

**n-Hexane 95%**

Version 2.6

Revision Date 2016-05-16

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

Product Name : n-Hexane 95%  
Material : 1030462, 1089438, 1089437, 1089439, 1089436, 1096670,  
1092233, 1024843, 1024844, 1104994

**EC-No.Registration number**

| Chemical name | CAS-No.<br>EC-No.<br>Index No.        | Legal Entity<br>Registration number |
|---------------|---------------------------------------|-------------------------------------|
| n-hexane      | 110-54-3<br>203-777-6<br>601-037-00-0 | 01-2119480412-44-xxxx               |

Relevant Identified Uses : Manufacture  
Supported

**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

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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:<br>Highly flammable liquid and vapor.                                    |
| Skin irritation, Category 2                                                                                                  | H315:<br>Causes skin irritation.                                               |
| Reproductive toxicity, Category 2                                                                                            | H361:<br>Suspected of damaging fertility or the unborn child.                  |
| Specific target organ systemic toxicity -<br>single exposure, Category 3 , Respiratory<br>system<br>, Central nervous system | H335:<br>May cause respiratory irritation.                                     |
| Specific target organ systemic toxicity -<br>repeated exposure, Category 2                                                   | H336:<br>May cause drowsiness or dizziness.                                    |
| Aspiration hazard, Category 1                                                                                                | H373:<br>May cause damage to organs through prolonged or<br>repeated exposure. |
| Chronic aquatic toxicity, Category 2                                                                                         | H304:<br>May be fatal if swallowed and enters airways.                         |
|                                                                                                                              | H411:<br>Toxic 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.                                            |
|                   |   | H335 | May cause respiratory irritation.                                  |
|                   |   | H336 | May cause drowsiness or dizziness.                                 |
|                   |   | H361 | Suspected of damaging fertility or the unborn child.               |
|                   |   | H373 | May cause damage to organs through prolonged or repeated exposure. |
|                   |   | H411 | Toxic to aquatic life with long lasting effects.                   |

|                          |   |                    |                                                                  |
|--------------------------|---|--------------------|------------------------------------------------------------------|
| Precautionary Statements | : | <b>Prevention:</b> |                                                                  |
|                          |   | P210               | Keep away from heat/sparks/open flames/hot surfaces. No smoking. |
|                          |   | P260               | Do not breathe dust/fume/gas/mist/vapor/spray.                   |

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P281 Use personal protective equipment as required.

**Response:**

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P331 Do NOT induce vomiting.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Hazardous ingredients which must be listed on the label:

- 110-54-3 n-hexane

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

Molecular formula : C<sub>6</sub>H<sub>14</sub>

**Mixtures****Hazardous ingredients**

| Chemical name | CAS-No.<br>EC-No.<br>Index No.        | Classification<br>(REGULATION (EC) No<br>1272/2008)                                                                                                | Concentration<br>[wt%] |
|---------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| n-hexane      | 110-54-3<br>203-777-6<br>601-037-00-0 | Flam. Liq. 2; H225<br>Skin Irrit. 2; H315<br>Repr. 2; H361fd<br>STOT SE 3; H336<br>STOT RE 2; H373<br>Asp. Tox. 1; H304<br>Aquatic Chronic 2; H411 | 95                     |

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 : Flush eyes with water as a precaution. 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.

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**SECTION 5: Firefighting measures**

- Flash point : -23 °C (-9 °F)  
Method: Tag closed cup
- Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO2). 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.
- 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.

**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

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in the application area. Provide sufficient air exchange and/or exhaust in work rooms. 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". 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. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

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 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 |
|----------|----------|-----------------|-------------------------------|----------|
| n-hexane | SK OEL   | NPEL priemerný  | 20 ppm, 72 mg/m <sup>3</sup>  |          |
|          | SK OEL   | NPEL krátkodobý | 40 ppm, 140 mg/m <sup>3</sup> |          |

**SI**

| Sestavine | Osnova | Vrednost | Parametri nadzora            | Pripomba      |
|-----------|--------|----------|------------------------------|---------------|
| n-hexane  | SI OEL | MV       | 20 ppm, 72 mg/m <sup>3</sup> | EU, BAT, RF3. |

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.

EU Mejna vrednost, določena z Direktivo Komisije z dne 29. maja 1991 o določitvi indikativne mejne vrednosti v skladu z Direktivo Sveta 80/1107/EGS o varovanju delavcev pred tveganjem zaradi izpostavljenosti kemičnim, fizikalnim in biološkim dejavnikom pri delu (UL L, št. 177, z dne 5. julija 1991, str. 22).

