SDMS Doc ID 2027606

NIOSH Pocket Guide to Chemical Hazards

1,1,2-Trichloro-1,2,2-trifluoroethane	CAS 76-13-1
CCl_2FCClF_2	RTECS KJ4000000
Synonyms & Trade Names Chlorofluorocarbon-113, CFC-113, Freon® 113, Genetron® 113, Halocarbon 113, Refrigerant 113, TTE	**DOT ID & Guide**

Exposure Limits	NIOSH REL: TWA 1000 ppm (7600 mg/m^3) ST 1250 ppm (9500 mg/m^3)
	OSHA PEL†: TWA 1000 ppm (7600 mg/m^3)

IDLH 2000 ppm See: 76131	**Conversion** 1 ppm = 7.67 mg/m^3

Physical Description
Colorless to water-white liquid with an odor like carbon tetrachloride at high concentrations. [Note: A gas above 118°F.]

MW: 187.4	BP: 118°F	FRZ: -31°F	Sol(77°F): 0.02%
VP: 285 mmHg	IP: 11.99 eV		Sp.Gr(77°F): 1.56
Fl.P: ?	UEL: ?	LEL: ?	

Noncombustible Liquid at ordinary temperatures, but the gas will ignite and burn weakly at 1256°F.

Incompatibilities & Reactivities
Chemically-active metals such as calcium, powdered aluminum, zinc, magnesium & beryllium [Note: Decomposes if in contact with alloys containing >2% magnesium.]

Measurement Methods
NIOSH 1020; OSHA 113
See: NMAM or OSHA Methods

Personal Protection & Sanitation	**First Aid** (See procedures)
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA
Up to 2000 ppm: (APF = 10) Any supplied-air respirator/(APF = 50) Any self-contained breathing apparatus with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure- demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front-

or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Exposure Routes inhalation, ingestion, skin and/or eye contact
Symptoms Irritation skin, throat, drowsiness, dermatitis; central nervous system depression; in animals: cardiac arrhythmias, narcosis
Target Organs Skin, heart, central nervous system, cardiovascular system
See also: INTRODUCTION See ICSC CARD: 0050

International Chemical Safety Cards

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE

ICSC: 0050

Trichlorotrifluoroethane
CFC 113
R 113
$C_2Cl_3F_3$ / $Cl_2FCCClF_2$
Molecular mass: 187.4

ICSC # 0050
CAS # 76-13-1
RTECS # KJ4000000

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames.	In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE			
•**INHALATION**	Cardiac arrhythmia. Confusion. Drowsiness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•**SKIN**	Redness.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
•**EYES**	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: self-contained breathing apparatus.)	Separated from metals and alloys. See Chemical Dangers. Cool. Ventilation along the floor.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0050

International Chemical Safety Cards

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE

ICSC: 0050

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS VOLATILE LIQUID , WITH CHARACTERISTIC ODOUR **PHYSICAL DANGERS:** The vapour is heavier than air and may accumulate in low ceiling spaces causing deficiency of oxygen. **CHEMICAL DANGERS:** On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive gases (hydrogen chloride ICSC 0163, phosgene ICSC 0007, hydrogen fluoride ICSC 0283, carbonyl fluoride ICSC 0633) Reacts violently with powdered metals causing fire and explosion hazard Attacks magnesium and its alloys. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 1000 ppm as TWA 1250 ppm as STEL A4 (ACGIH 2001) MAK 500 ppm; 3900 mg/m^3, IV (2001) OSHA PEL: TWA 1000 ppm (7600 mg/m^3) NIOSH REL: TWA 1000 ppm (7600 mg/m^3) ST 1250 ppm (9500 mg/m^3) NIOSH IDLH: 2000 ppm	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation and by ingestion **INHALATION RISK:** On loss of containment this liquid evaporates very quickly displacing the air and causing a serious risk of suffocation when in confined areas **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes . The substance may cause effects on the cardiovascular system and central nervous system , resulting in cardiac disorders and central nervous system depression Exposure could cause lowering of consciousness. See Notes. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis.
PHYSICAL PROPERTIES	Boiling point: 48°C Melting point. -36°C Relative density (water = 1). 1.56 Solubility in water, g/100 ml at 20°C: 0.02 Vapour pressure, kPa at 20°C. 36	Relative vapour density (air = 1): 6.5 Relative density of the vapour/air-mixture at 20°C (air = 1): 3.0 Auto-ignition temperature. 680°C Octanol/water partition coefficient as log Pow 3.30
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. This substance may be hazardous to the environment; special attention should be given to its impact on the ozone layer. 	

