

Benzene

Version 1.8

Revision Date 2021-09-23

According to Regulation (EC) No. 1907/2006, Regulation (EC) No. 2015/830

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1****Product information**

Product Name : Benzene
Material : 1098293, 1059192, 1059060, 1037212, 1037213, 1037103,
1029170, 1037104, 1015526, 1016960

1.2**Relevant identified uses of the substance or mixture and uses advised against**

Relevant Identified Uses : Use as an intermediate
Supported

1.3**Details of the supplier of the safety data sheet**

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
Responsible Party: Product Safety Group
Email:sds@cpchem.com

1.4**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: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

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Argentina: +(54)-1159839431

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

SECTION 2: Hazards identification**2.1****Classification of the substance or mixture
REGULATION (EC) No 1272/2008**

Flammable liquids, Category 2	H225: Highly flammable liquid and vapor.
Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Germ cell mutagenicity, Category 1B	H340: May cause genetic defects.
Carcinogenicity, Category 1A	H350: May cause cancer.
Long-term (chronic) aquatic hazard, Category 3	H412: Harmful to aquatic life with long lasting effects.
Specific target organ toxicity - repeated exposure, Category 1	H372: Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Long-term (chronic) aquatic hazard, Category 3	H412: Harmful to aquatic life with long lasting effects.

2.2**Labeling (REGULATION (EC) No 1272/2008)**

Hazard pictograms :



Signal Word : Danger

Hazard Statements	H225	Highly flammable liquid and vapor.
	H304	May be fatal if swallowed and enters airways.
	H315	Causes skin irritation.
	H319	Causes serious eye irritation.
	H340	May cause genetic defects.
	H350	May cause cancer.
Hazard Statements	H372	Causes damage to organs through prolonged or repeated exposure.
	H412	Harmful to aquatic life with long lasting effects.

Precautionary Statements	Prevention:	
	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

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P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
Response:	
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P331	Do NOT induce vomiting.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Hazardous ingredients which must be listed on the label:

- 71-43-2 Benzene

Additional Labeling:

Restricted to professional users.

SECTION 3: Composition/information on ingredients**3.1 - 3.2****Substance or Mixture**

Synonyms : Aromatic Benzene
Benzol
Cyclohexatriene
Phene
Phenyl Hydride

Molecular formula : C₆H₆

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
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	100

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

SECTION 4: First aid measures**4.1****Description of first-aid measures**

General advice : Move out of dangerous area. Show this material safety data

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- sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.
- 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 : Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : -11°C (12°F)
Method: Tag closed cup

Autoignition temperature : 498°C (928°F)

5.1**Extinguishing media**

Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO₂). Dry chemical.

Unsuitable extinguishing media : High volume water jet.

5.2**Special hazards arising from the substance or mixture**

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

5.3**Advice for firefighters**

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 a naked flame or any 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.

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SECTION 6: Accidental release measures**6.1****Personal precautions, protective equipment and emergency procedures**

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.

6.2**Environmental precautions**

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.

6.3**Methods and materials for containment and cleaning up**

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).

6.4**Reference to other sections**

Reference to other sections : For personal protection see section 8. For disposal considerations see section 13.

SECTION 7: Handling and storage**7.1****Precautions for safe handling
Handling**

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. 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 a naked flame or any 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.

7.2**Conditions for safe storage, including any incompatibilities****Storage**

Requirements for storage : No smoking. Keep container tightly closed in a dry and well-

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areas and containers

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**8.1****Control parameters
Ingredients with workplace control parameters****SK**

Zložky	Podstata	Hodnota	Kontrolné parametre	Poznámka
Benzene	SK OEL	TSH	1 ppm, 3,25 mg/m ³	1B, 1A, K,

1A Kategória 1A - Dokázaný karcinogén pre ľudí
1B Kategória 1B - Mutagén cicavčích zárodočných buniek
K Prienik cez kožu

