direktivo Komisije 2000/39/ES z dne 8. junija 2000 o določitvi prvega seznama indikativnih mejnih vrednosti za poklicno izpostavljenost pri izvajanju Direktive Sveta 98/24/ES o varovanju zdravja in zagotavljanju varnosti delavcev pred tveganjem zaradi izpostavljenosti kemičnim dejavnikom pri delu (UL L, št. 142, z dne 16. junija 2000, str. 47).
- EU\*\* Mejna vrednost, določena z Direktivo Komisije 2006/15/ES z dne 7. februarja 2006 o določitvi drugega seznama indikativnih mejnih vrednosti za poklicno izpostavljenost pri izvajanju Direktive Sveta 98/24/ES ter o spremembi Direktive 91/322/EGS in Direktive 2000/39/ES (UL L, št. 38, z dne 9. februarja 2006, str. 36).
- EU0 Mejna vrednost, določena z Direktivo Evropskega parlamenta in Sveta 2004/37/ES z dne 29. aprila 2004 o varovanju delavcev pred tveganji zaradi izpostavljenosti rakotvornim ali mutagenim snovem pri delu (šesta posamična direktiva v skladu s členom 16(1) Direktive Sveta 89/391/EGS) (UL L, št. 229 z dne 29. 6. 2004, str. 23, kodificirana verzija).
- K Lastnost lažjega prehajanja snovi v organizem skozi kožo
- TDK Tehnično dosegljiva koncentracija - je podana za rakotvorne snovi in pomeni koncentracijo snovi v zraku na delovnem mestu, ki je dosegljiva s stanjem tehnike

**SE**

| Beståndsdelar                                 | Grundval | Värde | Kontrollparametrar             | Anmärkning |
|-----------------------------------------------|----------|-------|--------------------------------|------------|
| Naphtha (petroleum), light catalytic reformed | SE AFS   | NGV   | 30 ppm, 60 mg/m <sup>3</sup>   | H, 35,     |
|                                               | SE AFS   | KTV   | 175 ppm, 350 mg/m <sup>3</sup> | H, 35,     |
| Benzene                                       | SE AFS   | NGV   | 0,5 ppm, 1,5 mg/m <sup>3</sup> | H, C,      |
|                                               | SE AFS   | KTV   | 3 ppm, 9 mg/m <sup>3</sup>     | H, C,      |
| Toluene                                       | SE AFS   | NGV   | 50 ppm, 192 mg/m <sup>3</sup>  | B, H,      |
|                                               | SE AFS   | KTV   | 100 ppm, 384 mg/m <sup>3</sup> | B, H,      |
| Benzene, dimethyl-                            | SE AFS   | NGV   | 50 ppm, 200 mg/m <sup>3</sup>  | H,         |
|                                               | SE AFS   | KTV   | 100 ppm, 450 mg/m <sup>3</sup> | H,         |
|                                               | SE AFS   | NGV   | 50 ppm, 221 mg/m <sup>3</sup>  | H,         |
|                                               | SE AFS   | KTV   | 100 ppm, 442 mg/m <sup>3</sup> | H,         |

- 35 Avser lacknafta som företädesvis används som lösnings- och spädningsmedel för färg- och lackprodukter, dvs. petroleumnafta med sina huvudsakliga beståndsdelar i området C7 till C12 och med upp till 22 viktprocent aromater (upp till ca 20 volymprocent) och mindre än 0,1 viktprocent bensen. Jämför not 40 om petroleumnafta. Angivet ungefärligt värde uttryckt i ppm är beräknat på lacknafta med 22 viktprocent aromater.

- B Exponering för vissa kemiska ämnen nära befintligt yrkeshygieniskt gränsvärde och samtidig exponering för buller nära

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- insatsvärdet 80 dB kan orsaka hörselskada.  
 C Ämnet är cancerframkallande.  
 H Ämnet kan lätt upptas genom huden.

**RS**

| Компоненты         | Основа | Величина | Параметры контроля             | Заметка  |
|--------------------|--------|----------|--------------------------------|----------|
| Benzene            | RS OEL | GVI      | 1 ppm, 3,25 mg/m <sup>3</sup>  | EU0,     |
| Toluene            | RS OEL | GVI      | 50 ppm, 192 mg/m <sup>3</sup>  | K, EU**, |
|                    | RS OEL | KGVI     | 100 ppm, 384 mg/m <sup>3</sup> | K, EU**, |
| Benzene, dimethyl- | RS OEL | GVI      | 50 ppm, 221 mg/m <sup>3</sup>  | K, EU*,  |
|                    | RS OEL | KGVI     | 100 ppm, 442 mg/m <sup>3</sup> | K, EU*,  |

- EU\* Substance mentioned in indicative exposure limit values in Directive 2000/39 / EC (first list)  
 EU\*\* Substance mentioned in indicative exposure limit values in Directive 2006/15 / EC (second list)  
 EU0 Substance mentioned in indicative exposure limit values in Directive 99/38/EC and Directive 98/24/EC  
 K This chemical substance can adversely affect the skin.

**RO**

| Componente         | Bază   | Valoare | Parametri de control           | Notă  |
|--------------------|--------|---------|--------------------------------|-------|
| Benzene            | RO OEL | TWA     | 1 ppm, 3,25 mg/m <sup>3</sup>  | P, C, |
| Toluene            | RO OEL | TWA     | 50 ppm, 192 mg/m <sup>3</sup>  | P,    |
|                    | RO OEL | STEL    | 100 ppm, 384 mg/m <sup>3</sup> | P,    |
| Benzene, dimethyl- | RO OEL | TWA     | 50 ppm, 221 mg/m <sup>3</sup>  | P,    |
|                    | RO OEL | STEL    | 100 ppm, 442 mg/m <sup>3</sup> | P,    |

- C Substanțele cu indicativul C au acțiune cancerigenă.  
 P Substanțele cu indicativul P (piele) pot pătrunde în organism prin pielea sau mucoasele intacte. Indicativul P nu se referă la substanțele care au numai o acțiune locală de tip iritativ.

**PT**

| Componentes        | Bases          | Valor         | Parâmetros de controlo         | Nota                                            |
|--------------------|----------------|---------------|--------------------------------|-------------------------------------------------|
| Benzene            | PT OEL         | VLE-MP        | 0,5 ppm,                       | (1), P, A1, IBE,                                |
|                    | PT OEL         | VLE_CD        | 2,5 ppm,                       | (1), P, A1, IBE,                                |
| Toluene            | PT OEL         | VLE-MP        | 20 ppm,                        | (1), P, A4, IBE,                                |
|                    | PT DL 305/2007 | oito horas    | 50 ppm, 192 mg/m <sup>3</sup>  | Cutânea,                                        |
|                    | PT DL 305/2007 | curta duração | 100 ppm, 384 mg/m <sup>3</sup> | Cutânea,                                        |
| Benzene, dimethyl- | PT OEL         | VLE-MP        | 100 ppm,                       | (1), A4, IBE, irritação do TRS, afecção do SNC, |
|                    | PT OEL         | VLE_CD        | 150 ppm,                       | (1), A4, IBE, irritação do TRS, afecção do SNC, |
|                    | PT OEL         | VLE-MP        | 100 ppm,                       | (1), A4, IBE, irritação do TRS, afecção do SNC, |
|                    | PT OEL         | VLE_CD        | 150 ppm,                       | (1), A4, IBE, irritação do TRS, afecção do SNC, |
|                    | PT DL 305/2007 | oito horas    | 50 ppm, 221 mg/m <sup>3</sup>  | Cutânea,                                        |
|                    | PT DL 305/2007 | curta duração | 100 ppm, 442 mg/m <sup>3</sup> | Cutânea,                                        |

- (1) Abrangido por legislação nacional específica ou por legislação comunitária não transposta  
 A1 Agente carcinogénico confirmado no Homem.  
 A4 Agente não classificável como carcinogénico no Homem.  
 afecção do SNC afecção do sistema nervoso central  
 Cutânea Uma notação cutânea atribuída ao valor limite de exposição profissional assinala a possibilidade de absorção significativa através de pele.  
 IBE Identifica substâncias para as quais existem índices de exposição biológicos. Estes podem ser de dois tipos: IBE A referentes a pesticidas inibidores da acetilcolinesterase e IBE M indutores de metahemoglobina.  
 irritação do irritação do trato respiratório superior  
 TRS  
 P Perigo de absorção cutânea

**PL**

| Składniki          | Podstawa | Wartość | Parametry dotyczące kontroli | Uwaga |
|--------------------|----------|---------|------------------------------|-------|
| Benzene            | PL NDS   | NDS     | 1,6 mg/m <sup>3</sup>        |       |
| Toluene            | PL NDS   | NDS     | 100 mg/m <sup>3</sup>        |       |
|                    | PL NDS   | NDSch   | 200 mg/m <sup>3</sup>        |       |
| Benzene, dimethyl- | PL NDS   | NDS     | 100 mg/m <sup>3</sup>        |       |

**NO**

| Komponenter                                   | Grunnlag            | Verdi | Kontrollparametrer            | Nota     |
|-----------------------------------------------|---------------------|-------|-------------------------------|----------|
| Naphtha (petroleum), light catalytic reformed | FOR-2011-12-06-1358 | TWA   | 50 ppm, 275 mg/m <sup>3</sup> |          |
| Benzene                                       | FOR-2011-12-06-1358 | T     | 1 ppm, 3 mg/m <sup>3</sup>    | G, K, H, |
| Toluene                                       | FOR-2011-12-06-1358 | TWA   | 25 ppm, 94 mg/m <sup>3</sup>  | E, H,    |
| Benzene, dimethyl-                            | FOR-2011-12-06-1358 | TWA   | 25 ppm, 108 mg/m <sup>3</sup> | E, H,    |

