1. Identification of the substance/mixture and of the company/undertaking

Product identifier:
Product name: Toluene
Product code(SDS NO): 7902E-2

Details of the supplier of the safety data sheet
Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
Address: 3-1, Honmachibashi, Chuo-ku,Osaka 540-0029,JAPAN
Division: Safety Management Dept. of Chemicals
Telephone number: +81-6-6946-8061
FAX: +81-6-6946-1607
e-mail address: kagakuhinanzenkanri@kishida.co.jp

2. Hazards identification

GHS classification and label elements of the product
Classification of the substance or mixture
Physical and chemical hazards
Flammable liquids: Category 2

HEALTH HAZARDS
  Acute toxicity Inhalation: Category 4
  Skin corrosion/irritation: Category 2
  Serious eye damage/eye irritation: Category 2B
  Reproductive toxicity: Category 1A
  Reproductive toxicity – effects on or via lactation: Additional category
  Specific target organ toxicity – single exposure: Category 1(CNS)
  Specific target organ toxicity – single exposure: Respiratory tract irritation Category 3
  Specific target organ toxicity – single exposure: Narcosis Category 3
  Specific target organ toxicity – repeated exposure: Category 1(CNS; kidney)
  Aspiration hazard: Category 1

ENVIRONMENT HAZARDS
  Hazardous to the aquatic environment – acute hazard: Category 2
  Hazardous to the aquatic environment – long–term hazard: Category 3

Label elements

Signal word: Danger

HAZARD STATEMENT
  Highly flammable liquid and vapor
  Harmful if inhaled
  Causes skin irritation
  Causes eye irritation
  May damage fertility or the unborn child
  May cause harm to breast–fed children
  Causes damage to organs after single exposure
  May cause respiratory irritation
  May cause drowsiness or dizziness
  Causes damage to organs through prolonged or repeated exposure
May be fatal if swallowed and enters airways
Toxic to aquatic life
Harmful to aquatic life with long lasting effects
PRECAUTIONARY STATEMENT

Prevention
Avoid release to the environment.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wear protective gloves and face protection.
Do not eat, drink or smoke when using this product.

Response
In case of fire: Use appropriate media other than water for extinction.
Get medical advice/attention if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Do NOT induce vomiting.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

Storage
Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal
Dispose of contents/container in accordance with local/national regulation.

Physical and Chemical hazards
Highly flammable liquid. Vapor/air mixture may explode.

3. Composition/information on ingredients
Mixture/Substance selection:
Substance
Ingredient name: Toluene
Content(%): 99 (min)
Chemical formula: C7H8
Chemicals No., Japan: 3–2
CAS No.: 108–88–3
MW: 92.14

Note: The figures shown above are not the specifications of the product.
4. First-aid measures
   Descriptions of first-aid measures
   
   General measures
   Get medical attention/advice if you feel unwell.
   
   IF INHALED
   Remove person to fresh air and keep comfortable for breathing.
   Call a POISON CENTER or doctor/physician if you feel unwell.
   
   IF ON SKIN (or hair)
   Take off immediately all contaminated clothing. Rinse skin with water/shower.
   Wash with plenty of soap and water.
   If skin irritation or rash occurs: Get medical advice/attention.
   
   IF IN EYES
   Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy
to do. Continue rinsing.
   If eye irritation persists: Get medical advice/attention.
   
   IF SWALLOWED
   Do NOT induce vomiting.
   Call a POISON CENTER or doctor/physician if you feel unwell.

5. Fire-fighting measures
   Extinguishing media
   Suitable extinguishing media
   Use appropriate extinguishing media suitable for surrounding facilities.
   
   Specific hazards arising from the substance or mixture
   Containers may explode when heated.
   Fire may produce irritating, corrosive and/or toxic gases.
   