SE

Beståndsdelar	Grundval	Värde	Kontrollparametrar	Anmärkning
Benzene	SE AFS	NGV	0,5 ppm, 1,5 mg/m ³	H, C,
	SE AFS	KGV	3 ppm, 9 mg/m ³	H, C,

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

RS

Компоненты	Основа	Величина	Параметры контроля	Заметка
Бензол	RS OEL	GVI	1 ppm, 3,25 mg/m ³	
	RS OEL CM	TWA	1 ppm, 3,25 mg/m ³	

RO

Componente	Sursă	Valoare	Parametri de control	Notă
Benzene	RO OEL	TWA	1 ppm, 3,25 mg/m ³	C1A, M1B, P,

C1A poate provoca apariția cancerului
M1B poate provoca anomalii genetice
P Substanțele cu indicativul P (piele) pot pătrunde în organism prin pielea sau mucoasele intacte. Indicativul P nu se referă la substanțele care au numai o acțiune locală de tip iritativ.

PT

Componentes	Bases	Valor	Parâmetros de controlo	Nota
Benzene	PT OEL	VLE-MP	0,5 ppm,	P, A1,
	PT OEL	VLE_CD	2,5 ppm,	P, A1,
	PT DL 88/2015	TWA	1 ppm, 3,25 mg/m ³	

A1 Agente carcinogénico confirmado no Homem.
P Perigo de absorção cutânea

PL

Składniki	Podstawa	Wartość	Parametry dotyczące kontroli	Uwaga
Benzene	PL NDS	NDS	1,6 mg/m ³	

NL

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
Benzene	NL WG	TGG-8 uur	0,7 mg/m ³	B1, H,

B1 Kankerverwekkende stoffen, vastgesteld op basis van het drempelwaarde-effect
H Huidopname

MK

Съставки	Основа	Стойност	Параметри на контрол	Бележка
Benzene	MK OEL	MV	1 ppm, 3,25 mg/m ³	R1, K,

K The properties of easier transport of substances into organism through (via) the skin
R1 Carcinogenic R1 - may cause cancer. Numbers 1, 2 and 3 indicate the class of carcinogenicity or mutagenicity according to the EU classification of carcinogenic or mutagenic substances. Carcinogenic or mutagenic substances are in EU classified in separate groups, according to the fulfilling of criteria, set in the EU directive 67/548/EEC.

LV

Sastāvdaļas	Bāze	Vērtība	Pārvaldības parametri	Piezīme
Benzene	LV OEL	AER 8 st	1 ppm, 3,25 mg/m ³	Āda,

Āda Āda

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LU

Composants	Base	Valeur	Paramètres de contrôle	Note
Benzene	LU OEL	TWA	1 ppm, 3,25 mg/m3	

LT

Komponentai	Šaltinis	Vertė	Kontrolės parametrai	Pastaba
Benzene	LT OEL	IPRD	1 ppm, 3,25 mg/m3	O.
	LT OEL	TPRD	6 ppm, 19 mg/m3	O.

O pateikimas per nepažeistą odą

IT

Componenti	Base	Valore	Parametri di controllo	Nota
Benzene	IT VLEP	TWA	0,5 ppm,	
	IT VLEP	TPRD	2,5 ppm,	

IS

Komponenter	Grunnlag	Verdi	Kontrollparametrer	Nota
Benzene	IS OEL	TWA	0,5 ppm, 1,6 mg/m3	H, K,

H Skin notation

K Carcinogenic substances

IE

Components	Basis	Value	Control parameters	Note
Benzene	IE OEL	OELV - 8 hrs (TWA)	1 ppm, 3,25 mg/m3	Sk, Carc 1A, Muta 1B,

Carc 1A Carc 1A - Substances known to have carcinogenic potential for humans

Muta 1B Muta 1B - Substances which should be regarded as if they induce heritable mutations in the germ cells of humans