- E EU har en veiledende grenseverdi for stoffet  
 G EU har fastsatt en bindende grenseverdi for stoffet  
 H En del av stoffene kan i stor grad trenge gjennom huden selv om denne er uskadet, og således tas opp i kroppen.  
 K Stoffer som skal betraktes som kreftfremkallende

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**NL**

| Bestanddelen       | Basis | Waarde     | Controleparameters | Opmerking |
|--------------------|-------|------------|--------------------|-----------|
| Benzene            | NL WG | TGG-8 uur  | 3,25 mg/m3         | H,        |
| Toluene            | NL WG | TGG-8 uur  | 150 mg/m3          |           |
|                    | NL WG | TGG-15 min | 384 mg/m3          |           |
| Benzene, dimethyl- | NL WG | TGG-8 uur  | 210 mg/m3          | H,        |
|                    | NL WG | TGG-15 min | 442 mg/m3          | H,        |

H Huidopname

**MT**

| Ingredients        | Basis  | Value | Control parameters | Note  |
|--------------------|--------|-------|--------------------|-------|
| Toluene            | MT OEL | TWA   | 50 ppm, 192 mg/m3  | Skin, |
|                    | MT OEL | STEL  | 100 ppm, 384 mg/m3 | Skin, |
| Benzene, dimethyl- | MT OEL | TWA   | 50 ppm, 221 mg/m3  | Skin, |
|                    | MT OEL | STEL  | 100 ppm, 442 mg/m3 | Skin, |

Skin A skin notation assigned to the OEL identifies the possibility of significant uptake through the skin.

**MK**

| Съставки           | Основа | Стойност | Параметри на контрол | Бележка                   |
|--------------------|--------|----------|----------------------|---------------------------|
| Benzene            | MK OEL | MV       | 1 ppm, 3,25 mg/m3    | R1, BAT, EKA, EU, K, TDK, |
| Toluene            | MK OEL | MV       | 50 ppm, 192 mg/m3    | BAT, EU, K,               |
| Benzene, dimethyl- | MK OEL | MV       | 50 ppm, 221 mg/m3    | BAT, EU, K,               |

BAT Biological limit value - the biological limit value is set, which means a warning level of dangerous chemical substance and its metabolites in the cell tissues, body liquids or expired air, not depending on the route of entering the body, inhalation, oral or dermal

EKA The relation of concentration of carcinogenic substances in air at workplace and the quantity of the substance and/or its metabolites in the organism - given for carcinogenic substances

EU European Union - limit (threshold) value set at the level of European Union

K The properties of easier transport of substances into organism through (via) the skin

R1 Carcinogenic R1 - may cause cancer. Numbers 1, 2 and 3 indicate the class of carcinogenicity or mutagenicity according to the EU classification of carcinogenic or mutagenic substances. Carcinogenic or mutagenic substances are in EU classified in separate groups, according to the fulfilling of criteria, set in the EU directive 67/548/EEC.

TDK Technically achievable concentration - is given for carcinogenic substances and it means the concentration of the substance in the air at workplace, which is achievable at the level of technique available.

**LV**

| Sastāvdaļas        | Bāze   | Vērtība       | Pārvaldības parametri | Piezīme |
|--------------------|--------|---------------|-----------------------|---------|
| Benzene            | LV OEL | AER 8 st      | 1 ppm, 3,25 mg/m3     | Āda,    |
| Toluene            | LV OEL | AER 8 st      | 14 ppm, 50 mg/m3      | Āda,    |
|                    | LV OEL | AER īslaicīgā | 40 ppm, 150 mg/m3     | Āda,    |
| Benzene, dimethyl- | LV OEL | AER 8 st      | 50 ppm, 221 mg/m3     | Āda,    |
|                    | LV OEL | AER īslaicīgā | 100 ppm, 442 mg/m3    | Āda,    |

Āda Āda

**LU**

| Composants         | Base   | Valeur | Paramètres de contrôle | Note  |
|--------------------|--------|--------|------------------------|-------|
| Benzene            | LU OEL | TWA    | 1 ppm, 3,25 mg/m3      |       |
| Toluene            | LU OEL | TWA    | 50 ppm, 192 mg/m3      | Peau, |
|                    | LU OEL | STEL   | 100 ppm, 384 mg/m3     | Peau, |
| Benzene, dimethyl- | LU OEL | TWA    | 50 ppm, 221 mg/m3      | Peau, |
|                    | LU OEL | STEL   | 100 ppm, 442 mg/m3     | Peau, |

Peau Une pénétration cutanée s'ajoutant à l'inhalation réglementée est possible

**LT**

| Komponentai        | Pagrindas, bazė | Vertė | Kontrolės parametrai | Pastaba |
|--------------------|-----------------|-------|----------------------|---------|
| Benzene            | LT OEL          | IPRD  | 1 ppm, 3,25 mg/m3    | O,      |
|                    | LT OEL          | TPRD  | 6 ppm, 19 mg/m3      | O,      |
| Toluene            | LT OEL          | IPRD  | 50 ppm, 192 mg/m3    | O,      |
|                    | LT OEL          | TPRD  | 100 ppm, 384 mg/m3   | O,      |
| Benzene, dimethyl- | LT OEL          | IPRD  | 50 ppm, 200 mg/m3    | O,      |
|                    | LT OEL          | TPRD  | 100 ppm, 450 mg/m3   | O,      |

O Oksiduojanti

**IT**

| Componenti         | Base   | Valore | Parametri di controllo | Nota   |
|--------------------|--------|--------|------------------------|--------|
| Benzene            | IT OEL | TWA    | 1 ppm, 3,25 mg/m3      | Pelle, |
|                    | IT OEL | TWA    | 0,5 ppm,               |        |
|                    | IT OEL | TPRD   | 2,5 ppm,               |        |
| Toluene            | IT OEL | TWA    | 50 ppm, 192 mg/m3      | Pelle, |
| Benzene, dimethyl- | IT OEL | TWA    | 50 ppm, 221 mg/m3      | Pelle, |



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|                                                                                                                                             |        |      |                    |        |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------|------|--------------------|--------|
|                                                                                                                                             | IT OEL | STEL | 100 ppm, 442 mg/m3 | Pelle, |
| Pelle La notazione 'Pelle' attribuita ai valori limite di esposizione indica possibilità di assorbimento significativo attraverso la pelle. |        |      |                    |        |

IS

| Komponenter        | Grunnlag | Verdi | Kontrollparametrer | Nota  |
|--------------------|----------|-------|--------------------|-------|
| Benzene            | IS OEL   | TWA   | 0,5 ppm, 1,6 mg/m3 | H, K, |
| Toluene            | IS OEL   | TWA   | 25 ppm, 94 mg/m3   | H,    |
|                    | IS OEL   | STEL  | 50 ppm, 188 mg/m3  | H,    |
| Benzene, dimethyl- | IS OEL   | TWA   | 25 ppm, 109 mg/m3  | H,    |
|                    | IS OEL   | STEL  | 100 ppm, 442 mg/m3 | H,    |

H Skin notation  
K Carcinogenic substances

IE

| Ingredients        | Basis  | Value                | Control parameters | Note                |
|--------------------|--------|----------------------|--------------------|---------------------|
| Benzene            | IE OEL | OELV - 8 hrs (TWA)   | 1 ppm, 3 mg/m3     | BOELV, Sk, Carc 1A, |
| Toluene            | IE OEL | OELV - 8 hrs (TWA)   | 50 ppm, 192 mg/m3  | Sk, IOELV,          |
|                    | IE OEL | OELV - 15 min (STEL) | 100 ppm, 384 mg/m3 | Sk, IOELV,          |
| Benzene, dimethyl- | IE OEL | OELV - 8 hrs (TWA)   | 50 ppm, 221 mg/m3  | Sk, IOELV,          |
|                    | IE OEL | OELV - 15 min (STEL) | 100 ppm, 442 mg/m3 | Sk, IOELV,          |

BOELV Binding Occupational Exposure Limit Value  
Carc 1A Carc 1A - Substances known to have carcinogenic potential for humans  
IOELV Indicative Occupational Exposure Limit Value  
Sk Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body

HU

| Komponensek | Bázis  | Érték    | Ellenőrzési paraméterek | Megjegyzés |
|-------------|--------|----------|-------------------------|------------|
| Benzene     | HU OEL | MK-érték | 3 mg/m3                 | b, k, i,   |
| Toluene     | HU OEL | AK-érték | 190 mg/m3               | b, EU2, i, |
|             | HU OEL | CK-érték | 380 mg/m3               | b, EU2, i, |

b Bőrön át is felszívódik. Az AK-értékek a veszélyes anyagoknak ezt a tulajdonságát, illetve az ebből származó expozíciót csak a levegőben megengedett koncentrációjuk mértékének megfelelően veszik figyelembe  
EU2 2006/15/EK irányelvben közölt érték  
i Ingerlő anyag (izgatja a bőrt, nyálkahártyát, szemet vagy mindhámat)  
k Rákkeltő

HR

| Sastojci                                      | Temelj | Vrijednost | Nadzorni parametri | Bilješka            |
|-----------------------------------------------|--------|------------|--------------------|---------------------|
| Naphtha (petroleum), light catalytic reformed | HR OEL | GVI        | 100 ppm, 300 mg/m3 | 2, 2, T,            |
|                                               | HR OEL | GVI        | 100 ppm, 400 mg/m3 | 2, 2, T,            |
| Benzene                                       | HR OEL | GVI        | 1 ppm, 3,25 mg/m3  | K, 1, 2, EU0, T, F, |
| Toluene                                       | HR OEL | GVI        | 50 ppm, 192 mg/m3  | K, 3, EU**, Xn, F,  |
|                                               | HR OEL | STEL       | 100 ppm, 384 mg/m3 | K, 3, EU**, Xn, F,  |
| Benzene, dimethyl-                            | HR OEL | GVI        | 50 ppm, 221 mg/m3  | K, EU*, Xn,         |
|                                               | HR OEL | STEL       | 100 ppm, 442 mg/m3 | K, EU*, Xn,         |