   Advice for firefighters
   Specific fire-fighting measures
   Evacuate non-essential personnel to safe area.
   Special protective equipment and precautions for fire-fighters
   Wear fire/flame resistant/retardant clothing.
   Wear protective gloves/protective clothing/eye protection/face protection.
   Firefighters should wear self-contained breathing apparatus with full face peace operated
positive pressure mode.

6. Accidental release measures
   Personnel precautions, protective equipment and emergency procedures
   Ventilate area after material pick up is complete.
   Wear proper protective equipment.
   
   Methods and materials for containment and cleaning up
   Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste
   container.
   
   Preventive measures for secondary accident
   Collect spillage.

7. Handling and storage
   Precautions for safe handling
   Preventive measures
   (Exposure Control for handling personnel)
   Do not breathe dust/fume/gas/mist/vapors/spray.
(Protective measures against fire and explosion)
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.

Exhaust/ventilator
Exhaust/ventilator should be available.

Safety treatments
Avoid contact with skin.
Avoid contact with eyes.

Safety Measures/Incompatibility
Use only outdoors or in a well-ventilated area.
Wear protective gloves, protective clothing or face protection.
When using do not eat, drink or smoke.

Conditions for safe storage, including any incompatibilities
Recommendation for storage
Keep container tightly closed.
Store in a cool, dry place. Do not store in direct sunlight.
keep under lock and key.

8. Exposure controls/personal protection

Control parameters
Adopted value
(Toluene)
ACGIH(2006) TWA: 20ppm (Visual impair; female repro; pregnancy loss)
OSHA–PEL
TolueneTWA: 200ppm; STEL: C 300ppm
Acceptable maximum peak: 500ppm; Maximum Duration: 10min

Exposure controls
Appropriate engineering controls
Do not use in areas without adequate ventilation.
Eye wash station should be available.
Washing facilities should be available.

Individual protection measures
Respiratory protection
Wear respiratory protection.

Hand protection
Wear protective gloves.

Eye protection
Wear eye/face protection.

Safety and Health measures
Wash ... thoroughly after handling.
Do not eat, drink or smoke when using this product.
Take off contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties

Information on basic physical and chemical properties
Physical properties
Appearance: Liquid
Color: Colorless, clear
Odor: Characteristic odor
Phase change temperature
Initial Boiling Point/Boiling point: 111°C
Melting point/Freezing point: -95°C
Decomposition temperature data N.A.
Flash point: (Toluene)(C.C.) 4°C
Auto-ignition temperature: 480°C
Explosive properties: Flammability or explosive limit
   Lower limit: 1.1 vol %
   Upper limit: 7.1 vol %
Vapor pressure: 3.8 kPa (25 ℃)
Vapor density data N.A.
Relative Vapor Density (Air=1): 3.1
Relative density of the Vapor/air–mixture at 20°C (Air = 1): 1.01
Specific gravity/Density: 0.87
Solubility
   Solubility in water: None
   n-Octanol /water partition coefficient: log Pow2.69

10. Stability and Reactivity
Chemical stability
   Stable under normal storage/handling conditions.
Possibility of hazardous reactions
   Reacts violently with strong oxidants. This generates fire and explosion hazard. (ICSC 0078)
Conditions to avoid
   Contact with incompatible materials.
   Contact with fire source.
Incompatible materials
   Strong oxidizing agents
Hazardous decomposition products
   Carbon oxides

11. Toxicological Information
Information on toxicological effects
Acute toxicity
   Acute toxicity (Inhalation)
      [GHS Cat. Japan, base data]
      (Toluene)
      vapor : rat LC50 =3319 – 8800 ppm/4hr (EU–RAR, 2003) et al
Irritant properties
   Skin corrosion/irritation
      [GHS Cat. Japan, base data]
      (Toluene)
      rabbit moderate irritating (EU–RAR, 2003)
Serious eye damage /irritation
   [GHS Cat. Japan, base data]
   (Toluene)
   rabbit slight eye irritation (EU–RAR, 2003)
No Allergenic and sensitizing effects data available
No Mutagenic effects data available
Carcinogenicity
   (Toluene)
   IARC–Gr.3 : Not Classifiable as a Human Carcinogen
Reproductive toxicity