Sk Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body

HU

Komponensek	Bázis	Érték	Ellenőrzési paraméterek	Megjegyzés
Benzene	HU OEL	AK-érték	3,25 mg/m3	T, EU6, k(1A), b, 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

EU6 2019/130 EU irányelvben közölt érték

i Ingerlő anyag (izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát)

k(1A) rákkeltő 1A

T Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik. Korrigált AK = AK x 40/a heti óraszám

HR

Sastojci	Temelj	Vrijednost	Nadzorni parametri	Bilješka
Benzene	HR OEL	GVI	1 ppm, 3,25 mg/m3	koža, Karc 1A, Muta 1B,

Karc 1A Tvar koja je prema Uredbi (EZ) br. 1272/2008 razvrstana kao karcinogena 1.A kategorije

koža Razvrstana kao tvar koja nadražuje kožu (H315) ili je takva napomena navedena u direktivama

Muta 1B Tvar koja je prema Uredbi (EZ) br. 1272/2008 razvrstana kao mutagena 1.B kategorije

GR

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
Benzene	GR OEL	TWA	1 ppm, 3,25 mg/m3	Δ,

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

GB

Components	Basis	Value	Control parameters	Note
Benzene	GB EH40	TWA	1 ppm, 3,25 mg/m3	Sk, Carc,

Carc Capable of causing cancer and/or heritable genetic damage.

Sk Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.

FR

Composants	Base	Valeur	Paramètres de contrôle	Note
Benzene	FR VLE	VME	1 ppm, 3,25 mg/m3	C1A, M1B, Peau, VLR contraignantes,

C1A Substances que l'on sait être cancerogènes chez l'homme

M1B Substances devant être assimilées à des substances pour l'homme

Peau Risque de pénétration percutanée

VLR Valeurs limites réglementaires contraignantes

contraignantes

FI

Aineosat	Peruste	Arvo	Valvontaa koskevat muuttujat	Huomautus
Benzene	FI OEL CM	TWA	1 ppm, 3,25 mg/m3	

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ES

Componentes	Base	Valor	Parámetros de control	Nota
Benzene	ES VLA	VLA-ED	1 ppm, 3,25 mg/m ³	M1B, vía dérmica, C1A,

C1A Carcinógenos para el hombre, en base a la existencia de pruebas en humanos.
 M1B Sustancias de las que se considera que inducen mutaciones hereditarias en las células germinales humanas
 vía dérmica Vía dérmica

EE

Komponendid, osad	Alused	Väärtus	Kontrolliparameetrid	Märkused
Benzene	EE OEL	Piirnorm	0,5 ppm, 1,5 mg/m ³	A, C,
	EE OEL	Lühiajalise kokkupuute piirnorm	3 ppm, 9 mg/m ³	A, C,

A Naha kaudu kergesti absorbeeruvad ained
 C Kantserogeensed ained

DK

Komponenter	Basis	Værdi	Kontrolparametre	Note
Benzene	DK OEL	GV	0,5 ppm, 1,6 mg/m ³	H, K,

H Betyder, at stoffet kan optages gennem huden.
 K Betyder, at stoffet er optaget på listen over stoffer, der anses for at være kræftfremkaldende.

DE

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Benzene	DE TRGS 910	Akzeptanzkonzentration	0,06 ppm, 0,2 mg/m ³	H,
	DE TRGS 910	Toleranzkonzentration	0,6 ppm, 1,9 mg/m ³	H,

H hautresorptiv

CZ

Složky	Základ	Hodnota	Kontrolní parametry	Poznámka
Benzene	CZ OEL	PEL	3 mg/m ³	I, K, M, D,
	CZ OEL	NPK-P	10 mg/m ³	I, K, M, D,

D Při expozici se významně uplatňuje pronikání faktoru kůží
 I dráždí sliznice (oči, dýchací cesty), respektive kůži
 K karcinogen kategorie 1A a 1B (s větou H350, H350i)
 M mutagen v zárodečných buňkách kategorie 1A a 1B (s větou H340)