1 Karc. kat. 1: tvari za koje je dokazano da su karcinogene za ljude  
2 Karc. kat. 2: tvari koje su vjerojatno karcinogene za ljude  
3 Repr. kat. 3: tvari za koje se pretpostavlja da bi mogle smanjiti plodnost kod ljudi i/ili tvari za koje se pretpostavlja da bi mogle iskazati razvojnu otrovnost kod ljudi  
EU\* Naznaka da se radi o tvarima za koje su utvrđene indikativne granične vrijednosti izloženosti prema Direktivi 2000/39/ EC (prva lista)  
EU\*\* Naznaka da se radi o tvarima za koje su utvrđene indikativne granične vrijednosti izloženosti prema Direktivi 2006/15/ EC (druga lista)  
EU0 Naznaka da se radi o tvarima za koje su utvrđene obvezujuće granične vrijednosti izloženosti prema Direktivi 2003/18/ EC, Direktivi 99/38/EC i Direktivi 98/24/EC  
F Lako zapaljivo  
K naznaka da tvar može štetno djelovati kroz kožu  
T Otrovnost  
Xn Štetno za zdravlje

GR

| Συστατικά          | Βάση   | Τιμή | Παράμετροι ελέγχου | Σημείωση |
|--------------------|--------|------|--------------------|----------|
| Benzene            | GR OEL | TWA  | 1 ppm, 3,19 mg/m3  | Δ,       |
| Toluene            | GR OEL | TWA  | 50 ppm, 192 mg/m3  | Δ,       |
|                    | GR OEL | STEL | 100 ppm, 384 mg/m3 | Δ,       |
| Benzene, dimethyl- | GR OEL | TWA  | 100 ppm, 435 mg/m3 | Δ,       |
|                    | GR OEL | STEL | 150 ppm, 650 mg/m3 | Δ,       |
|                    | GR OEL | TWA  | 100 ppm, 435 mg/m3 | Δ,       |
|                    | GR OEL | STEL | 150 ppm, 650 mg/m3 | Δ,       |

Δ Η ένδειξη 'δέρμα' (Δ), η οποία επισημαίνει ορισμένους χημικούς παράγοντες του πίνακα της παρ. 1 του άρθρου 3, υπονοεί την πιθανή συμβολή στην συνολική έκθεση του εργαζόμενου και της ποσότητας αυτών των χημικών παραγόντων που απορροφάται διαμέσου του δέρματος κατά την άμεση επαφή μαζί τους.

GB

| Ingredients | Basis   | Value | Control parameters | Note         |
|-------------|---------|-------|--------------------|--------------|
| Benzene     | GB EH40 | TWA   | 1 ppm,             | Sk, Carc, 2, |

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|--------------------|---------|------|--------------------|-----|
| Toluene            | GB EH40 | TWA  | 50 ppm, 191 mg/m3  | Sk, |
|                    | GB EH40 | STEL | 100 ppm, 384 mg/m3 | Sk, |
| Benzene, dimethyl- | GB EH40 | TWA  | 50 ppm, 220 mg/m3  | Sk, |
|                    | GB EH40 | STEL | 100 ppm, 441 mg/m3 | Sk, |

2 Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used  
Carc Capable of causing cancer and/or heritable genetic damage. The identified substances include those which: - are assigned the risk phrases 'R45: May cause cancer'; 'R46: may cause heritable genetic damage'; 'R49: May cause cancer by inhalation' or - a substance or process listed in Schedule 1 of COSHH.  
Sk Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.

FR

| Composants         | Base   | Valeur     | Paramètres de contrôle | Note               |
|--------------------|--------|------------|------------------------|--------------------|
| Benzene            | FR VLE | VME        | 1 ppm, 3,25 mg/m3      | C1A, M1B, *, noir, |
| Toluene            | FR VLE | VME        | 20 ppm, 76,8 mg/m3     | R2, *, noir,       |
|                    | FR VLE | VLCT (VLE) | 100 ppm, 384 mg/m3     | R2, *, noir,       |
| Benzene, dimethyl- | FR VLE | VME        | 50 ppm, 221 mg/m3      | *, noir,           |
|                    | FR VLE | VLCT (VLE) | 100 ppm, 442 mg/m3     | *, noir,           |

\* Risque de pénétration percutanée  
C1A Substances que l'on sait être cancérogènes chez l'homme  
M1B Substances devant être assimilées à des substances pour l'homme  
noir Valeurs limites réglementaires contraignantes  
R2 Substances préoccupantes en raison d'effets toxiques pour la reproduction possibles

FI

| Aineosat           | Peruste | Arvo             | Valvontaa koskevat muuttujat | Huomautus  |
|--------------------|---------|------------------|------------------------------|------------|
| Toluene            | FI OEL  | HTP-arvot 8h     | 25 ppm, 81 mg/m3             | melu, iho, |
|                    | FI OEL  | HTP-arvot 15 min | 100 ppm, 380 mg/m3           | melu, iho, |
| Benzene, dimethyl- | FI OEL  | HTP-arvot 8h     | 50 ppm, 220 mg/m3            | iho,       |
|                    | FI OEL  | HTP-arvot 15 min | 100 ppm, 440 mg/m3           | iho,       |
|                    | FI OEL  | HTP-arvot 8h     | 50 ppm, 220 mg/m3            | iho,       |
|                    | FI OEL  | HTP-arvot 15 min | 100 ppm, 440 mg/m3           | iho,       |

iho Ihon läpi imeytyvien aineiden elimistöön joutuvia määriä ja elimistöön joutuneesta aineesta aiheutuvaa vaaraa ei voida näin ollen arvioida pelkästään ilmapitoisuuksien avulla. Tämän vuoksi näiden aineiden HTP-arvojen yhteyteen on huomautussarakkeeseen otettu ihon läpi imeytymisen osoittamiseksi merkintä 'iho'. Monet aineet, varsinkin voimakkaat hapot tai emäkset, voivat aiheuttaa iholle jouduttuaan ihon ärsyyntymistä tai syöpymistä.  
melu Melu: aineille, joiden tiedetään voimistavan melun haitallisia kuuloaikutuksia.

ES

| Componentes        | Base   | Valor  | Parámetros de control | Nota                             |
|--------------------|--------|--------|-----------------------|----------------------------------|
| Benzene            | ES VLA | VLA-ED | 1 ppm, 3,25 mg/m3     | 1B, vía dérmica, r, v, VLB®, 1A, |
| Toluene            | ES VLA | VLA-ED | 50 ppm, 192 mg/m3     | vía dérmica, r, VLB®, VLI,       |
|                    | ES VLA | VLA-EC | 100 ppm, 384 mg/m3    | vía dérmica, r, VLB®, VLI,       |
| Benzene, dimethyl- | ES VLA | VLA-ED | 50 ppm, 221 mg/m3     | vía dérmica, VLB®, VLI,          |
|                    | ES VLA | VLA-EC | 100 ppm, 442 mg/m3    | vía dérmica, VLB®, VLI,          |

1A Carcinógenos para el hombre, en base a la existencia de evidencias en humanos.  
1B Sustancias de las que se sabe o se considera que inducen mutaciones hereditarias en las células germinales humanas. La clasificación en la categoría 1B se basa en: - Resultados positivos de ensayos de mutagenicidad hereditaria en células germinales de mamífero in vivo; o - Resultados positivos de ensayos de mutagenicidad en células somáticas de mamífero in vivo, junto con alguna prueba que haga suponer que la sustancia puede causar mutaciones en células germinales. Esta información complementaria puede proceder de ensayos de mutagenicidad/genotoxicidad en células germinales de mamífero in vivo, o de la demostración de que la sustancia o sus metabolitos son capaces de interactuar con el material genético de las células germinales; o - Resultados positivos de ensayos que muestran efectos mutagénicos en células germinales de personas, sin que esté demostrada la transmisión a los descendientes; por ejemplo, un incremento de la frecuencia de aneuploidía en los espermatozoides de los varones expuestos.  
r Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el 'Reglamento CE 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos' (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido.  
v Real Decreto 1124/2000, de 16 de junio (BOE nº 145 de 17 de junio de 2000), por el que se modifica el Real Decreto 665/1997, de 12 de mayo, sobre la protección de los trabajadores contra los riesgos relacionados con la exposición a agentes cancerígenos durante el trabajo.  
vía dérmica Vía dérmica  
VLB® Agente químico que tiene Valor Límite Biológico específico en este documento.  
VLI Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país.