RF3 Teratogeno RF3 - lahko škoduje plodnosti. Številke 1, 2 in 3 pomenijo skupino rakotvornosti ali mutagenosti po EU razvrstitvi

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rakotvornih ali mutagenih snovi. Rakotvorne ali mutagene snovi se v EU razvršča v posamezne skupine, glede na izpolnjevanje kriterijev, določenih v EU direktivi 67/548/EEC.

**SE**

| Beståndsdelar | Grundval | Värde | Kontrollparametrar | Anmärkning |
|---------------|----------|-------|--------------------|------------|
| n-hexane      | SE AFS   | NGV   | 25 ppm, 90 mg/m3   |            |
|               | SE AFS   | KTV   | 50 ppm, 180 mg/m3  |            |

**RO**

| Componente | Bază   | Valoare | Parametri de control | Notă |
|------------|--------|---------|----------------------|------|
| n-hexane   | RO OEL | TWA     | 20 ppm, 170 mg/m3    |      |

**PT**

| Componentes | Bases          | Valor      | Parâmetros de controlo | Nota                        |
|-------------|----------------|------------|------------------------|-----------------------------|
| n-hexane    | PT OEL         | VLE-MP     | 50 ppm,                | (1), P, IBE, afeção do SNC, |
|             | PT DL 305/2007 | oito horas | 20 ppm, 72 mg/m3       |                             |

- (1) Abrangido por legislação nacional específica ou por legislação comunitária não transposta  
afeção do SNC afeção do sistema nervoso central  
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.  
P Perigo de absorção cutânea

**PL**

| Składniki | Podstawa | Wartość | Parametry dotyczące kontroli | Uwaga |
|-----------|----------|---------|------------------------------|-------|
| n-hexane  | PL NDS   | NDS     | 72 mg/m3                     |       |

**NO**

| Komponenter | Grunnlag            | Verdi | Kontrollparametere | Nota |
|-------------|---------------------|-------|--------------------|------|
| n-hexane    | FOR-2011-12-06-1358 | TWA   | 20 ppm, 72 mg/m3   | R,   |

R Kjemikalier som skal betraktes som reproduksjonstoksiske

**NL**

| Bestanddelen | Basis | Waarde     | Controleparameters | Opmerking |
|--------------|-------|------------|--------------------|-----------|
| n-hexane     | NL WG | TGG-8 uur  | 72 mg/m3           |           |
|              | NL WG | TGG-15 min | 144 mg/m3          |           |

**MT**

| Ingredients | Basis  | Value | Control parameters | Note |
|-------------|--------|-------|--------------------|------|
| n-hexane    | MT OEL | TWA   | 20 ppm, 72 mg/m3   |      |

**LV**

| Sastāvdaļas | Bāze   | Vērtība  | Pārvaldības parametri | Piezīme |
|-------------|--------|----------|-----------------------|---------|
| n-hexane    | LV OEL | AER 8 st | 20 ppm, 72 mg/m3      |         |

**LU**

| Composants | Base   | Valeur | Paramètres de contrôle | Note |
|------------|--------|--------|------------------------|------|
| n-hexane   | LU OEL | TWA    | 20 ppm, 72 mg/m3       |      |

**LT**

| Komponentai | Pagrindas, bazė | Vertė | Kontrolės parametrai | Pastaba |
|-------------|-----------------|-------|----------------------|---------|
| n-hexane    | LT OEL          | IPRD  | 20 ppm, 72 mg/m3     |         |

**IT**

| Componenti | Base   | Valore | Parametri di controllo | Nota |
|------------|--------|--------|------------------------|------|
| n-hexane   | IT OEL | TWA    | 20 ppm, 72 mg/m3       |      |

**IE**

| Ingredients | Basis  | Value              | Control parameters | Note   |
|-------------|--------|--------------------|--------------------|--------|
| n-hexane    | IE OEL | OELV - 8 hrs (TWA) | 20 ppm, 72 mg/m3   | IOELV, |

IOELV Indicative Occupational Exposure Limit Value

**HU**

| Komponensek | Bázis  | Érték    | Ellenőrzési paraméterek | Megjegyzés |
|-------------|--------|----------|-------------------------|------------|
| n-hexane    | HU OEL | AK-érték | 72 mg/m3                | b, EU2, i, |
|             | HU OEL | CK-érték | 288 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 96/94/EK irányelvben közölt érték  
i Ingerlő anyag (izgatja a bőrt, nyálkahártyát, szemet vagy mindhámat)