CH

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Benzene	CH SUVA	MAK-Wert	0,5 ppm, 1,6 mg/m ³	H, Carc.Cat.1, M1B, NIOSH, DFG, HSE, BG,

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)
 M1B Stoffe, die wahrscheinlich vererbare Mutationen an menschlichen Keimzellen auslösen.
 NIOSH National Institute for Occupational Safety and Health

BG

Съставки	Основа	Стойност	Параметри на контрол	Бележка
Benzene	BG OEL	TWA	1 ppm, 3,25 mg/m ³	

BE

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
Benzene	BE OEL	TGG 8 hr	1 ppm, 3,25 mg/m ³	D, C,

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

AT

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Benzene	AT OEL	TRK-TMW	1 ppm, 3,2 mg/m ³	H,
	AT OEL	TRK-KZW	4 ppm, 12,8 mg/m ³	H,

H Besondere Gefahr der Hautresorption

Biological exposure indices**SI**

Ime snovi	Št. CAS	Parametri nadzora	Čas vzorčenja	Sprememba

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Benzene	71-43-2	fenol: 18 mmol/mol kreatinina Rezultati, ki so izraženi s kreatininom, se pri koncentraciji kreatinina < 0.5 g/l in > 3.0 g/l, ne upoštevajo. (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 Rezultati, ki so izraženi s kreatininom, se pri koncentraciji kreatinina < 0.5 g/l in > 3.0 g/l, ne upoštevajo. (Urin)	Ob koncu delovne izmene	2001-12-11
		benzen: 0.12 Delov na milijon (Zadnji izdihani zrak)	16 Ur po končanem delu	2001-12-11

RO

Numele substanței	Nr. CAS	Parametri de control	Temp de prelevare a probei	Adus la zi
Benzene	71-43-2	fenoli totali: 50 mg/l (Urină)	Sfârșit schimb	2018-08-17
		acid S-fenil-mercapturic: 25 µg/g creatinină (Urină)	Sfârșit schimb	2018-08-17
		Acid t,t muconic: 500 µg/g creatinină (Urină)	Sfârșit schimb	2018-08-17

PT

Nome da substância	No. CAS	Parâmetros de controlo	Tempo de amostra	Atualizada em
Benzene	71-43-2	Ácido s-fenilmercaptúrico: 25 µg/g creatinina Valor basal (Urina) Abrangido por legislação nacional específica ()	Fim do turno	2014-11-14
		Ácido t,t-mucónico: 500 µg/g creatinina Valor basal (Urina) Abrangido por legislação nacional específica ()	Fim do turno	2014-11-14

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

IT

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

Az anyag megnevezése	CAS szám	Ellenőrzési paraméterek	Mintavétel időpontja	Aktualizálás
Benzene	71-43-2	S-fenil-merkaptursav: 0.04 mg/g kreatinin (húgyhólyag)	A műszak végén	2020-02-06
		S-fenil-merkaptursav: 0.22 µmol/mmol kreatinin (kerekített értékek) (húgyhólyag)	A műszak végén	2020-02-06

HR

Naziv tvari	CAS-br.	Nadzorni parametri	Vrijeme uzorkovanja	Ažurirati
Benzene	71-43-2	Benzen: 28 µg/l (Krv)	na kraju radne smjene	2018-10-12
		Benzen: 0.36 µmol/l (Krv)	na kraju radne smjene	2018-10-12
		S-fenilmerkapturna kiselina: 46 µg/g kreatinina Računato na prosječnu vrijednost kreatinina od 1,2 g/L urina. Za sve rezultate koji se izražavaju na kreatinin, koncentracije kreatinina < 0,5 g/L i > 3,0 g/L ne mogu se uzeti u obzir. (Urin)	na kraju radne smjene	2018-10-12