EE

| Komponendid, osad | Alused | Väärtus                         | Kontrolliparameetrid | Märkused |
|-------------------|--------|---------------------------------|----------------------|----------|
| Benzene           | EE OEL | Piirnorm                        | 0,5 ppm, 1,5 mg/m3   | A, C,    |
|                   | EE OEL | Lühiajalise kokkupuute piirnorm | 3 ppm, 9 mg/m3       | A, C,    |
| Toluene           | EE OEL | Piirnorm                        | 50 ppm, 192 mg/m3    | A,       |

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|--------------------|--------|---------------------------------|--------------------|----|
|                    | EE OEL | Lühiajalise kokkupuute piirnorm | 100 ppm, 384 mg/m3 | A, |
| Benzene, dimethyl- | EE OEL | Piirnorm                        | 50 ppm, 221 mg/m3  | A, |
|                    | EE OEL | Lühiajalise kokkupuute piirnorm | 100 ppm, 442 mg/m3 | A, |
|                    | EE OEL | Piirnorm                        | 50 ppm, 200 mg/m3  | A, |
|                    | EE OEL | Lühiajalise kokkupuute piirnorm | 100 ppm, 450 mg/m3 | A, |

- A Naha kaudu kergesti absorbeeruvad ained  
C Kantserogeensed ained

**DK**

| Komponenter        | Basis  | Værdi | Kontrolparametre   | Note     |
|--------------------|--------|-------|--------------------|----------|
| Benzene            | DK OEL | GV    | 0,5 ppm, 1,6 mg/m3 | H, K, E, |
| Toluene            | DK OEL | GV    | 25 ppm, 94 mg/m3   | H, E,    |
| Benzene, dimethyl- | DK OEL | GV    | 25 ppm, 109 mg/m3  | H, E,    |
|                    | DK OEL | GV    | 25 ppm, 109 mg/m3  | H, E,    |

- E At stoffet har en EF-grænseværdi  
H Betyder, at stoffet kan optages gennem huden.  
K Betyder, at stoffet er optaget på listen over stoffer, der anses for at være kræftfremkaldende.

**DE**

| Inhaltsstoffe      | Grundlage   | Wert                   | Zu überwachende Parameter | Bemerkung      |
|--------------------|-------------|------------------------|---------------------------|----------------|
| Benzene            | DE TRGS 910 | Akzeptanzkonzentration | 0,06 ppm, 0,2 mg/m3       | b, H,          |
|                    | DE TRGS 910 | Toleranzkonzentration  | 0,6 ppm, 1,9 mg/m3        | H,             |
| Toluene            | DE TRGS 900 | AGW                    | 50 ppm, 190 mg/m3         | DFG, EU, H, Y, |
| Benzene, dimethyl- | DE TRGS 900 | AGW                    | 100 ppm, 440 mg/m3        | DFG, EU, H,    |

- b Akzeptanzkonzentration assoziiert mit Risiko 4:10.000  
DFG Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)  
EU Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich.)  
H Hautresorptiv  
Y Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden

**CZ**

| Složky             | Základ | Hodnota | Kontrolní parametry | Poznámka |
|--------------------|--------|---------|---------------------|----------|
| Benzene            | CZ OEL | PEL     | 3 mg/m3             | I, D, P, |
|                    | CZ OEL | NPK-P   | 10 mg/m3            | I, D, P, |
| Toluene            | CZ OEL | PEL     | 200 mg/m3           | I, D,    |
|                    | CZ OEL | NPK-P   | 500 mg/m3           | I, D,    |
| Benzene, dimethyl- | CZ OEL | PEL     | 200 mg/m3           | D,       |
|                    | CZ OEL | NPK-P   | 400 mg/m3           | D,       |

- D Při expozici se významně uplatňuje pronikání látky kůží  
I dráždí sliznice (oči, dýchací cesty) resp. kůži  
P U látky nelze vyloučit závažné pozdní účinky

**CY**

| Συστατικά          | Βάση     | Τιμή   | Παράμετροι ελέγχου | Σημείωση |
|--------------------|----------|--------|--------------------|----------|
| Benzene            | CY OEL 2 | M.E.Σ. | 10 ppm, 30 mg/m3   |          |
| Toluene            | CY OEL   | TWA    | 50 ppm, 192 mg/m3  |          |
|                    | CY OEL   | STEL   | 100 ppm, 384 mg/m3 |          |
| Benzene, dimethyl- | CY OEL   | TWA    | 50 ppm, 221 mg/m3  |          |
|                    | CY OEL   | STEL   | 100 ppm, 442 mg/m3 |          |

**CH**

| Inhaltsstoffe      | Grundlage | Wert     | Zu überwachende Parameter | Bemerkung                                    |
|--------------------|-----------|----------|---------------------------|----------------------------------------------|
| Benzene            | CH SUVA   | MAK-Wert | 0,5 ppm, 1,6 mg/m3        | H, Carc.Cat.1, M1B, NIOSH, DFG, HSE, BG,     |
| Toluene            | CH SUVA   | MAK-Wert | 50 ppm, 190 mg/m3         | OL, H, R2D, R2F, NIOSH, DFG, INRS, HSE, SSc, |
|                    | CH SUVA   | KZGW     | 200 ppm, 760 mg/m3        | OL, H, R2D, R2F, NIOSH, DFG, INRS, HSE, SSc, |
| Benzene, dimethyl- | CH SUVA   | MAK-Wert | 100 ppm, 435 mg/m3        | H, Gruppe D - Preg, NIOSH, INRS,             |
|                    | CH SUVA   | KZGW     | 200 ppm, 870 mg/m3        | H, Gruppe D - Preg, NIOSH, INRS,             |
|                    | CH SUVA   | MAK-Wert | 100 ppm, 435 mg/m3        | H, NIOSH, INRS,                              |
|                    | CH SUVA   | KZGW     | 200 ppm, 870 mg/m3        | H, NIOSH, INRS,                              |

- BG BG  
Carc.Cat.1 Krebserzeugende Stoffe Kategorie 1  
DFG Deutsche Forschungsgemeinschaft  
Gruppe D - Eine Zuteilung der Gruppen A-C ist z. Zt. noch nicht möglich. Die vorliegenden Daten lassen einen Trend erkennen oder sind kontrovers, für eine abschliessende Beurteilung reichen sie jedoch nicht aus.  
Preg Vergiftung durch Hautresorption möglich; Bei Stoffen, welche die Haut leicht zu durchdringen vermögen, kann durch die

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- zusätzliche Hautresorption die innere Belastung wesentlich höher werden als bei alleiniger Aufnahme durch die Atemwege.
- HSE Health and Safety Executive (Occupational Medicine and Hygiene Laboratory)
- INRS Institut National de Recherche et de Sécurité pour la prévention des accidents du travail et des maladies professionnelles
- M1B Stoffe, die wahrscheinlich vererbare Mutationen an menschlichen Keimzellen auslösen.
- NIOSH National Institute for Occupational Safety and Health
- OL lärmverstärkende Ototoxizität
- R2D Stoffe, die möglicherweise beim Menschen reproduktionstoxisch sind; die Beeinträchtigung bezieht sich auf die Entwicklung.
- R2F Stoffe, die möglicherweise beim Menschen reproduktionstoxisch sind; die Beeinträchtigung bezieht sich auf die Fruchtbarkeit oder Sexualität.
- SSc Eine Schädigung der Leibesfrucht braucht bei Einhaltung des MAK-Wertes nicht befürchtet zu werden.

**BG**

| Съставки           | Основа | Стойност | Параметри на контрол           | Бележка |
|--------------------|--------|----------|--------------------------------|---------|
| Benzene            | BG OEL | TWA      | 3,25 mg/m <sup>3</sup>         | -       |
| Toluene            | BG OEL | TWA      | 50 ppm, 192 mg/m <sup>3</sup>  | -       |
|                    | BG OEL | STEL     | 100 ppm, 384 mg/m <sup>3</sup> | -       |
| Benzene, dimethyl- | BG OEL | TWA      | 50 ppm, 221 mg/m <sup>3</sup>  | -       |
|                    | BG OEL | STEL     | 100 ppm, 442 mg/m <sup>3</sup> | -       |

- Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност. Граничните стойности на тези химични агенти във въздуха на работната среда, определени с наредбата, са съобразени със съответните стойности, приети за Европейската общност, като могат да бъдат равни или по-ниски от тях.

**BE**

| Bestanddelen       | Basis  | Waarde     | Controleparameters             | Opmerking |
|--------------------|--------|------------|--------------------------------|-----------|
| Benzene            | BE OEL | TGG 8 hr   | 1 ppm, 3,25 mg/m <sup>3</sup>  | D, C,     |
| Toluene            | BE OEL | TGG 8 hr   | 20 ppm, 77 mg/m <sup>3</sup>   | D,        |
|                    | BE OEL | TGG 15 min | 100 ppm, 384 mg/m <sup>3</sup> | D,        |
| Benzene, dimethyl- | BE OEL | TGG 8 hr   | 50 ppm, 221 mg/m <sup>3</sup>  | D,        |
|                    | BE OEL | TGG 15 min | 100 ppm, 442 mg/m <sup>3</sup> | D,        |

- C De betrokken stof valt onder het toepassingsgebied van het koninklijk besluit van 2 december 1993 betreffende de bescherming van de werknemers tegen de risico's van blootstelling aan kankerverwekkende en mutagene agentia op het werk.
- D Opname van het agens via de huid, de slijmvliezen of de ogen vormt een belangrijk deel van de totale blootstelling. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.

