


AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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

Product Name : AROMAX® HYDROGEN STREAM S-CHEM

Company : Saudi Chevron Phillips Company
 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 gases, Category 1	H220: Extremely flammable gas.
Germ cell mutagenicity, Category 1B	H340: May cause genetic defects.
Carcinogenicity, Category 1A	H350: May cause cancer.
Specific target organ systemic toxicity -	H335:

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

single exposure, Category 3

May cause respiratory irritation.

H336:

May cause drowsiness or dizziness.

Specific target organ systemic toxicity -
repeated exposure, Category 2

H373:

May cause damage to organs through prolonged or
repeated exposure.

Chronic aquatic toxicity, Category 3

H412:

Harmful to aquatic life with long lasting effects.

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

Hazard pictograms



Signal Word

: Danger

Hazard Statements

: H220
H335 + H336

Extremely flammable gas.

May cause respiratory irritation, and
drowsiness or dizziness.

H340

May cause genetic defects.

H350

May cause cancer.

H373

May cause damage to organs through
prolonged or repeated exposure.

H412

Harmful to aquatic life with long lasting
effects.

Precautionary Statements

: **Prevention:**

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.

P281

Use personal protective equipment as
required.**Response:**

P308 + P313

IF exposed or concerned: Get medical
advice/ attention.

P377

Leaking gas fire: Do not extinguish, unless
leak can be stopped safely.**Storage:**

P403

Store in a well-ventilated place.

Hazardous ingredients which must be listed on the label:

- 68647-60-9 Hydrocarbons, C5 and Higher
- 71-43-2 Benzene

Additional Labeling:

Restricted to professional users.

SECTION 3: Composition/information on ingredients

SDS Number:100000002668

2/24

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

Molecular formula : UVCB

Mixtures**Hazardous ingredients**

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
Hydrogen	1333-74-0 215-605-7 001-001-00-9	Flam. Gas 1; H220 Press. Gas H280 Press. Gas Compr. Gas; H280	0 - 50
Ethane	74-84-0 200-814-8 601-002-00-X	Flam. Gas 1; H220 Press. Gas Liquefied gas; H280 Press. Gas Compr. Gas; H280	0 - 25
Methane	74-82-8 200-812-7 601-001-00-4	Flam. Gas 1; H220 Press. Gas Compr. Gas; H280 Press. Gas Liquefied gas; H280	0 - 25
Propane	74-98-6 200-827-9 601-003-00-5	Flam. Gas 1; H220 Press. Gas Liquefied gas; H280 Press. Gas Compr. Gas; H280	0 - 20
Hydrocarbons, C5 and Higher	68647-60-9 271-960-8	Asp. Tox. 1; H304	0 - 15
n-Butane	106-97-8 203-448-7 601-004-00-0	Flam. Gas 1; H220 Press. Gas Liquefied gas; H280 Press. Gas Compr. Gas; H280	0 - 10
Benzene	71-43-2 200-753-7 601-020-00-8	Flam. Liq. 2; H225 Skin Irrit. 2; H315 Eye Irrit. 2; H319 Muta. 1B; H340 Carc. 1A; H350 Aquatic Chronic 3; H412 STOT RE 1; H372 Asp. Tox. 1; H304 Aquatic Chronic 3; H412	0 - 5
n-hexane	110-54-3 203-777-6 601-037-00-0	Flam. Liq. 2; H225 Skin Irrit. 2; H315 Repr. 2; H361fd STOT SE 3; H336 STOT RE 2; H373 Asp. Tox. 1; H304 Aquatic Chronic 2; H411	0 - 5

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

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

SECTION 4: First aid measures

- General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.
- If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
- 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 : Induce vomiting immediately and call a physician. 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 : < -73 °C (< -99 °F)
- 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

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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.

SECTION 7: Handling and storage**Handling**

Advice on safe handling : 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. 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.

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 : Prevent unauthorized access. No smoking. Keep in a 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 ³	1B, 1A, +,
n-hexane	SK OEL	NPEL priemerný	20 ppm, 72 mg/m ³	
	SK OEL	NPEL krátkodobý	40 ppm, 140 mg/m ³	

+ 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

SI

Sestavine	Osnova	Vrednost	Parametri nadzora	Pripomba
Propane	SI OEL	MV	1.000 ppm, 1.800 mg/m ³	
n-Butane	SI OEL	MV	1.000 ppm, 2.400 mg/m ³	
Benzene	SI OEL	MV	1 ppm, 3,25 mg/m ³	1A, EU0, K, EKA, BAT, TDK,
n-hexane	SI OEL	MV	20 ppm, 72 mg/m ³	RF-2, EU*, 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.