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		S-fenilmerkaptorna kiselina: 21.7 $\mu\text{mol/mol}$ kreatinina Računato na prosječnu vrijednost kreatinina od 1,2 g/L urina. Za sve rezultate koji se izražavaju na kreatinin, koncentracije kreatinina < 0,5 g/L i > 3,0 g/L ne mogu se uzeti u obzir. (Urin)	na kraju radne smjene	2018-10-12
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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 Cuando el final de la exposición no coincide con el final de la jornada laboral, la muestra se tomará lo antes posible después de que cese la exposición real (Orina)	Final de la jornada laboral	2017-01-01
		ácido S-fenilmercaptúrico: 0.045 mg/g creatinina Cuando el final de la exposición no coincide con el final de la jornada laboral, la muestra se tomará lo antes posible después de que cese la exposición real (Orina)	Final de la jornada laboral	2017-01-01

DE

Stoffname	CAS-Nr.	Zu überwachende Parameter	Probennahmezeit punkt	Stand
Benzene	71-43-2	Benzol: 5 $\mu\text{g/l}$ (Urin)	Äquivalenzwert zum Toleranzkonzentration: Expositionsende bzw. Schichtende	2019-03-29
		Benzol: 0,8 $\mu\text{g/l}$ für Nichtraucher abgeleitet (Urin)	Äquivalenzwert zum Akzeptanzkonzentration: Expositionsende bzw. Schichtende	2019-03-29
		S-Phenylmerkaptursäure: 25 $\mu\text{g/g}$ Kreatinin (Urin)	Äquivalenzwert zum Toleranzkonzentration: Expositionsende bzw. Schichtende	2019-03-29
		S-Phenylmerkaptursäure: 3 $\mu\text{g/g}$ Kreatinin für Nichtraucher abgeleitet (Urin)	Äquivalenzwert zum Toleranzkonzentration: Expositionsende bzw. Schichtende	2019-03-29
		Trans, trans-Muconsäure: 500 $\mu\text{g/g}$ Kreatinin (Urin)	Äquivalenzwert zum Toleranzkonzentration: Expositionsende bzw. Schichtende	2019-03-29

CZ

Název látky	Č. CAS	Kontrolní parametry	Doba odběru vzorku	Aktualizace
Benzene	71-43-2	S- Fenylmerkapturová kyselina: 0.05 mg/g kreatininu (moč)	Konec směny	2013-04-22
		S- Fenylmerkapturová kyselina: 0.024 $\mu\text{mol/mmol}$ 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 $\mu\text{mol/mmol}$ kreatininu (moč)	Konec směny	2013-04-22