**AT**

| Inhaltsstoffe      | Grundlage | Wert | Zu überwachende Parameter      | Bemerkung |
|--------------------|-----------|------|--------------------------------|-----------|
| Benzene            | AT TRK    | TMW  | 1 ppm, 3,2 mg/m <sup>3</sup>   | H,        |
|                    | AT TRK    | KZW  | 4 ppm, 12,8 mg/m <sup>3</sup>  | H,        |
| Toluene            | AT OEL    | TMW  | 50 ppm, 190 mg/m <sup>3</sup>  | H,        |
|                    | AT OEL    | KZW  | 100 ppm, 380 mg/m <sup>3</sup> | H,        |
| Benzene, dimethyl- | AT OEL    | TMW  | 50 ppm, 221 mg/m <sup>3</sup>  | H,        |
|                    | AT OEL    | KZW  | 100 ppm, 442 mg/m <sup>3</sup> | H,        |
|                    | AT OEL    | TMW  | 50 ppm, 221 mg/m <sup>3</sup>  | H,        |
|                    | AT OEL    | KZW  | 100 ppm, 442 mg/m <sup>3</sup> | H,        |

H Besondere Gefahr der Hautresorption

**Biological exposure indices****SK**

| Názov látky | Č. CAS   | Kontrolné parametre                                 | Doba odberu vzorky                      | Aktualizácia |
|-------------|----------|-----------------------------------------------------|-----------------------------------------|--------------|
| Toluene     | 108-88-3 | toluén: 600 µg/l (Krv)                              | Koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |
|             |          | toluén: 6.517 µmol.l-1 (Krv)                        | Koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |
|             |          | kyselina hippurová: 2.401 mg/l (moč)                | Koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |
|             |          | kyselina hippurová: 13399 µmol.l-1 (moč)            | Koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |
|             |          | kyselina hippurová: 1600 mg/g kreatinínu (moč)      | Koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |
|             |          | kyselina hippurová: 1010 µmol/mmol kreatinínu (moč) | Koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |

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|--------------------|-----------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------|
|                    |           | o-krezol: 14.3 $\mu\text{mol.l}^{-1}$ (moč)                                          | Koniec<br>vystavenia alebo<br>pracovnej<br>zmeny pri<br>dlhodobom<br>vystavení: po<br>viacerých<br>pracovných<br>zmenách | 2011-11-23 |
|                    |           | o-krezol: 1.03 mg/g kreatinínu<br>(moč)                                              | Koniec<br>vystavenia alebo<br>pracovnej<br>zmeny pri<br>dlhodobom<br>vystavení: po<br>viacerých<br>pracovných<br>zmenách | 2011-11-23 |
|                    |           | o-krezol: 1.08 $\mu\text{mol/mmol}$<br>kreatinínu (moč)                              | Koniec<br>vystavenia alebo<br>pracovnej<br>zmeny pri<br>dlhodobom<br>vystavení: po<br>viacerých<br>pracovných<br>zmenách | 2011-11-23 |
|                    |           | o-krezol: 1,5 mg/l (moč)                                                             | Koniec<br>vystavenia alebo<br>pracovnej<br>zmeny pri<br>dlhodobom<br>vystavení: po<br>viacerých<br>pracovných<br>zmenách | 2011-11-23 |
| Benzene, dimethyl- | 1330-20-7 | xylén: 1,5 mg/l (Krv)                                                                | Koniec<br>vystavenia alebo<br>pracovnej zmeny                                                                            | 2011-11-23 |
|                    |           | suma kyselí 2,3,4-<br>metylhippurových: 2.000 mg/l<br>(moč)                          | Koniec<br>vystavenia alebo<br>pracovnej zmeny                                                                            | 2011-11-23 |
|                    |           | xylén: 14.6 $\mu\text{mol.l}^{-1}$ (Krv)                                             | Koniec<br>vystavenia alebo<br>pracovnej zmeny                                                                            | 2011-11-23 |
|                    |           | suma kyselí 2,3,4-<br>metylhippurových: 10355 $\mu\text{mol.l}^{-1}$<br>(moč)        | Koniec<br>vystavenia alebo<br>pracovnej zmeny                                                                            | 2011-11-23 |
|                    |           | suma kyselí 2,3,4-<br>metylhippurových: 1334 mg/g<br>kreatinínu (moč)                | Koniec<br>vystavenia alebo<br>pracovnej zmeny                                                                            | 2011-11-23 |
|                    |           | suma kyselí 2,3,4-<br>metylhippurových: 781<br>$\mu\text{mol/mmol}$ kreatinínu (moč) | Koniec<br>vystavenia alebo<br>pracovnej zmeny                                                                            | 2011-11-23 |

**SI**

| Ime snovi | Št. CAS  | Parametri nadzora                                  | Čas vzorčenja              | Sprememba  |
|-----------|----------|----------------------------------------------------|----------------------------|------------|
| Benzene   | 71-43-2  | fenol: 18 mmol/mol kreatinina<br>(Urin)            | Ob koncu<br>delovne izmene | 2001-12-11 |
|           |          | benzen: 4.99 mmol/l (Zadnji<br>izdihani zrak)      | 16 Ur po<br>končanjem delu | 2001-12-11 |
|           |          | fenol: 15 mg/g kreatinina (Urin)                   | Ob koncu<br>delovne izmene | 2001-12-11 |
|           |          | benzen: 0.12 ppm (Zadnji<br>izdihani zrak)         | 16 Ur po<br>končanjem delu | 2001-12-11 |
| Toluene   | 108-88-3 | toluen: 1 mg/l (Kri)                               | Ob koncu<br>delovne izmene | 2001-12-11 |
|           |          | hipurna kislina: 1.58 mol/mol<br>kreatinina (Urin) | Ob koncu<br>delovne izmene | 2001-12-11 |
|           |          | o-krezol: 1.05 mol/mol kreatinina<br>(Urin)        | Ob koncu<br>delovne izmene | 2001-12-11 |
|           |          | toluen: 10.85 $\mu\text{mol/l}$ (Kri)              | Ob koncu<br>delovne izmene | 2001-12-11 |

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|--------------------|-----------|-----------------------------------------------------|-------------------------|------------|
|                    |           | toluen: 0.83 µmol/l (Zadnji izdihani zrak)          | V času izpostavljenosti | 2001-12-11 |
|                    |           | hipurna kislina: 2.5 kreatinin (Urin)               | Ob koncu delovne izmene | 2001-12-11 |
|                    |           | o-krezol: 1 mg/g kreatinina (Urin)                  | Ob koncu delovne izmene | 2001-12-11 |
|                    |           | toluen: 20 ppm (Zadnji izdihani zrak)               | V času izpostavljenosti | 2001-12-11 |
| Benzene, dimethyl- | 1330-20-7 | ksilen: 1.5 mg/l (Kri)                              | Ob koncu delovne izmene | 2001-12-11 |
|                    |           | metilhipurna kislina: 0.88 mol/mol kreatinina (Kri) | Ob koncu delovne izmene | 2001-12-11 |
|                    |           | ksilen: 14.13 µmol/l (Kri)                          | Ob koncu delovne izmene | 2001-12-11 |
|                    |           | metilhipurna kislina: 1.5 kreatinin (Kri)           | Ob koncu delovne izmene | 2001-12-11 |

**RO**

| Numele substanței  | Nr. CAS   | Parametri de control                                 | Timp de prelevare a probei | Adus la zi |
|--------------------|-----------|------------------------------------------------------|----------------------------|------------|
| Benzene            | 71-43-2   | fenol total: 50 mg/l (Urină)                         | Sfârșit schimb             | 2006-10-13 |
|                    |           | acid S-fenil-mercapturic: 25 µg/g creatinină (Urină) | Sfârșit schimb             | 2006-10-13 |
| Toluene            | 108-88-3  | acid hipuric o-cresol: 3 mg/l (Urină)                | Sfârșit schimb             | 2002-11-25 |
|                    |           | acid hipuric o-cresol: 2 g/l (Urină)                 | Sfârșit schimb             | 2002-11-25 |
| Benzene, dimethyl- | 1330-20-7 | acid metilhipuric: 3 g/l (Urină)                     | Sfârșit schimb             | 2002-11-25 |

**LV**

| Vielas nosaukums | CAS Nr.  | Pārvaldības parametri                  | Parauga ņemšanas laiks | Precizējums |
|------------------|----------|----------------------------------------|------------------------|-------------|
| Benzene          | 71-43-2  | fenolu: 25 µg/g kreatinīna (Urīns)     | maiņas beigās nosaka   | 2007-05-18  |
| Toluene          | 108-88-3 | toluolu: 0,05 mg/l (Asinis)            | maiņas beigās nosaka   | 2007-05-18  |
|                  |          | hipurskābi: 1.6 g/g kreatinīns (Urīns) | maiņas beigās nosaka   | 2007-05-18  |

**IT**

| Denominazione della sostanza | N. CAS | Parametri di controllo | Tempo di campionamento | Aggiornamento |
|------------------------------|--------|------------------------|------------------------|---------------|
|------------------------------|--------|------------------------|------------------------|---------------|

**HU**

| Az anyag megnevezése | CAS szám  | Ellenőrzési paraméterek                                                          | Mintavétel időpontja | Aktualizálás |
|----------------------|-----------|----------------------------------------------------------------------------------|----------------------|--------------|
| Benzene              | 71-43-2   | t,t-mukonsav: 1.2 mikromol/mmol kreatinin (kerekített értékek) (húgyhólyag)      | műszak után          | 2002-11-28   |
|                      |           | t,t-mukonsav: 1.5 mg/g kreatinin (húgyhólyag)                                    | műszak után          | 2002-11-28   |
| Toluene              | 108-88-3  | o-krezol: 1 mg/g kreatinin (húgyhólyag)                                          | műszak után          | 2002-11-28   |
|                      |           | o-krezol: 1.05 mikromol/mmol kreatinin (kerekített értékek) (húgyhólyag)         | műszak után          | 2002-11-28   |
| Benzene, dimethyl-   | 1330-20-7 | metil-hippursavak: 1500 mg/g kreatinin (húgyhólyag)                              | műszak után          | 2002-11-28   |
|                      |           | metil-hippursavak: 860 mikromol/mmol kreatinin (kerekített értékek) (húgyhólyag) | műszak után          | 2002-11-28   |