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

- 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 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
- RF-2 Strupeno za razmnoževanje - lahko škoduje plodnosti - kategorija 2
- 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
Benzene	SE AFS	NGV	0,5 ppm, 1,5 mg/m ³	H, C,
	SE AFS	KTV	3 ppm, 9 mg/m ³	H, C,
n-hexane	SE AFS	NGV	25 ppm, 90 mg/m ³	
	SE AFS	KTV	50 ppm, 180 mg/m ³	

- C Ämnet är cancerframkallande.
H Ämnet kan lätt upptas genom huden.

RO

Componente	Bază	Valoare	Parametri de control	Notă
Methane	RO OEL	TWA	1.834 ppm, 1.200 mg/m ³	
	RO OEL	STEL	2.292 ppm, 1.500 mg/m ³	
Propane	RO OEL	TWA	778 ppm, 1.400 mg/m ³	
	RO OEL	STEL	1.000 ppm, 1.800 mg/m ³	
Benzene	RO OEL	TWA	1 ppm, 3,25 mg/m ³	P, C,
n-hexane	RO OEL	TWA	20 ppm, 170 mg/m ³	

- 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
n-Butane	PT OEL	VLE_CD	1.000 ppm,	afeção do SNC,
Benzene	PT OEL	VLE-MP	0,5 ppm,	(1), P, A1, IBE,
	PT OEL	VLE_CD	2,5 ppm,	(1), P, A1, IBE,
n-hexane	PT OEL	VLE-MP	50 ppm,	(1), P, IBE, afeção do SNC,
	PT DL 305/2007	oito horas	20 ppm, 72 mg/m ³	

- (1) Abrangido por legislação nacional específica ou por legislação comunitária não transposta
A1 Agente carcinogénico confirmado no Homem.
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
Propane	PL NDS	NDS	1.800 mg/m ³	
n-Butane	PL NDS	NDS	1.900 mg/m ³	
	PL NDS	NDSch	3.000 mg/m ³	
Benzene	PL NDS	NDS	1,6 mg/m ³	
n-hexane	PL NDS	NDS	72 mg/m ³	

NO

Komponenter	Grunnlag	Verdi	Kontrollparametere	Nota
Propane	FOR-2011-12-06-1358	TWA	500 ppm, 900 mg/m ³	
n-Butane	FOR-2011-12-06-1358	TWA	250 ppm, 600 mg/m ³	
Benzene	FOR-2011-12-06-1358	T	1 ppm, 3 mg/m ³	G, K, H,
n-hexane	FOR-2011-12-06-1358	TWA	20 ppm, 72 mg/m ³	E, R,

- 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
R Kjemikalier som skal betraktes som reproduksjonstoksiske

NL

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
Benzene	NL WG	TGG-8 uur	3,25 mg/m ³	H,
n-hexane	NL WG	TGG-8 uur	72 mg/m ³	

SDS Number:100000002668

6/24

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

	NL WG	TGG-15 min	144 mg/m3	
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H Huidopname

MT

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

LV

Sastāvdaļas	Bāze	Vērtība	Pārvaldības parametri	Piezīme
Ethane	LV OEL	AER 8 st	100 mg/m3	
	LV OEL	AER īslaicīgā	300 mg/m3	
Methane	LV OEL	AER 8 st	100 mg/m3	
	LV OEL	AER īslaicīgā	300 mg/m3	
Propane	LV OEL	AER 8 st	100 mg/m3	
	LV OEL	AER īslaicīgā	300 mg/m3	
n-Butane	LV OEL	AER 8 st	300 mg/m3	
Benzene	LV OEL	AER 8 st	1 ppm, 3,25 mg/m3	Āda,
n-hexane	LV OEL	AER 8 st	20 ppm, 72 mg/m3	

Āda Āda

LU

Composants	Base	Valeur	Paramètres de contrôle	Note
Benzene	LU OEL	TWA	1 ppm, 3,25 mg/m3	
n-hexane	LU OEL	TWA	20 ppm, 72 mg/m3	

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,
n-hexane	LT OEL	IPRD	20 ppm, 72 mg/m3	

O Oksiduojuanti

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

Pelle La notazione 'Pelle' attribuita ai valori limite di esposizione indica possibilità di assorbimento significativo attraverso la pelle.