**GR**

| Συστατικά | Βάση | Τιμή | Παράμετροι ελέγχου | Σημείωση |
|-----------|------|------|--------------------|----------|
|-----------|------|------|--------------------|----------|

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|          |        |     |                  |  |
|----------|--------|-----|------------------|--|
| n-hexane | GR OEL | TWA | 20 ppm, 72 mg/m3 |  |
|----------|--------|-----|------------------|--|

**GB**

| Ingredients | Basis   | Value | Control parameters | Note |
|-------------|---------|-------|--------------------|------|
| n-hexane    | GB EH40 | TWA   | 20 ppm, 72 mg/m3   | 2,   |

2 Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used

**FR**

| Composants | Base   | Valeur | Paramètres de contrôle | Note      |
|------------|--------|--------|------------------------|-----------|
| n-hexane   | FR VLE | VME    | 20 ppm, 72 mg/m3       | R2, noir, |

noir Valeurs limites réglementaires contraignantes

R2 Substances préoccupantes en raison d'effets toxiques pour la reproduction possibles

**FI**

| Aineosat | Peruste | Arvo         | Valvontaa koskevat muutujat | Huomautus |
|----------|---------|--------------|-----------------------------|-----------|
| n-hexane | FI OEL  | HTP-arvot 8h | 20 ppm, 72 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 ärsyntyntymistä tai syöpymistä.

**ES**

| Componentes | Base   | Valor  | Parámetros de control | Nota       |
|-------------|--------|--------|-----------------------|------------|
| n-hexane    | ES VLA | VLA-ED | 20 ppm, 72 mg/m3      | VLB®, VLI, |

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 |
|-------------------|--------|----------|----------------------|----------|
| n-hexane          | EE OEL | Piirnorm | 20 ppm, 72 mg/m3     |          |

**DK**

| Komponenter | Basis  | Værdi | Kontrolparametre | Note |
|-------------|--------|-------|------------------|------|
| n-hexane    | DK OEL | GV    | 20 ppm, 72 mg/m3 | E,   |

E At stoffet har en EF-grænseværdi

**DE**

| Inhaltsstoffe | Grundlage   | Wert | Zu überwachende Parameter | Bemerkung   |
|---------------|-------------|------|---------------------------|-------------|
| n-hexane      | DE TRGS 900 | AGW  | 50 ppm, 180 mg/m3         | DFG, EU, Y, |

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.)

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 |
|----------|--------|---------|---------------------|----------|
| n-hexane | CZ OEL | PEL     | 70 mg/m3            | I, D, P, |
|          | CZ OEL | NPK-P   | 200 mg/m3           | I, D, P, |

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 |
|-----------|--------|------|--------------------|----------|
| n-hexane  | CY OEL | TWA  | 20 ppm, 72 mg/m3   |          |

**CH**

| Inhaltsstoffe | Grundlage | Wert     | Zu überwachende Parameter | Bemerkung           |
|---------------|-----------|----------|---------------------------|---------------------|
| n-hexane      | CH SUVA   | MAK-Wert | 50 ppm, 180 mg/m3         | H, RF3, NIOSH, SSc, |
|               | CH SUVA   | KZGW     | 400 ppm, 1.440 mg/m3      | H, RF3, NIOSH, SSc, |

H Vergiftung durch Hautresorption möglich; Bei Stoffen, welche die Haut leicht zu durchdringen vermögen, kann durch die zusätzliche Hautresorption die innere Belastung wesentlich höher werden als bei alleiniger Aufnahme durch die Atemwege.

NIOSH National Institute for Occupational Safety and Health

RF3 Umfasst Stoffe, die wegen möglicher Beeinträchtigung der Fortpflanzungsfähigkeit (Fruchtbarkeit) des Menschen zur Besorgnis Anlass geben.

SSc Eine Schädigung der Leibesfrucht braucht bei Einhaltung des MAK-Wertes nicht befürchtet zu werden.