**HR**

| Naziv tvari | CAS-br. | Nadzorni parametri                           | Vrijeme uzorkovanja                      | Ažurirati  |
|-------------|---------|----------------------------------------------|------------------------------------------|------------|
| Benzene     | 71-43-2 | Benzen: 4.99 mmol/l (krajnje izdahnuti zrak) | oko 16 sati nakon završetka radne smjene | 2009-01-30 |

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|--------------------|-----------|------------------------------------------------------|------------------------------------------|------------|
|                    |           | Benzen: 0.12 ppm (krajnje izdahnuti zrak)            | oko 16 sati nakon završetka radne smjene | 2009-01-30 |
|                    |           | fenol: 54.09 mmol/mol kreatinina (Urin)              | na kraju radne smjene                    | 2009-01-30 |
|                    |           | fenol: 45 mg/g kreatinina (Urin)                     | na kraju radne smjene                    | 2009-01-30 |
| Toluene            | 108-88-3  | toluen: 10.85 µmol/l (Krv)                           | na kraju radne smjene                    | 2009-01-30 |
|                    |           | toluen: 1 mg/l (Krv)                                 | na kraju radne smjene                    | 2009-01-30 |
|                    |           | toluen: 0.83 µmol/l (krajnje izdahnuti zrak)         | za vrijeme izloženosti                   | 2009-01-30 |
|                    |           | toluen: 20 ppm (krajnje izdahnuti zrak)              | za vrijeme izloženosti                   | 2009-01-30 |
|                    |           | hipurna kiselina: 1.58 mol/mol kreatinina (Urin)     | na kraju radne smjene                    | 2009-01-30 |
|                    |           | hipurna kiselina: 2.5 g/g kreatinin (Urin)           | na kraju radne smjene                    | 2009-01-30 |
|                    |           | o-krezol: 1.05 mmol/mol kreatinina (Urin)            | na kraju radne smjene                    | 2009-01-30 |
|                    |           | o-krezol: 1 mg/g kreatinina (Urin)                   | na kraju radne smjene                    | 2009-01-30 |
| Benzene, dimethyl- | 1330-20-7 | ksilen: 1.5 mg/l (Krv)                               | na kraju radne smjene                    | 2009-01-30 |
|                    |           | ksilen: 14.13 µmol/l (Krv)                           | na kraju radne smjene                    | 2009-01-30 |
|                    |           | metilhipurna kiselina: 0.88 mol/mol kreatinina (Krv) | na kraju radne smjene                    | 2009-01-30 |
|                    |           | metilhipurna kiselina: 1.5 g/g kreatinin (Krv)       | na kraju radne smjene                    | 2009-01-30 |

**GB**

| Substance name     | CAS-No.   | Control parameters                                    | Sampling time | Update     |
|--------------------|-----------|-------------------------------------------------------|---------------|------------|
| Benzene, dimethyl- | 1330-20-7 | methyl hippuric acid: 650 mmol/mol creatinine (Urine) | After shift   | 2011-12-18 |

**FI**

| Aineen nimi        | CAS-Nro.  | Valvontaa koskevat muuttujat            | Näytteenottoaika         | Päivämäärä |
|--------------------|-----------|-----------------------------------------|--------------------------|------------|
| Toluene            | 108-88-3  | tolueenipitoisuus: 500 nmol/l (Veri)    | Työpäivän jälkeinen aamu | 2009-07-01 |
| Benzene, dimethyl- | 1330-20-7 | metyylihippuurihappo: 5 mmol/l (Virtsa) | Työvuoron päätyttyä      | 2014-05-06 |

**ES**

| Nombre de la sustancia | No. CAS   | Parámetros de control                                    | Hora de muestreo                                    | Puesto al día |
|------------------------|-----------|----------------------------------------------------------|-----------------------------------------------------|---------------|
| Benzene                | 71-43-2   | ácido t,t-mucónico: 2 mg/l (Orina)                       | Final de la jornada laboral                         | 2011-03-03    |
|                        |           | ácido S-fenilmercaptúrico: 0.045 mg/g creatinina (Orina) | Final de la jornada laboral                         | 2011-03-03    |
|                        |           | benceno total: 5 µg/l (Sangre)                           | Final de la jornada laboral                         | 2011-03-03    |
| Toluene                | 108-88-3  | o-cresol: 0,5 mg/l (Orina)                               | Final de la jornada laboral                         | 2011-03-03    |
|                        |           | tolueno: 0,05 mg/l (Sangre)                              | principio de la última jornada de la semana laboral | 2011-03-03    |
|                        |           | ácido hipúrico: 1.6 g/g creatinina (Orina)               | Final de la jornada laboral                         | 2011-03-03    |
| Benzene, dimethyl-     | 1330-20-7 | ácidos metilhipúricos: 1.5 g/g creatinina (Orina)        | final de la jornada laboral                         | 2011-03-03    |
|                        |           | ácidos metilhipúricos: 1 g/g creatinina (Orina)          | Final de la jornada laboral                         | 2014-01-01    |

**DE**

| Stoffname | CAS-Nr.  | Zu überwachende Parameter | Probennahmezeit punkt             | Stand      |
|-----------|----------|---------------------------|-----------------------------------|------------|
| Toluene   | 108-88-3 | Toluol: 600 µg/l (Blut)   | Expositionsende, bzw. Schichtende | 2013-04-04 |

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|--------------------|-----------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------|
|                    |           | o-Kresol: 1,5 mg/l (Urin)                               | Expositionsende, bzw. Schichtende bei Langzeitexposition: nach mehreren vorangegangenen Schichten | 2013-04-04 |
| Benzene, dimethyl- | 1330-20-7 | Xylol: 1,5 mg/l (Blut)                                  | Expositionsende, bzw. Schichtende                                                                 | 2013-09-19 |
|                    |           | Methylhippur-(Tolur-)säure (alle Isomere): 2 g/l (Urin) | Expositionsende, bzw. Schichtende                                                                 | 2013-09-19 |

**CZ**

| Název látky        | Č. CAS    | Kontrolní parametry                                             | Doba odběru vzorku | Aktualizace |
|--------------------|-----------|-----------------------------------------------------------------|--------------------|-------------|
| Benzene            | 71-43-2   | S- Fenylmerkapturová kyselina: 0.05 mg/g kreatininu (moč)       | Konec směny        | 2013-04-22  |
|                    |           | S- Fenylmerkapturová kyselina: 0.024 μmol/mmol kreatininu (moč) | Konec směny        | 2013-04-22  |
|                    |           | t,t-mukonová kyselina: 1.5 mg/g kreatininu (moč)                | Konec směny        | 2013-04-22  |
|                    |           | t,t-mukonová kyselina: 1.2 μmol/mmol kreatininu (moč)           | Konec směny        | 2013-04-22  |
| Toluene            | 108-88-3  | Hippurová kyselina: 1600 mg/g kreatininu (moč)                  | Konec směny        | 2013-04-22  |
|                    |           | Hippurová kyselina: 1000 μmol/mmol kreatininu (moč)             | Konec směny        | 2013-04-22  |
|                    |           | o-Kresol: 1.5 mg/g kreatininu (moč)                             | Konec směny        | 2013-04-22  |
|                    |           | o-Kresol: 1.6 μmol/mmol kreatininu (moč)                        | Konec směny        | 2013-04-22  |
| Benzene, dimethyl- | 1330-20-7 | Methylhippurové kyseliny: 1400 mg/g kreatininu (moč)            | Konec směny        | 2003-12-15  |
|                    |           | Methylhippurové kyseliny: 820 μmol/mmol kreatininu (moč)        | Konec směny        | 2003-12-15  |

**CH**

| Stoffname | CAS-Nr.  | Zu überwachende Parameter                                | Probennahmezeitpunkt                                                                              | Stand      |
|-----------|----------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------|
| Benzene   | 71-43-2  | S-Phenylmerkaptursäure: 25 μg/g Kreatinin (Urin)         | Expositionsende, bzw. Schichtende                                                                 | 2009-01-01 |
|           |          | S-Phenylmerkaptursäure: 0.011 μmol/mmol Kreatinin (Urin) | Expositionsende, bzw. Schichtende                                                                 | 2009-01-01 |
|           |          | t,t-Mukonsäure: 500 μg/g Kreatinin (Urin)                | Expositionsende, bzw. Schichtende                                                                 | 2009-01-01 |
|           |          | t,t-Mukonsäure: 0.398 μmol/mmol Kreatinin (Urin)         | Expositionsende, bzw. Schichtende                                                                 | 2009-01-01 |
| Toluene   | 108-88-3 | o-Kresol: 0,5 mg/l (Urin)                                | Expositionsende, bzw. Schichtende bei Langzeitexposition: nach mehreren vorangegangenen Schichten | 2011-01-01 |
|           |          | Hippursäure: 2 g/g Kreatinin (Urin)                      | Expositionsende, bzw. Schichtende bei Langzeitexposition: nach mehreren vorangegangenen Schichten | 2011-01-01 |
|           |          | Toluol: 6.48 μmol/l (Blut)                               | Expositionsende, bzw. Schichtende                                                                 | 2011-01-01 |
|           |          | Hippursäure: 1.26 μmol/mmol Kreatinin (Urin)             | Expositionsende, bzw. Schichtende bei Langzeitexposition: nach mehreren vorangegangenen Schichten | 2011-01-01 |