IE

Ingredients	Basis	Value	Control parameters	Note
Ethane	IE OEL	OELV - 8 hrs (TWA)	1.000 ppm,	Asphx,
Methane	IE OEL	OELV - 8 hrs (TWA)	1.000 ppm,	Asphx,
Propane	IE OEL	OELV - 8 hrs (TWA)	1.000 ppm,	Asphx,
n-Butane	IE OEL	OELV - 8 hrs (TWA)	1.000 ppm,	
Benzene	IE OEL	OELV - 8 hrs (TWA)	1 ppm, 3 mg/m3	BOELV, Sk, Carc 1A,
n-hexane	IE OEL	OELV - 8 hrs (TWA)	20 ppm, 72 mg/m3	IOELV,

Asphx Gaseous chemical substances which may not produce significant physiological effects in the exposed employee, but when present in high concentrations will act as simple asphyxiants

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
n-Butane	HU OEL	AK-érték	2.350 mg/m3	
	HU OEL	CK-érték	9.400 mg/m3	
Benzene	HU OEL	MK-érték	3 mg/m3	b, k, i,
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)

k Rákkeltő

GR

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
Propane	GR OEL	TWA	1.000 ppm, 1.800 mg/m3	
n-Butane	GR OEL	TWA	1.000 ppm, 2.350 mg/m3	
Benzene	GR OEL	TWA	1 ppm, 3,19 mg/m3	Δ,
n-hexane	GR OEL	TWA	20 ppm, 72 mg/m3	

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

- 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
n-Butane	GB EH40	TWA	600 ppm, 1.450 mg/m3	Carc,
	GB EH40	STEL	750 ppm, 1.810 mg/m3	Carc,
Benzene	GB EH40	TWA	1 ppm,	Sk, Carc, 2,
	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
 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
n-Butane	FR VLE	VME	800 ppm, 1.900 mg/m3	normal,
Benzene	FR VLE	VME	1 ppm, 3,25 mg/m3	C1A, M1B, *, noir,
n-hexane	FR VLE	VME	20 ppm, 72 mg/m3	R2, 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
 normal Valeurs limites indicatives
 R2 Substances préoccupantes en raison d'effets toxiques pour la reproduction possibles

FI

Aineosat	Peruste	Arvo	Valvontaa koskevat muuttujat	Huomautus
Propane	FI OEL	HTP-arvot 8h	800 ppm, 1.500 mg/m3	Liite 4,
	FI OEL	HTP-arvot 15 min	1.100 ppm, 2.000 mg/m3	Liite 4,
n-Butane	FI OEL	HTP-arvot 8h	800 ppm, 1.900 mg/m3	Liite 4,
	FI OEL	HTP-arvot 15 min	1.000 ppm, 2.400 mg/m3	Liite 4,
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.

Liite 4 Happea syrjäyttämällä tukehduttavat kaasut

ES

Componentes	Base	Valor	Parámetros de control	Nota
Ethane	ES VLA	VLA-ED	1.000 ppm,	
Methane	ES VLA	VLA-ED	1.000 ppm,	
Propane	ES VLA	VLA-ED	1.000 ppm,	
n-Butane	ES VLA	VLA-ED	1.000 ppm,	gas
Benzene	ES VLA	VLA-ED	1 ppm, 3,25 mg/m3	1B, vía dérmica, r, v, VLB®, 1A,
n-hexane	ES VLA	VLA-ED	20 ppm, 72 mg/m3	VLB®, VLI,

- 1A Carcinógenos o supuestos carcinógenos para el hombre - en base a la existencia de pruebas 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
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SDS Number:100000002668

8/24

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

Propane	EE OEL	Piirnorm	1.000 ppm, 1.800 mg/m3	
n-Butane	EE OEL	Piirnorm	800 ppm, 1.500 mg/m3	
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,
n-hexane	EE OEL	Piirnorm	20 ppm, 72 mg/m3	