CH

Stoffname	CAS-Nr.	Zu überwachende Parameter	Probennahmezeit punkt	Stand

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Benzene	71-43-2	S-Phenylmerkaptursäure: 25 µg/g Kreatinin BAT-Werte von Arbeitsstoffen mit der Einstufung 'krebserzeugend' C1 und C2. (Urin) Umwelteinflüsse; Die mit X gekennzeichneten biologischen Parameter werden auch in unterschiedlicher Quantität bei beruflich Nichtexponierten gemessen, da sie zusätzlich auf Umwelteinflüsse zurückgeführt werden können. Die Festsetzung des BAT-Wertes berücksichtigt bei diesen Parametern auch die Einflüsse von Umweltfaktoren. ()	Expositionsende, bzw. Schichtende	2016-01-01
		S-Phenylmerkaptursäure: 0.011 µmol/mmol Kreatinin BAT-Werte von Arbeitsstoffen mit der Einstufung 'krebserzeugend' C1 und C2. (Urin) Umwelteinflüsse; Die mit X gekennzeichneten biologischen Parameter werden auch in unterschiedlicher Quantität bei beruflich Nichtexponierten gemessen, da sie zusätzlich auf Umwelteinflüsse zurückgeführt werden können. Die Festsetzung des BAT-Wertes berücksichtigt bei diesen Parametern auch die Einflüsse von Umweltfaktoren. ()	Expositionsende, bzw. Schichtende	2016-01-01
		t,t-Mukonsäure: 500 µg/g Kreatinin Provisorische Festlegung. Die BAT-Werte für diesen biologische Parameter sind aus verschiedenen Gründen noch nicht definitiv festgelegt. (Urin) BAT-Werte von Arbeitsstoffen mit der Einstufung 'krebserzeugend' C1 und C2. () Umwelteinflüsse; Die mit X gekennzeichneten biologischen Parameter werden auch in unterschiedlicher Quantität bei beruflich Nichtexponierten gemessen, da sie zusätzlich auf Umwelteinflüsse zurückgeführt werden können. Die Festsetzung des BAT-Wertes berücksichtigt bei diesen Parametern auch die Einflüsse von Umweltfaktoren. ()	Expositionsende, bzw. Schichtende	2016-01-01
		t,t-Mukonsäure: 0.398 µmol/mmol Kreatinin Provisorische Festlegung. Die BAT-Werte für diesen biologische Parameter sind aus verschiedenen Gründen noch nicht definitiv festgelegt. (Urin) BAT-Werte von Arbeitsstoffen mit der Einstufung 'krebserzeugend' C1 und C2. () Umwelteinflüsse; Die mit X gekennzeichneten biologischen Parameter werden auch in unterschiedlicher Quantität bei beruflich Nichtexponierten gemessen, da sie zusätzlich auf Umwelteinflüsse zurückgeführt werden können. Die Festsetzung des BAT-Wertes berücksichtigt bei diesen Parametern auch die Einflüsse von Umweltfaktoren. ()	Expositionsende, bzw. Schichtende	2016-01-01

BG

Наименование на веществото	CAS номер	Параметри на контрол	Време на взимане на пробата	Последна актуализация
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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

AT

Stoffname	CAS-Nr.	Zu überwachende Parameter	Probennahmezeit punkt	Stand
Benzene	71-43-2	t,t-Muconsäure: 1,6 mg/l (Urin)	Nach Ablauf einer Arbeitswoche/am Ende des Arbeitstages/am Schichtende	2014-02-18

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

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

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

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

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

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

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	Potential health effects: Chronic effects, Systemic effects Value: 0,00325 mg/m ³ 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
PNEC	: Fresh water Value: 1,9 mg/l
PNEC	: Marine water Value: 1,9 mg/l
PNEC	: Fresh water sediment Value: 33 mg/l
PNEC	: Soil Value: 4,8 mg/l

8.2**Exposure controls****Engineering measures**

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

Personal protective equipment

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

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concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

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

Physical state : liquid
 Color : Clear, Colorless
 Odor : sweet, distinct

Safety data

Flash point : -11°C (12°F)
 Method: Tag closed cup

Lower explosion limit : 1,2 %(V)

Upper explosion limit : 7,8 %(V)

Oxidizing properties : no

Autoignition temperature : 498°C (928°F)

Molecular formula : C₆H₆

Molecular weight : 78,12 g/mol

pH : Not applicable

Pour point : No data available

Boiling point/boiling range : 80°C (176°F)

Vapor pressure : 75,00 MMHG
 at 20°C (68°F)

Relative density : 0,88
 at 25 °C (77 °F)

Water solubility : 1,88 g/l
 at 23,5°C (74,3°F)

Partition coefficient: n-
 octanol/water : log Pow: 2,13

Relative vapor density : 2,77
 (Air = 1.0)

Evaporation rate : 2,8

Percent volatile : > 99 %

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100 %

9.2 Other information
 Conductivity : < 50 pSm
 at 20 °C

SECTION 10: Stability and reactivity**10.1**

Reactivity : Stable at normal ambient temperature and pressure.