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|                    |           | o-Kresol: 4.62 µmol/l (Urin)                       | Expositionsende, bzw. Schichtende bei Langzeitexposition: nach mehreren vorangegangenen Schichten | 2011-01-01 |
|                    |           | Toluol: 600 µg/l (Blut)                            | Expositionsende, bzw. Schichtende                                                                 | 2011-01-01 |
| Benzene, dimethyl- | 1330-20-7 | Xylol: 1,5 mg/l (Blut)                             | Expositionsende, bzw. Schichtende                                                                 | 2009-01-01 |
|                    |           | Methyl-Hippursäure: 1.5 g/g Kreatinin (Urin)       | Expositionsende, bzw. Schichtende bei Langzeitexposition: nach mehreren vorangegangenen Schichten | 2009-01-01 |
|                    |           | Methyl-Hippursäure: 874 µmol/mmol Kreatinin (Urin) | Expositionsende, bzw. Schichtende bei Langzeitexposition: nach mehreren vorangegangenen Schichten | 2009-01-01 |
|                    |           | Xylol: 14.1 µmol/l (Blut)                          | Expositionsende, bzw. Schichtende                                                                 | 2009-01-01 |

**BG**

| Наименование на веществото | CAS номер | Параметри на контрол                                       | Време на взимане на пробата                          | Нова Информация |
|----------------------------|-----------|------------------------------------------------------------|------------------------------------------------------|-----------------|
| Benzene                    | 71-43-2   | Trans, trans -муконова киселина: 2 mg/l (Урина)            | В края на експозицията или в края на работната смяна | 2007-08-17      |
|                            |           | S-Фенилмеркаптурова киселина: 0.045 mg/g креатинин (Урина) | В края на експозицията или в края на работната смяна | 2007-08-17      |
| Toluene                    | 108-88-3  | хипурова киселина: 1.6 mmol/mmol креатинин (Урина)         | В края на експозицията или в края на работната смяна | 2007-08-17      |

**DMEL**  
Benzene

: End Use: Workers  
Routes of exposure: Skin contact  
Potential health effects: Chronic effects, Systemic effects  
Value: 234 mg/kg

End Use: Workers  
Routes of exposure: Inhalation  
Potential health effects: Chronic effects, Systemic effects  
Value: 3,25 mg/m3

End Use: Consumers  
Routes of exposure: Skin contact  
Potential health effects: Chronic effects, Systemic effects  
Value: 0,234 mg/kg

End Use: Consumers  
Routes of exposure: Inhalation  
Potential health effects: Chronic effects, Systemic effects  
Value: 0,00325 mg/m3  
Derived minimal effect level  
End Use: Consumer use

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Routes of exposure: Ingestion  
 Potential health effects: Chronic effects, Systemic effects  
 Value: 0,00014 mg/kg  
 Derived minimal effect level

**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

- Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
- Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.
- Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

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

- Physical state : Liquid  
 Color : Clear, colorless  
 Odor : Sweet, distinct

**Safety data**

- Flash point : -11 °C (12 °F)

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Method: Tag closed cup

|                             |                                                            |
|-----------------------------|------------------------------------------------------------|
| Lower explosion limit       | : No data available                                        |
| Upper explosion limit       | : No data available                                        |
| Oxidizing properties        | : no                                                       |
| Autoignition temperature    | : 580 °C (1.076 °F)                                        |
| Molecular formula           | : UVCB                                                     |
| Molecular weight            | : Not applicable                                           |
| pH                          | : Not applicable                                           |
| Melting point/range         | : -5,5 °C (22,1 °F)                                        |
| Boiling point/boiling range | : 80 °C (176 °F)                                           |
| Vapor pressure              | : 75,00 MMHG<br>at 20 °C (68 °F)                           |
| Relative density            | : 0,87<br>at 15,6 °C (60,1 °F)                             |
| Density                     | : 0,87 G/ML                                                |
| Water solubility            | : Insoluble in water; miscible with most organic solvents. |
| Viscosity, kinematic        | : < 1,138 cSt<br>at 37,8 °C (100,0 °F)                     |
| Relative vapor density      | : 2,77<br>(Air = 1.0)                                      |
| Evaporation rate            | : 2,8                                                      |
| Percent volatile            | : > 99 %                                                   |

**SECTION 10: Stability and reactivity**

|                    |                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity         | : No decomposition if stored and applied as directed.                                                                                                                                         |
| Chemical stability | : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.<br>No decomposition if stored and applied as directed. |

**Possibility of hazardous reactions**

|                     |                            |
|---------------------|----------------------------|
| Conditions to avoid | : Heat, flames and sparks. |
|---------------------|----------------------------|

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Materials to avoid : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous decomposition products : Carbon Dioxide  
Carbon oxides

Other data : No decomposition if stored and applied as directed.

**SECTION 11: Toxicological information****Benzene / Toluene Mixture - Kingwood**

**Acute oral toxicity** : LD50 Oral: 4.052 mg/kg  
Species: Rat  
Method: Acute toxicity estimate

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**Acute inhalation toxicity** : LC50: > 40 mg/l  
Exposure time: 4 h  
Species: Rat  
Test atmosphere: vapor  
Method: Acute toxicity estimate

**Acute dermal toxicity**

Benzene : LD50: > 8.260 mg/kg  
Species: Rabbit

Toluene : LD50: 12.400 mg/kg  
Species: Rabbit  
Sex: Not Specified

Benzene, dimethyl- : LD50: > 2.000 mg/kg  
Species: Rabbit  
Information given is based on data obtained from similar substances.

**Benzene / Toluene Mixture - Kingwood**

**Skin irritation** : Information refers to the main ingredient. Moderate skin irritation.  
May cause skin irritation in susceptible persons.

**Benzene / Toluene Mixture - Kingwood**

**Eye irritation** : May irritate eyes. Vapors may cause irritation to the eyes, respiratory system and the skin.

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**Sensitization** : No data available.

**Repeated dose toxicity**

Naphtha (petroleum), light catalytic reformed : Species: Rat  
Application Route: Inhalation  
Dose: 0, 2.00, 5.85, 20.3 mg/l  
Exposure time: 21 day  
Number of exposures: 6 h/d, 5 d/wk  
NOEL: 20.3 mg/l

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**Benzene**

Species: Rabbit  
Application Route: Dermal  
Dose: 0, 200, 1000, 2000 mg/l  
Exposure time: 28 day  
Number of exposures: 3 times/wk  
Lowest observable effect level: 1000 mg/l

Species: Rat, female  
Sex: female  
Application Route: oral gavage  
Dose: 0, 25, 50, 100 mg/kg  
Exposure time: 103 wk  
Number of exposures: 5 d/wk  
NOEL: < 25 mg/kg  
Lowest observable effect level: 25 mg/kg

Species: Rat, male  
Sex: male  
Application Route: oral gavage  
Dose: 0, 50, 100, 200 mg/kg  
Exposure time: 103 wk  
Number of exposures: 5 d/wk  
NOEL: < 50 mg/kg  
Lowest observable effect level: 50 mg/kg

Species: Mouse  
Application Route: oral gavage  
Dose: 0, 25, 50, 100 mg/kg  
Exposure time: 103 wk  
NOEL: < 25 mg/kg

**Toluene**

Species: Rat  
Application Route: Inhalation  
Dose: 0, 100, 625, 1250, 3000 ppm  
Exposure time: 15 wk  
Number of exposures: 6.5 h/d, 5 d/wk  
NOEL: 625 ppm

Species: Mouse  
Application Route: Inhalation  
Dose: 0, 100, 625, 1250, 3000 ppm  
Exposure time: 14 wk  
Number of exposures: 6.5 h/d, 5 d/wk  
NOEL: 100 ppm

**Benzene, dimethyl-**

Species: Rat  
Application Route: oral gavage  
Dose: 0, 62.5, 125, 250, 500, 1000 mg/kg  
Exposure time: 13 wk  
Number of exposures: daily, 5 d/wk  
NOEL: 1.000 mg/kg

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Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 180, 460, 810 ppm  
 Exposure time: 13 wk  
 Number of exposures: 6 h/d, 5 d/wk  
 NOEL: > 810 ppm

Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 450, 900, 1800 ppm  
 Exposure time: 13 wk  
 Number of exposures: 6 h/d, 6 d/wk  
 Lowest observable effect level: 900 ppm

**Carcinogenicity**

Benzene

: Species: Rat  
 Sex: female  
 Dose: 0, 25, 50, 250 mg/kg  
 Exposure time: 103 wks  
 Number of exposures: daily, 5 days/week  
 Test substance: yes  
 Remarks: zymbal gland carcinomas, squamous cell papillomas

Species: Rat  
 Sex: male  
 Dose: 0, 50, 100, 200 mg/kg  
 Exposure time: 103 wks  
 Number of exposures: daily, 5 days/week  
 Test substance: yes  
 Remarks: zymbal gland carcinomas, squamous cell papillomas

Species: Mouse  
 Sex: male and female  
 Dose: 25, 50, 100 mg/kg  
 Exposure time: 103 wks  
 Number of exposures: daily, 5 days/week  
 Test substance: yes  
 Remarks: Clear evidence of multiple organ carcinogenicity.