- A Naha kaudu kergesti absorbeeruvad ained
C Kantserogeensed ained

DK

Komponenter	Basis	Værdi	Kontrolparametre	Note
Propane	DK OEL	GV	1.000 ppm, 1.800 mg/m3	
n-Butane	DK OEL	GV	500 ppm, 1.200 mg/m3	
Benzene	DK OEL	GV	0,5 ppm, 1,6 mg/m3	H, K, E,
n-hexane	DK OEL	GV	20 ppm, 72 mg/m3	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
Propane	DE TRGS 900	AGW	1.000 ppm, 1.800 mg/m3	DFG,
n-Butane	DE TRGS 900	AGW	1.000 ppm, 2.400 mg/m3	DFG,
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,
n-hexane	DE TRGS 900	AGW	50 ppm, 180 mg/m3	DFG, EU, Y,

- 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,
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
Benzene	CY OEL 2	M.E.Σ.	10 ppm, 30 mg/m3	
n-hexane	CY OEL	TWA	20 ppm, 72 mg/m3	

CH

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Ethane	CH SUVA	MAK-Wert	10.000 ppm, 12.500 mg/m3	
Methane	CH SUVA	MAK-Wert	10.000 ppm, 6.700 mg/m3	
Propane	CH SUVA	MAK-Wert	1.000 ppm, 1.800 mg/m3	NIOSH,
	CH SUVA	KZGW	4.000 ppm, 7.200 mg/m3	NIOSH,
n-Butane	CH SUVA	MAK-Wert	800 ppm, 1.900 mg/m3	
	CH SUVA	MAK-Wert	800 ppm, 1.900 mg/m3	
	CH SUVA	KZGW	3.200 ppm, 7.200 mg/m3	
Benzene	CH SUVA	MAK-Wert	0,5 ppm, 1,6 mg/m3	H, Carc.Cat.1, M2, NIOSH, DFG, HSE, BG,
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,

- BG BG
Carc.Cat.1 Krebserzeugende Stoffe Kategorie 1
DFG Deutsche Forschungsgemeinschaft
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.
HSE Health and Safety Executive (Occupational Medicine and Hygiene Laboratory)
M2 Umfasst Stoffe, die als erbgutverändernd für den Menschen angesehen werden sollten. Es bestehen hinreichende Anhaltspunkte zu der begründeten Annahme, dass die Exposition eines Menschen gegenüber dem Stoff zu vererbaren Schäden führen kann.
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.

SDS Number:100000002668

9/24

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

BG

Съставки	Основа	Стойност	Параметри на контрол	Бележка
Methane	BG OEL	TWA	500 mg/m ³	
Propane	BG OEL	TWA	1.800 mg/m ³	
n-Butane	BG OEL	TWA	1.900 mg/m ³	
Benzene	BG OEL	TWA	3,25 mg/m ³	-,
n-hexane	BG OEL	TWA	20 ppm, 72 mg/m ³	-,

- 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
Ethane	BE OEL	TGG 8 hr	1.000 ppm,	
	BE OEL	TGG 8 hr	1.000 ppm,	gas
Methane	BE OEL	TGG 8 hr	1.000 ppm,	
	BE OEL	TGG 8 hr	1.000 ppm,	gas
Propane	BE OEL	TGG 8 hr	1.000 ppm,	
	BE OEL	TGG 8 hr	1.000 ppm,	gas
n-Butane	BE OEL	TGG 8 hr	1.000 ppm,	
	BE OEL	TGG 8 hr	1.000 ppm,	gas
Benzene	BE OEL	TGG 8 hr	1 ppm, 3,25 mg/m ³	D, C,
n-hexane	BE OEL	TGG 8 hr	20 ppm, 72 mg/m ³	

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
Propane	AT OEL	TMW	1.000 ppm, 1.800 mg/m ³	
	AT OEL	KZW	2.000 ppm, 3.600 mg/m ³	
n-Butane	AT OEL	TMW	800 ppm, 1.900 mg/m ³	
	AT OEL	KZW	1.600 ppm, 3.800 mg/m ³	
Benzene	AT TRK	TMW	1 ppm, 3,2 mg/m ³	H,
	AT TRK	KZW	4 ppm, 12,8 mg/m ³	H,
n-hexane	AT OEL	TMW	20 ppm, 72 mg/m ³	
	AT OEL	KZW	80 ppm, 288 mg/m ³	