**BG**

| Съставки | Основа | Стойност | Параметри на контрол | Бележка |
|----------|--------|----------|----------------------|---------|
| n-hexane | BG OEL | TWA      | 20 ppm, 72 mg/m3     | -,      |

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- 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 |
|--------------|--------|----------|--------------------|-----------|
| n-hexane     | BE OEL | TGG 8 hr | 20 ppm, 72 mg/m3   |           |

**AT**

| Inhaltsstoffe | Grundlage | Wert | Zu überwachende Parameter | Bemerkung |
|---------------|-----------|------|---------------------------|-----------|
| n-hexane      | AT OEL    | TMW  | 20 ppm, 72 mg/m3          |           |
|               | AT OEL    | KZW  | 80 ppm, 288 mg/m3         |           |

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

| Názov látky | Č. CAS   | Kontrolné parametre                                                     | Doba odberu vzorky                      | Aktualizácia |
|-------------|----------|-------------------------------------------------------------------------|-----------------------------------------|--------------|
| n-hexane    | 110-54-3 | 2,5-hexándiön a 4,5-dihydroxy-2-hexanón: 5 mg/l (moč)                   | koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |
|             |          | 2,5-hexándiön a 4,5-dihydroxy-2-hexanón: 20 µmol.l-1 (moč)              | koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |
|             |          | 2,5-hexándiön a 4,5-dihydroxy-2-hexanón: 3 mg/g kreatinínu (moč)        | koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |
|             |          | 2,5-hexándiön a 4,5-dihydroxy-2-hexanón: 1.4 µmol/mmol kreatinínu (moč) | koniec vystavenia alebo pracovnej zmeny | 2011-11-23   |

**SI**

| Ime snovi | Št. CAS  | Parametri nadzora                               | Čas vzorčenja           | Sprememba  |
|-----------|----------|-------------------------------------------------|-------------------------|------------|
| n-hexane  | 110-54-3 | 2,5-heksandion: 5.25 mmol/mol kreatinina (Urin) | Ob koncu delovne izmene | 2001-12-11 |
|           |          | 2-heksanol: 0.22 mmol/mol kreatinina (Urin)     | Ob koncu delovne izmene | 2001-12-11 |
|           |          | n-heksan: 1.74 µmol/l (Kri)                     | V času izpostavljenosti | 2001-12-11 |
|           |          | n-heksan: 1.66 µmol/l (Zadnji izdihani zrak)    | V času izpostavljenosti | 2001-12-11 |
|           |          | 2,5-heksandion: 5.3 mg/g kreatinina (Urin)      | Ob koncu delovne izmene | 2001-12-11 |
|           |          | 2-heksanol: 0.2 mg/g kreatinina (Urin)          | Ob koncu delovne izmene | 2001-12-11 |
|           |          | n-heksan: 40 ppm (Zadnji izdihani zrak)         | V času izpostavljenosti | 2001-12-11 |
|           |          | n-heksan: 150 µg/l (Kri)                        | V času izpostavljenosti | 2001-12-11 |

**RO**

| Numele substanței | Nr. CAS  | Parametri de control                      | Timp de prelevare a probei | Adus la zi |
|-------------------|----------|-------------------------------------------|----------------------------|------------|
| n-hexane          | 110-54-3 | 2,5 hexandionă: 5 mg/g creatinină (Urină) | Sfârșit schimb             | 2002-11-25 |

**HU**

| Az anyag megnevezése | CAS szám | Ellenőrzési paraméterek                                                       | Mintavétel időpontja | Aktualizálás |
|----------------------|----------|-------------------------------------------------------------------------------|----------------------|--------------|
| n-hexane             | 110-54-3 | 2,5-hexán-dion: 3.5 mg/g kreatinin (húgyhólyag)                               | műszak után          | 2002-11-28   |
|                      |          | 2,5-hexán-dion: 3.5 mikromol/mmol kreatinin (kerekített értékek) (húgyhólyag) | műszak után          | 2002-11-28   |

**ES**

| Nombre de la sustancia | No. CAS | Parámetros de control | Hora de muestreo | Puesto al día |
|------------------------|---------|-----------------------|------------------|---------------|
|------------------------|---------|-----------------------|------------------|---------------|

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|          |          |                                      |                               |            |
|----------|----------|--------------------------------------|-------------------------------|------------|
| n-hexane | 110-54-3 | 2,5-hexanodiona: 0,4 mg/l<br>(Orina) | final de la<br>semana laboral | 2011-03-03 |
|----------|----------|--------------------------------------|-------------------------------|------------|

**DE**

| Stoffname | CAS-Nr.  | Zu überwachende Parameter                                     | Probennahmezeit<br>punkt             | Stand      |
|-----------|----------|---------------------------------------------------------------|--------------------------------------|------------|
| n-hexane  | 110-54-3 | 2,5-Hexandion plus 4,5-Dihydroxy-<br>2-hexanon: 5 mg/l (Urin) | Expositionsende,<br>bzw. Schichtende | 2013-09-19 |