[GHS Cat. Japan, base data]

(Toluene)
cat.1A; CERI/NITE hazard assessment 87, 2006
(Toluene)
cat.add; SIDS(J), Access on Apr. 2012

No Teratogenic effects data available

Delayed and immediate effects and also chronic effects from short- and long-term exposure

STOT

STOT—single exposure

[cat.1]

[Japan published data]

(Toluene)

CNS (IARC 47, 1989; IRIS tox. Review, 2005)

[cat.3(resp. irrit.)]

[Japan published data]

(Toluene)

Respiratory tract irritation (PATTY 5th, 2001)

[cat.3(drow./dizz.)]

[Japan published data]

(Toluene)

Narcosis (EHC 52, 1985; IARC 47, 1989)

STOT—repeated exposure

[cat.1]

[Japan published data]

(Toluene)

CNS; kidney (Occupational medicine vol.36, 1994)

Aspiration hazard

[cat.1]

[GHS Cat. Japan, base data]

(Toluene)
cat.1; hydrocarbon, kinematic viscosity =0.86 mm²/s (40°C)

12. Ecological Information

Ecotoxicity

Aquatic toxicity

Toxic to aquatic life
Harmful to aquatic life with long lasting effects

Aquatic acute toxicity component(s) data

[GHS Cat. Japan, base data]

(Toluene)

Crustacea (Ceriodaphnia dubia) EC50=3.78mg/L/48hr (NITE risk primary assessment, 2006)

Aquatic chronic toxicity component(s) data

[GHS Cat. Japan, base data]

(Toluene)

Crustacea (Ceriodaphnia dubia) NOEC=0.74mg/L/7days (NITE risk primary assessment, 2006)

Water solubility

(Toluene)
none (ICSC, 2002)

Persistence and degradability

(Toluene)
13. Disposal considerations

Waste treatment methods

Avoid release to the environment (− if this is not the intended use).
Dispose of contents/container in accordance with local/national regulation.

14. Transport Information

UN number: 1294
UN proper shipping name: TOLUENE
Transport hazard class(es): 3
Packing group: II
ERG GUIDE NO.: 130

Environmental hazards
MARPOL Annex V – Substances Harmful to Marine Environment
Reproductive toxicity: cat.1, 1A, 1B
Toluene
Specific target organ toxicity – repeated exposure: cat.1
Toluene

Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code
Noxious Liquid; Cat. Y
Toluene

15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture
US major regulations
TSCA
Toluene

Other regulatory information
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information

GHS classification and labelling
Flam. Liq. 2: H225 Highly flammable liquid and vapor
Acute Tox. 4: H332 Harmful if inhaled
Skin Irrit. 2: H315 Causes skin irritation
Eye Irrit. 2B: H320 Causes eye irritation
Repr. 1A: H360 May damage fertility or the unborn child
Lact.: H362 May cause harm to breast-fed children
STOT SE 1: H370 Causes damage to organs after single exposure
STOT SE 3: H335 May cause respiratory irritation
STOT SE 3: H336 May cause drowsiness or dizziness
STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure
Toluene, KISHIDA CHEMICAL CO., LTD., 7902E-2, 23/08/2018

Asp. Tox. 1: H304 May be fatal if swallowed and enters airways
Aquatic Acute 2: H401 Toxic to aquatic life
Aquatic Chronic 3: H412 Harmful to aquatic life with long lasting effects

Reference Book
Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN
Classification, labelling and packaging of substances and mixtures (table 3-1 ECNO6182012)
2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2018 TLVs and BEIs. (ACGIH)
http://monographs.iarc.fr/ENG/Classification/index.php
Supplier's data/information

General Disclaimer
This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determine the safety and suitability of each such product or combination for their own purposes.

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products’ properties.

The GHS classification data given here is based on current Japan official data (NITE published in 2016).