H Besondere Gefahr der Hautresorption

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
Benzene	71-43-2	fenol: 18 mmol/mol kreatinina (Urin)	Ob koncu delovne izmene	2001-12-11
		benzen: 4.99 mmol/l (Zadnji izdihani zrak)	16 Ur po končanem delu	2001-12-11
		fenol: 15 mg/g kreatinina (Urin)	Ob koncu delovne izmene	2001-12-11
		benzen: 0.12 ppm (Zadnji izdihani zrak)	16 Ur po končanem delu	2001-12-11

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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
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
n-hexane	110-54-3	2,5 hexandionă: 5 mg/g creatinină (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

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
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
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
n-hexane	110-54-3	2,5-hexanodiona: 0,2 mg/l (Orina)	Final de la semana laboral	2014-01-01

DE

Stoffname	CAS-Nr.	Zu überwachende Parameter	Probennahmezeit punkt	Stand
n-hexane	110-54-3	2,5-Hexandion plus 4,5-Dihydroxy- 2-hexanon: 5 mg/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

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

		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

CH

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

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

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

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.

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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:
- 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.

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

- Form : Gaseous
 Physical state : Gaseous
 Color : Colorless
 Odor : Odorless

Safety data

- Flash point : < -73 °C (< -99 °F)
 Lower explosion limit : 4,0 %(V)
 Upper explosion limit : 61,0 %(V)
 Molecular formula : UVCB
 pH : Not applicable
 Melting point/range : Not applicable

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

Freezing point	Not applicable
Boiling point/boiling range	: Not applicable
Vapor pressure	: > 100,00 PSI
Relative density	: 0,2 estimated
Density	: 0,2 mg/m3
Water solubility	: Insoluble
Relative vapor density	: 0,7

SECTION 10: Stability and reactivity

Reactivity	: May react violently or explosively with halogens.
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.
Materials to avoid	: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Other data	: No decomposition if stored and applied as directed.

SECTION 11: Toxicological information**AROMAX® HYDROGEN STREAM S-CHEM**

Acute oral toxicity : Negligible or unlikely exposure pathways

Acute inhalation toxicity

Hydrogen	: Substance is a simple asphyxiant that may create an atmosphere deficient in oxygen. Available oxygen in the range of 19.5 percent to 23 percent by volume must be present.
Methane	: Substance is a simple asphyxiant that may create an atmosphere deficient in oxygen. Available oxygen in the range of 19.5 percent to 23 percent by volume must be present.

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

Propane	LC50: > 800000 ppm Exposure time: 15 min Species: Rat Test atmosphere: gas
n-Butane	LC50: 658 mg/l Exposure time: 4 h Species: Rat Test atmosphere: vapor
Benzene	LC50: 44,5 mg/l Exposure time: 4 h Species: Rat Sex: Not Specified Test atmosphere: vapor
n-hexane	LC50: 73680 ppm Exposure time: 4 h Species: Rat Sex: male

AROMAX® HYDROGEN STREAM S-CHEM**Acute dermal toxicity** : Negligible or unlikely exposure pathways**AROMAX® HYDROGEN STREAM S-CHEM****Skin irritation** : May irritate skin.**AROMAX® HYDROGEN STREAM S-CHEM****Eye irritation** : Vapors may cause irritation to the eyes, respiratory system and the skin.**AROMAX® HYDROGEN STREAM S-CHEM****Sensitization** : No adverse effects expected. Information refers to the main ingredient.**Repeated dose toxicity**

Ethane	: Species: Rat, Male and female Sex: Male and female Application Route: Inhalation Dose: 0, 1600, 5000, 16000 ppm Exposure time: 6 weeks Number of exposures: 6 hours/day, 7 days/week NOEL: 16000 ppm Test substance: yes Method: OECD Guideline 422
Propane	Species: Monkey Application Route: Inhalation Dose: 0, 750 ppm Exposure time: 90 day Number of exposures: daily NOEL: > 750 ppm
n-Butane	Species: Rat, Male and female Sex: Male and female Application Route: Inhalation Dose: 0, 1017, 4489 ppm

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

Benzene

Exposure time: 90 day
Number of exposures: 6 hr/d, 5 d/wk
NOEL: 4489 ppm

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

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

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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

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.