**CH**

| Stoffname | CAS-Nr.  | Zu überwachende Parameter                                     | Probennahmezeit<br>punkt             | Stand      |
|-----------|----------|---------------------------------------------------------------|--------------------------------------|------------|
| n-hexane  | 110-54-3 | 2,5-Hexandion plus 4,5-Dihydroxy-<br>2-hexanon: 5 mg/l (Urin) | Expositionsende,<br>bzw. Schichtende | 2005-01-01 |

**DNEL** : End Use: Workers  
Routes of exposure: Inhalation  
Potential health effects: Chronic effects, Systemic effects  
Value: 75 mg/m<sup>3</sup>

**DNEL** : Routes of exposure: Skin contact  
Potential health effects: Chronic effects, Systemic effects  
Value: 11 mg/kg

**PNEC** : Fresh water  
Value: 0,086 mg/l

**PNEC** : Sea water  
Value: 0,086 mg/l

**PNEC** : Fresh water sediment  
Value: 1,0 mg/kg

**PNEC** : Sea sediment  
Value: 1,0 mg/kg

**PNEC** : Soil  
Value: 0,44 mg/kg

**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 NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: 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. 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

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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 according to the amount and concentration of the dangerous substance at the 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.

For additional details, see the Exposure Scenario in the Annex portion

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

- Form : Liquid
- Physical state : Liquid
- Color : Colorless
- Odor : Mild, Hydrocarbon

**Safety data**

- Flash point : -23 °C (-9 °F)  
Method: Tag closed cup
- Lower explosion limit : 1,1 %(V)
- Upper explosion limit : 7,7 %(V)
- Molecular formula : C<sub>6</sub>H<sub>14</sub>
- Molecular weight : 86,2 g/mol
- Boiling point/boiling range : 67 °C (153 °F)
- Density : 660 - 680 g/l  
at 15 °C (59 °F)

**SECTION 10: Stability and reactivity**

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Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Possibility of hazardous reactions**

Conditions to avoid : Heat, flames and sparks.

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

**SECTION 11: Toxicological information****Acute inhalation toxicity**

n-hexane : LC50: 73680 ppm  
Exposure time: 4 h  
Species: Rat  
Sex: male

**Acute dermal toxicity**

n-hexane : LD50: > 3.350 mg/kg  
Species: Rabbit  
Sex: male and female

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**Skin irritation** : May cause skin irritation in susceptible persons.

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

**Sensitization**

n-hexane : Did not cause sensitization on laboratory animals.  
  
Does not cause skin sensitization.

**Repeated dose toxicity**

n-hexane : Species: Rat, male  
Sex: male  
Application Route: Inhalation  
Dose: 3,000 ppm  
Exposure time: 16 wks  
Number of exposures: 12 h/d  
Lowest observable effect level: 3,000 ppm  
Target Organs: Peripheral nervous system

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Species: Mouse, female  
Sex: female  
Application Route: Inhalation  
Dose: 500, 1,000, 4,000, 10,000 ppm  
Exposure time: 13 wks  
Number of exposures: 6h or 22h (1,000 ppm)/ 5d/wk  
Lowest observable effect level: 500 ppm  
Target Organs: Nose

Species: Mouse, male  
Sex: male  
Application Route: Inhalation  
Dose: 500, 1,000, 4000, 10,000 ppm  
Exposure time: 13 wks  
Number of exposures: 6h or 22h (1,000 ppm)/d, 5d/wk  
NOEL: 500 ppm  
Lowest observable effect level: 1,000 ppm  
Target Organs: Nose

Species: Rat, male  
Sex: male  
Application Route: oral gavage  
Dose: 568, 1,135, 3,973 mg/kg bw/day  
Exposure time: 90 or 120 days  
Number of exposures: Daily or 5d/wk (120-d study)  
NOEL: 568 mg/kg bw/day  
Lowest observable effect level: 1135 mg/kg bw/day

**Carcinogenicity**

n-hexane

: Species: Rat  
Dose: 0.043, 900, 3,000, 9,016 ppm  
Exposure time: 2 yrs  
Number of exposures: 6 h/d, 5 d/wk  
Remarks: No evidence of carcinogenicity