10.2

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

10.3**Possibility of hazardous reactions**

Hazardous reactions : Further information: No decomposition if stored and applied as directed.

Hazardous reactions: Vapors may form explosive mixture with air.

10.4

Conditions to avoid : Heat, flames and sparks.

10.5

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

10.6

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

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

Benzene : LD50: > 2.000 mg/kg
 Species: Rat
 Sex: female

Acute inhalation toxicity

Benzene : LC50: 44,5 mg/l
 Exposure time: 4 h

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Species: Rat
Sex: Not Specified
Test atmosphere: vapor

Acute dermal toxicity

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

**Benzene
Skin irritation**

: May cause skin irritation in susceptible persons.

**Benzene
Eye irritation**

: May irritate eyes.

Sensitization

Benzene : Did not cause sensitization on laboratory animals.

Repeated dose toxicity

Benzene : 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

Genotoxicity in vitro

Benzene : Test Type: Ames test
Result: negative

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Test Type: Cytogenetic assay
Result: positive

Test Type: Mouse lymphoma assay
Result: positive

Test Type: Sister Chromatid Exchange Assay
Result: negative

Genotoxicity in vivo

Benzene : Test Type: Mouse micronucleus assay
Result: positive

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.

**Benzene
Aspiration toxicity**

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

CMR effects

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.

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Benzene
Further information : Chronic Health Hazard.
Solvents may degrease the skin.

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

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

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

12.2**Persistence and degradability**

Biodegradability : This material is expected to be readily biodegradable.

12.3**Bioaccumulative potential**

Elimination information (persistence and degradability)

Bioaccumulation

Benzene : Bioconcentration factor (BCF): 13

12.4**Mobility in soil****Mobility**

Benzene : No data available

12.5**Results of PBT and vPvB assessment**

Results of PBT assessment : This substance/mixture contains no components considered

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to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6**Other adverse effects**

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

Ecotoxicology Assessment

Short-term (acute) aquatic hazard

Benzene : Toxic to aquatic life.

Long-term (chronic) aquatic hazard

Benzene : Harmful to aquatic life with long lasting effects.

SECTION 13: Disposal considerations**13.1****Waste treatment methods**

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

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

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

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

SECTION 14: Transport information**14.1 - 14.7****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)

UN1114, BENZENE, 3, II, RQ (BENZENE)

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IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN1114, BENZENE, 3, II, (-11°C)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN1114, BENZENE, 3, II

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

UN1114, BENZENE, 3, II, (D/E)

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

UN1114, BENZENE, 3, II

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

UN1114, BENZENE, 3, II

Other information	:	Benzene and mixtures having 10% Benzene or more, S.T. 3, Cat.Y
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Maritime transport in bulk according to IMO instruments

SECTION 15: Regulatory information**15.1****Safety, health and environmental regulations/legislation specific for the substance or mixture
National legislation**

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

15.2**Chemical Safety Assessment**

Components : benzene 200-753-7

Major Accident Hazard Legislation : ZEU_SEVES3 Update:
FLAMMABLE LIQUIDS
P5c
Quantity 1: 5.000 t
Quantity 2: 50.000 t

: 96/82/EC Update: 2003
Directive 96/82/EC does not apply

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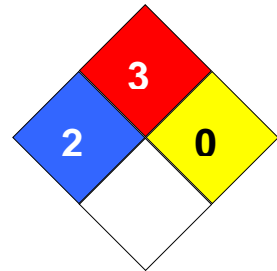
Revision Date 2021-09-23

Notification status

Europe REACH	:	This product is in full compliance according to REACH regulation 1907/2006/EC.
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	:	On or in compliance with the active portion of the TSCA inventory
Other AIIC	:	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	:	A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s).
Philippines PICCS	:	On the inventory, or in compliance with the inventory
Taiwan TCSI	:	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**

Legacy SDS Number : CPC00091

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

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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.

H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H340	May cause genetic defects.
H350	May cause cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.