n-hexane

Species: Rat
 Dose: 0.043, 900, 3,000, 9,016 ppm
 Exposure time: 2 yrs

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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

Ethane : Species: Rat
 Sex: male and female
 Application Route: Inhalation
 Dose: 0, 1600, 5000, 16000 ppm
 Exposure time: 6 weeks
 Number of exposures: 6 hours/day, 7 days/week
 Test period: 6 weeks
 Test substance: yes
 Method: OECD Guideline 422
 NOAEL Parent: 16000 ppm
 NOAEL F1: 16000 ppm
 no abnormalities observed

Propane : Species: Rat
 Sex: male and female
 Application Route: Inhalation
 Dose: 0, 1200, 4000, 12000 ppm
 Exposure time: 6 weeks
 Number of exposures: 6 hours/day, 7 days/week
 Test period: 6 weeks
 Test substance: yes
 Method: OECD Guideline 422
 NOAEL Parent: 12000 ppm
 NOAEL F1: 12000 ppm

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

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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

AROMAX® HYDROGEN STREAM S-CHEM

Aspiration toxicity : No aspiration toxicity classification.

CMR 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.

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.

AROMAX® HYDROGEN STREAM S-CHEM

Further information : No data available.

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

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

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

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

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

Method: QSAR modeled data

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

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

Elimination information (persistence and degradability)

Bioaccumulation : This material is not expected to bioaccumulate.
 Information refers to the main ingredient.

Biodegradability : No data available

Ecotoxicology Assessment

Acute aquatic toxicity

Benzene : Toxic to aquatic life.

n-hexane : Toxic to aquatic life.

Chronic aquatic toxicity

Benzene : Harmful to aquatic life with long lasting effects.

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

Results of PBT assessment : This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).

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

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

UN1954, COMPRESSED GAS, FLAMMABLE, N.O.S., (HYDROGEN, ETHANE), 2.1, MARINE POLLUTANT, (HEXANE), RQ (HEXANE)

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN1954, COMPRESSED GAS, FLAMMABLE, N.O.S., (HYDROGEN, ETHANE), 2.1, (< -73 °C), MARINE POLLUTANT, (HEXANE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN1954, COMPRESSED GAS, FLAMMABLE, N.O.S., (HYDROGEN, ETHANE), 2.1

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

UN1954, COMPRESSED GAS, FLAMMABLE, N.O.S., (HYDROGEN, ETHANE), 2.1, (B/D), ENVIRONMENTALLY HAZARDOUS, (HEXANE)

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

UN1954, COMPRESSED GAS, FLAMMABLE, N.O.S., (HYDROGEN, ETHANE), 2.1, ENVIRONMENTALLY HAZARDOUS, (HEXANE)

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

UN1954, COMPRESSED GAS, FLAMMABLE, N.O.S., (HYDROGEN, ETHANE), 2.1, ENVIRONMENTALLY HAZARDOUS, (HEXANE)

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

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

SECTION 15: Regulatory information**National legislation**

Major Accident Hazard Legislation : 96/82/EC Update: 2003
Extremely flammable
8
Quantity 1: 10 t
Quantity 2: 50 t

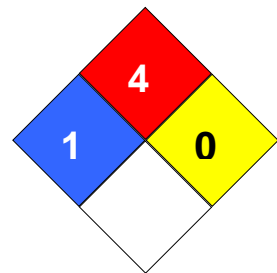
: 96/82/EC Update: 2003
Hydrogen
38
Quantity 1: 5 t
Quantity 2: 50 t

Notification status

Europe REACH : Not in compliance with the inventory
United States of America TSCA : On TSCA Inventory
Canada DSL : All components of this product are on the Canadian DSL
Australia AICS : On the inventory, or in compliance with the inventory
New Zealand NZIoC : Not in compliance with the inventory
Japan ENCS : Not in compliance with the inventory
Korea KECI : Not 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: 1
Fire Hazard: 4
Reactivity Hazard: 0

**Further information**

Legacy SDS Number : 7126

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.

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16

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
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.

H220	Extremely flammable gas.
H225	Highly flammable liquid and vapor.
H280	Contains gas under pressure; may explode if heated.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H361fd	Suspected of damaging fertility. 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.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

AROMAX® HYDROGEN STREAM S-CHEM

Version 1.4

Revision Date 2016-06-16