Species: Mouse  
Dose: 0.039, 900, 3,000, 9,018 ppm  
Exposure time: 2 yrs  
Number of exposures: 6 h/d, 5 d/wk  
Remarks: No evidence of carcinogenicity

**Reproductive toxicity**

n-hexane

: Species: Rat  
Sex: male  
Application Route: Inhalation  
Dose: 5,000 ppm  
Number of exposures: 16 hr/d, 6 d/wk  
Test period: 6 wks  
permanent testicular damage characterized by loss of germ-cell line

**Developmental Toxicity**

n-hexane

: Species: Rat  
Application Route: Inhalation  
Dose: 200, 1,000, 5,000 ppm

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Number of exposures: 20 hr/d, daily  
Test period: GD 6-20  
NOAEL Teratogenicity: 200 ppm  
NOAEL Maternal: 200 ppm

Species: Mouse  
Application Route: Inhalation  
Dose: 200, 1,000, 5,000 ppm  
Number of exposures: 20 hr/d, daily  
Test period: GD 6-17  
NOAEL Maternal: 1,000 ppm

**Aspiration toxicity**

n-hexane : May be fatal if swallowed and enters airways.

**CMR effects**

n-hexane : Carcinogenicity: Not classifiable as a human carcinogen.  
Mutagenicity: Did not show mutagenic effects in animal experiments.  
Teratogenicity: Suspected of damaging the unborn child.  
Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

**n-Hexane 95%****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**

n-hexane : LL50: 12,51 mg/l  
Exposure time: 96 h  
Species: Oncorhynchus mykiss (rainbow trout)  
Method: QSAR modeled data

**Toxicity to daphnia and other aquatic invertebrates**

n-hexane : EL50: 21,85 mg/l  
Exposure time: 48 h  
Species: Daphnia magna (Water flea)  
Method: QSAR modeled data

**Toxicity to algae**

n-hexane : EL50: 9,29 mg/l  
Exposure time: 72 h  
Species: Pseudokirchneriella subcapitata (green algae)  
Method: QSAR modeled data

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**Bioaccumulation**

n-hexane : Bioconcentration factor (BCF): 501  
Does not significantly accumulate in organisms.

**Biodegradability**

n-hexane : This material is expected to be readily biodegradable.

**Ecotoxicology Assessment****Acute aquatic toxicity**

n-hexane : Toxic to aquatic life.

**Chronic aquatic toxicity**

n-hexane : Toxic to aquatic life with long lasting effects.

**Results of PBT assessment**

n-hexane : Non-classified vPvB substance, Non-classified PBT substance

**Additional ecological information**

: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Toxic 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.

For additional details, see the Exposure Scenario in the Annex portion

**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

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description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

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

UN1208, HEXANES, 3, II, MARINE POLLUTANT, (HEXANE), RQ (HEXANE)

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

UN1208, HEXANES, 3, II, (-23 °C), MARINE POLLUTANT, (HEXANE)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN1208, HEXANES, 3, II

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

UN1208, HEXANES, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (HEXANE)

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

UN1208, HEXANES, 3, II, ENVIRONMENTALLY HAZARDOUS, (HEXANE)

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

UN1208, HEXANES, 3, II, ENVIRONMENTALLY HAZARDOUS, (HEXANE)

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

**SECTION 15: Regulatory information****National legislation****Chemical Safety Assessment**

**Ingredients** : n-hexane A Chemical Safety Assessment 203-777-6  
has been carried out for this  
substance.

**Major Accident Hazard Legislation** : 96/82/EC Update: 2003  
Highly flammable  
7b

Quantity 1: 5.000 t  
Quantity 2: 50.000 t

: 96/82/EC Update: 2003  
Dangerous for the environment  
9b

Quantity 1: 200 t  
Quantity 2: 500 t

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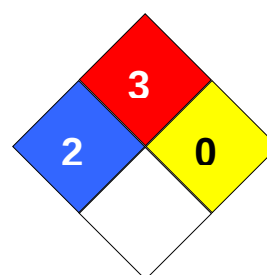
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**Notification status**

|                               |   |                                                       |
|-------------------------------|---|-------------------------------------------------------|
| Europe REACH                  | : | On the inventory, or in compliance with the inventory |
| United States of America TSCA | : | On the inventory, or in compliance with the inventory |
| 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             | : | On the inventory, or 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**

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 Scenario Tool                    | OSHA  | Occupational Safety & Health 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 |