Toluene

Species: Rat  
 Dose: 0, 600, 1200 ppm  
 Exposure time: 2 yrs  
 Number of exposures: 6.5 h/d, 5 d/wk  
 Remarks: No evidence of carcinogenicity

Species: Mouse  
 Dose: 0, 600, 1200 ppm  
 Exposure time: 2 yrs  
 Number of exposures: 6.5 h/d, 5 d/wk  
 Remarks: No evidence of carcinogenicity

Benzene, dimethyl-

Species: Rat  
 Dose: 0, 250, 500 mg/kg  
 Exposure time: 103 wks  
 Number of exposures: 5 d/wk  
 Remarks: No evidence of carcinogenicity

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Species: Mouse  
 Dose: 0, 500, 1000 mg/kg  
 Exposure time: 103 wks  
 Number of exposures: 5 d/wk  
 Remarks: No evidence of carcinogenicity

**Reproductive toxicity**

Toluene : Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 100, 500, 2000 ppm  
 Test period: 95 d  
 NOAEL Parent: 2000 ppm

**Developmental Toxicity**

Toluene : Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 100, 500, 2000 ppm  
 Test period: 95 d  
 NOAEL Teratogenicity: 400-750 ppm

Benzene, dimethyl- Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 805, 1610 ppm  
 Number of exposures: 6 h/d  
 Test period: GD 7-16  
 NOAEL Maternal: 1610 ppm

Species: Mouse  
 Application Route: oral gavage  
 Dose: 0, 780, 1960, 2619 mg/kg  
 Number of exposures: 3 times/d  
 Test period: GD 6-15  
 NOAEL Teratogenicity: 780 mg/kg  
 NOAEL Maternal: 780 mg/kg

**Benzene / Toluene Mixture - Kingwood**

**Aspiration toxicity** : May be fatal if swallowed and enters airways.  
 Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

**CMR effects**

Naphtha (petroleum), light catalytic reformed : Carcinogenicity: Possible human carcinogen  
 Mutagenicity: In vivo tests showed mutagenic effects

Benzene Carcinogenicity: Human carcinogen.  
 Mutagenicity: In vivo tests showed mutagenic effects  
 Teratogenicity: Did not show teratogenic effects in animal experiments.  
 Reproductive toxicity: Animal testing did not show any effects on fertility.

Toluene Carcinogenicity: Not classifiable as a human carcinogen.  
 Mutagenicity: Animal testing did not show any mutagenic

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effects.  
 Teratogenicity: Some evidence of adverse effects on development, based on animal experiments.  
 Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Benzene, dimethyl-  
 Carcinogenicity: Not classifiable as a human carcinogen.  
 Mutagenicity: Did not show mutagenic effects in animal experiments.  
 Teratogenicity: Damage to fetus not classifiable

**Benzene / Toluene Mixture - Kingwood**

**Further information** : Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

**SECTION 12: Ecological information****Toxicity to fish**

Benzene : LC50: 5,3 mg/l  
 Exposure time: 96 h  
 Species: Oncorhynchus mykiss (rainbow trout)  
 flow-through test Test substance: yes  
 Method: OECD Test Guideline 203

Toluene LC50: 18 - 36 mg/l  
 Exposure time: 96 h  
 Species: Pimephales promelas (fathead minnow)

Benzene, dimethyl- LC50: 8,2 mg/l  
 Exposure time: 96 h  
 Species: Salmo gairdneri (Rainbow trout)

**Toxicity to daphnia and other aquatic invertebrates**

Benzene : EC50: 10 mg/l  
 Exposure time: 48 h  
 Species: Daphnia magna (Water flea)  
 static test Test substance: yes  
 Method: OECD Test Guideline 202

Toluene EC50: 3,78 mg/l  
 Exposure time: 48 h  
 Species: Daphnia magna (Water flea)

**Toxicity to algae**

Benzene : ErC50: 100 mg/l  
 Exposure time: 72 h  
 Species: Pseudokirchneriella subcapitata (green algae)  
 Test substance: yes  
 Method: OECD Test Guideline 201



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Toluene EC50: 134 mg/l  
 Exposure time: 72 h  
 Species: Chlamydomonas angulosa (Green algae)

Elimination information (persistence and degradability)

Bioaccumulation

Benzene, dimethyl- : This material is not expected to bioaccumulate.

Biodegradability : This material is volatile and is expected to partition to air.

**Ecotoxicology Assessment**

Acute aquatic toxicity : Toxic to aquatic life.

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Results of PBT assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Toxic to aquatic life., Harmful to aquatic life with long lasting effects.

**SECTION 13: Disposal considerations**

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

**SECTION 14: Transport information**

**The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).**

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

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**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

UN1993, FLAMMABLE LIQUIDS, N.O.S., (TOLUENE, BENZENE), 3, II, RQ (TOLUENE, BENZENE)

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

UN1993, FLAMMABLE LIQUID, N.O.S., (TOLUENE, BENZENE), 3, II, (-11 °C)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN1993, FLAMMABLE LIQUID, N.O.S., (TOLUENE, BENZENE), 3, II

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

UN1993, FLAMMABLE LIQUID, N.O.S., (TOLUENE, BENZENE), 3, II, (D/E)

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**

UN1993, FLAMMABLE LIQUID, N.O.S., (TOLUENE, BENZENE), 3, II

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**

UN1993, FLAMMABLE LIQUID, N.O.S., (TOLUENE, BENZENE), 3, II

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

**SECTION 15: Regulatory information****National legislation****Major Accident Hazard Legislation**

: 96/82/EC Update: 2003

Toxic

2

Quantity 1: 50 t

Quantity 2: 200 t

: 96/82/EC Update: 2003

Dangerous for the environment

9b

Quantity 1: 200 t

Quantity 2: 500 t

: 96/82/EC Update: 2003

Highly flammable

7b

Quantity 1: 5.000 t

Quantity 2: 50.000 t

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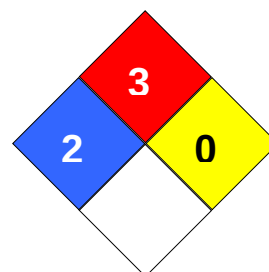
**Water contaminating class** : WGK 3 highly water endangering  
(Germany)

**Notification status**

Europe REACH : Not in compliance with the inventory  
 United States of America (USA) : On the inventory, or in compliance with the inventory  
 TSCA :  
 Canada DSL : On the inventory, or in compliance with the inventory  
 Australia AICS : On the inventory, or in compliance with the inventory  
 New Zealand NZIoC : On the inventory, or in compliance with the inventory  
 Japan ENCS : On the inventory, or in compliance with the inventory  
 Korea KECI : On the inventory, or in compliance with the inventory  
 Philippines PICCS : Not in compliance with the inventory  
 China IECSC : On the inventory, or in compliance with the inventory

**SECTION 16: Other information**

**NFPA Classification** : Health Hazard: 2  
 Fire Hazard: 3  
 Reactivity Hazard: 0

**Further information**

Legacy SDS Number : CPC00230

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

|       |                                                         |       |                                                     |
|-------|---------------------------------------------------------|-------|-----------------------------------------------------|
| ACGIH | American Conference of Government Industrial Hygienists | LD50  | Lethal Dose 50%                                     |
| AICS  | Australia, Inventory of Chemical Substances             | LOAEL | Lowest Observed Adverse Effect Level                |
| DSL   | Canada, Domestic Substances List                        | NFPA  | National Fire Protection Agency                     |
| NDSL  | Canada, Non-Domestic Substances List                    | NIOSH | National Institute for Occupational Safety & Health |
| CNS   | Central Nervous System                                  | NTP   | National Toxicology Program                         |
| CAS   | Chemical Abstract Service                               | NZIoC | New Zealand Inventory of Chemicals                  |
| EC50  | Effective Concentration                                 | NOAEL | No Observable Adverse Effect Level                  |
| EC50  | Effective Concentration 50%                             | NOEC  | No Observed Effect Concentration                    |
| EGEST | EOSCA Generic Exposure                                  | OSHA  | Occupational Safety & Health                        |

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|        | Scenario Tool                                            |       | Administration                                                                       |
|--------|----------------------------------------------------------|-------|--------------------------------------------------------------------------------------|
| EOSCA  | European Oilfield Specialty Chemicals Association        | PEL   | Permissible Exposure Limit                                                           |
| EINECS | European Inventory of Existing Chemical Substances       | PICCS | Philippines Inventory of Commercial Chemical Substances                              |
| MAK    | Germany Maximum Concentration Values                     | PRNT  | Presumed Not Toxic                                                                   |
| GHS    | Globally Harmonized System                               | RCRA  | Resource Conservation Recovery Act                                                   |
| >=     | Greater Than or Equal To                                 | STEL  | Short-term Exposure Limit                                                            |
| IC50   | Inhibition Concentration 50%                             | SARA  | Superfund Amendments and Reauthorization Act.                                        |
| IARC   | International Agency for Research on Cancer              | TLV   | Threshold Limit Value                                                                |
| IECSC  | Inventory of Existing Chemical Substances in China       | TWA   | Time Weighted Average                                                                |
| ENCS   | Japan, Inventory of Existing and New Chemical Substances | TSCA  | Toxic Substance Control Act                                                          |
| KECI   | Korea, Existing Chemical Inventory                       | UVCB  | Unknown or Variable Composition, Complex Reaction Products, and Biological Materials |
| <=     | Less Than or Equal To                                    | WHMIS | Workplace Hazardous Materials Information System                                     |
| LC50   | Lethal Concentration 50%                                 |       |                                                                                      |

**Full text of H-Statements referred to under sections 2 and 3.**

|       |                                                                    |
|-------|--------------------------------------------------------------------|
| H225  | Highly flammable liquid and vapor.                                 |
| H226  | Flammable liquid and vapor.                                        |
| H304  | May be fatal if swallowed and enters airways.                      |
| H312  | Harmful in contact with skin.                                      |
| H315  | Causes skin irritation.                                            |
| H319  | Causes serious eye irritation.                                     |
| H332  | Harmful if inhaled.                                                |
| H335  | May cause respiratory irritation.                                  |
| H336  | May cause drowsiness or dizziness.                                 |
| H340  | May cause genetic defects.                                         |
| H350  | May cause cancer.                                                  |
| H361d | Suspected of damaging the unborn child.                            |
| H372  | Causes damage to organs through prolonged or repeated exposure.    |
| H373  | May cause damage to organs through prolonged or repeated exposure. |
| H412  | Harmful to aquatic life with long lasting effects.                 |