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|       |                                                          |       |                                                                                      |
|-------|----------------------------------------------------------|-------|--------------------------------------------------------------------------------------|
| 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.                                       |
| H304   | May be fatal if swallowed and enters airways.                            |
| H315   | Causes skin irritation.                                                  |
| H335   | May cause respiratory irritation.                                        |
| H336   | May cause drowsiness or dizziness.                                       |
| H361   | Suspected of damaging fertility or the unborn child.                     |
| H361fd | Suspected of damaging fertility. Suspected of damaging the unborn child. |
| H373   | May cause damage to organs through prolonged or repeated exposure.       |
| H411   | Toxic to aquatic life with long lasting effects.                         |

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**Annex****1. Short title of Exposure Scenario: Manufacture**

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main User Groups               | : <b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Sector of use                  | : <b>SU3, SU8, SU9:</b> Industrial Manufacturing (all), Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Process category               | : <b>PROC1:</b> Use in closed process, no likelihood of exposure<br><b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure<br><b>PROC3:</b> Use in closed batch process (synthesis or formulation)<br><b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises<br><b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br><b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities<br><b>PROC15:</b> Use as laboratory reagent |
| Environmental release category | : <b>ERC1, ERC4:</b> Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Further information            | :<br>Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities                                                                                                                                                                                                                                                                                                                                                                           |

**2.1 Contributing scenario controlling environmental exposure for:ERC1, ERC4: Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles****Product characteristics**Viscosity, kinematic : > 0,47 mm<sup>2</sup>/s at 20 °C

(Msafe) : 2.100 tonnes/day

**Environment factors not influenced by risk management**Flow rate : 18.000 m<sup>3</sup>/d

Dilution Factor (River) : 10

Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release

Number of emission days per year : 300

Emission or Release Factor: Air : 5 %

Emission or Release Factor: Water : 0,03 %

Emission or Release Factor: Soil : 0,01 %

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**Technical conditions and measures / Organizational measures**

|         |                                                                                                                                                    |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Air     | : Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: 90 %)                                                         |
| Water   | : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%): (Effectiveness: 0 %)      |
| Water   | : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%): (Effectiveness: 0 %) |
| Remarks | : Common practices vary across sites thus conservative process release estimates used.                                                             |
| Remarks | : Risk from environmental exposure is driven by freshwater sediment.                                                                               |
| Remarks | : Do not apply industrial sludge to natural soils.                                                                                                 |
| Remarks | : Sludge should be incinerated, contained or reclaimed.                                                                                            |
| Remarks | : No wastewater treatment required.                                                                                                                |

**Conditions and measures related to municipal sewage treatment plant**

|                                              |                                                        |
|----------------------------------------------|--------------------------------------------------------|
| Flow rate of sewage treatment plant effluent | : 10.000 m <sup>3</sup> /d                             |
| Effectiveness (of a measure)                 | : 96 %                                                 |
| Percentage removed from waste water          | : 96 %                                                 |
| Remarks                                      | : Not applicable as there is no release to wastewater. |

**Conditions and measures related to external treatment of waste for disposal**

|                 |                                                                |
|-----------------|----------------------------------------------------------------|
| Waste treatment | : During manufacturing no waste of the substance is generated. |
|-----------------|----------------------------------------------------------------|

**Conditions and measures related to external recovery of waste**

|                  |                                                                |
|------------------|----------------------------------------------------------------|
| Recovery Methods | : During manufacturing no waste of the substance is generated. |
|------------------|----------------------------------------------------------------|

**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure****Product characteristics**

|                                |                    |
|--------------------------------|--------------------|
| Physical Form (at time of use) | : Liquid substance |
| Vapor pressure                 | : > 20 kPa         |

**Amount used**

|         |            |
|---------|------------|
| Remarks | : No limit |
|---------|------------|

**Frequency and duration of use**

|         |                                                                    |
|---------|--------------------------------------------------------------------|
| Remarks | : Covers daily exposures up to 8 hours (unless stated differently) |
|---------|--------------------------------------------------------------------|

**Other operational conditions affecting workers exposure**

|                  |                                                                                                                                                                  |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Outdoor / Indoor | : Outdoor                                                                                                                                                        |
| Remarks          | : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently. |

**Organizational measures to prevent /limit releases, dispersion and exposure**

No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure**

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**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : > 20 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Outdoor  
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system.  
Provide extract ventilation to material transfer points and other openings.

**2.2 Contributing scenario controlling worker exposure for: PROC3, PROC4: Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : > 20 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor, Outdoor  
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Ensure material transfers are under containment or extract ventilation.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : > 20 kPa

**Amount used**

Remarks : No limit

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**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.  
Drain down and flush system prior to equipment opening or maintenance.

**2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**
**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : > 20 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor, Outdoor  
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur.  
Ensure material transfers are under containment or extract ventilation.

**2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent**
**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : > 20 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor  
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above

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ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle in a fume cupboard or under extract ventilation.

**3. Exposure estimation and reference to its source****Environment**

| Contributing Scenario | Exposure Assessment Method              | Specific conditions | Compartment         | Value type | Level of Exposure | Risk characterization ratio |
|-----------------------|-----------------------------------------|---------------------|---------------------|------------|-------------------|-----------------------------|
| ERC1, ERC4            | Hydrocarbon Block Method with Petrorisk |                     | Freshwater          |            | 0,0042 mg/L       | 0,015                       |
|                       |                                         |                     | Marine water        |            | 0,0004 mg/L       | 0,0015                      |
|                       |                                         |                     | Freshwater sediment |            | 0,049 mg/kg       | 0,017                       |
|                       |                                         |                     | Marine sediment     |            | 0,0049 mg/kg      | 0,0017                      |
|                       |                                         |                     | Soil                |            | 0,0003 mg/kg      | 0,00035                     |

ERC1: Manufacture of substances

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

**Workers/Consumers**

| Contributing Scenario     | Exposure Assessment Method | Specific conditions | Value type                                    | Level of Exposure | Risk characterization ratio |
|---------------------------|----------------------------|---------------------|-----------------------------------------------|-------------------|-----------------------------|
| PROC1, CS15, CS67         | ECETOC TRA                 |                     | Worker – inhalation, long-term – systemic     | 0,04 mg/m3        | 0,00                        |
|                           |                            |                     | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d      | 0,031                       |
|                           |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,031                       |
| PROC2, CS15, CS67         | ECETOC TRA                 |                     | Worker – inhalation, long-term – systemic     | 17,62 mg/m3       | 0,235                       |
|                           |                            |                     | Worker – dermal, long-term – systemic         | 0,137 mg/kg/d     | 0,012                       |
|                           |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,247                       |
| PROC3, CS15               | ECETOC TRA                 |                     | Worker – inhalation, long-term – systemic     | 35,25 mg/m3       | 0,470                       |
|                           |                            |                     | Worker – dermal, long-term – systemic         | 0,034 mg/kg/d     | 0,003                       |
|                           |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,473                       |
| PROC4, CS16               | ECETOC TRA                 |                     | Worker – inhalation, long-term – systemic     | 35,25 mg/m3       | 0,470                       |
|                           |                            |                     | Worker – dermal, long-term – systemic         | 0,686 mg/kg/d     | 0,062                       |
|                           |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,532                       |
| PROC8a, CS39              | ECETOC TRA                 |                     | Worker – inhalation, long-term – systemic     | 26,44 mg/m3       | 0,352                       |
|                           |                            |                     | Worker – dermal, long-term – systemic         | 2,742 mg/kg/d     | 0,249                       |
|                           |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,602                       |
| PROC8b, CS2, CS14, CS107, | ECETOC TRA                 |                     | Worker – inhalation, long-term – systemic     | 15,86 mg/m3       | 0,211                       |

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|              |            |  |                                               |               |       |
|--------------|------------|--|-----------------------------------------------|---------------|-------|
| CS108        |            |  |                                               |               |       |
|              |            |  | Worker – dermal, long-term – systemic         | 0,686 mg/kg/d | 0,062 |
|              |            |  | Worker – long-term – systemic Combined routes |               | 0,274 |
| PROC15, CS36 | ECETOC TRA |  | Worker – inhalation, long-term – systemic     | 17,62 mg/m3   | 0,235 |
|              |            |  | Worker – dermal, long-term – systemic         | 0,034 mg/kg/d | 0,003 |
|              |            |  | Worker – long-term – systemic Combined routes |               | 0,238 |

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

CS67: Storage

PROC2: Use in closed, continuous process with occasional controlled exposure

CS15: General exposures (closed systems)

CS67: Storage

PROC3: Use in closed batch process (synthesis or formulation)

CS15: General exposures (closed systems)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS16: General exposures (open systems)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

CS39: Equipment cleaning and maintenance

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

CS2: Process sampling

CS14: Bulk transfers

CS107: (closed systems)

CS108: (open systems)

PROC15: Use as laboratory reagent

CS36: Laboratory activities

#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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