NOTES

High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death Check oxygen content before entering area. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. Freon 113, Frigen 113, Halon 113 are trade names.

ADDITIONAL INFORMATION

ICSC: 0050	**1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE**

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

NIOSH Pocket Guide to Chemical Hazards

Tetrachloroethylene	**CAS** 127-18-4
$Cl_2C=CCl_2$	**RTECS** KX3850000
Synonyms & Trade Names Perchlorethylene, Perchloroethylene, Perk, Tetrachlorethylene	**DOT ID & Guide** 1897 160

Exposure Limits	NIOSH REL: Ca Minimize workplace exposure concentrations. See Appendix A
	OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3-hours)

IDLH Ca [150 ppm] See: 127184	**Conversion** 1 ppm = 6.78 mg/m^3

Physical Description
Colorless liquid with a mild, chloroform-like odor.

MW: 165.8	BP: 250°F	FRZ: -2°F	Sol: 0.02%
VP: 14 mmHg	IP: 9.32 eV		Sp.Gr: 1.62
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.

Incompatibilities & Reactivities
Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash

Measurement Methods
NIOSH 1003; OSHA 1001
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench	**First Aid** (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact
Symptoms Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]
Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system **Cancer Site** [in animals: liver tumors]
See also: INTRODUCTION See ICSC CARD: 0076 See MEDICAL TESTS: 0179

NIOSH Pocket Guide to Chemical Hazards

Toluene	**CAS** 108-88-3
$C_6H_5CH_3$	**RTECS** XS5250000
Synonyms & Trade Names Methyl benzene, Methyl benzol, Phenyl methane, Toluol	**DOT ID & Guide** 1294 130

Exposure Limits	NIOSH REL: TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)
	OSHA PEL†: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)

IDLH 500 ppm See: 108883	**Conversion** 1 ppm = 3.77 mg/m^3

Physical Description
Colorless liquid with a sweet, pungent, benzene-like odor.

MW: 92.1	BP: 232°F	FRZ: -139°F	Sol(74°F): 0.07%
VP: 21 mmHg	IP: 8.82 eV		Sp.Gr: 0.87
Fl.P: 40°F	UEL: 7.1%	LEL: 1.1%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers

Measurement Methods
NIOSH 1500, 1501, 3800, 4000; OSHA 111
See: NMAM or OSHA Methods

Personal Protection & Sanitation	**First Aid** (See procedures)
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
Up to 500 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/(APF = 10) Any supplied-air respirator*/(APF = 50) Any self-contained breathing apparatus with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact
Symptoms Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage
Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys
See also: INTRODUCTION See ICSC CARD: 0078 See MEDICAL TESTS: 0232

NIOSH Pocket Guide to Chemical Hazards

Petroleum distillates (naphtha)	**CAS** 8002-05-9
	RTECS SE7449000
Synonyms & Trade Names Aliphatic petroleum naphtha, Petroleum naphtha, Rubber solvent	**DOT ID & Guide** 1255 128

Exposure Limits	NIOSH REL: TWA 350 mg/m^3 C 1800 mg/m^3 [15-minute]
	OSHA PEL†: TWA 500 ppm (2000 mg/m^3)

IDLH 1100 ppm [10%LEL] See: 8002059	**Conversion** 1 ppm = 4.05 mg/m^3

Physical Description
Colorless liquid with a gasoline- or kerosene-like odor. [Note: A mixture of paraffins (C5 to C13) that may contain a small amount of aromatic hydrocarbons.]

MW: 99 (approx)	BP: 86-460°F	FRZ: -99°F	Sol: Insoluble
VP: 40 mmHg (approx)	IP: ?		Sp.Gr: 0.63-0.66
Fl.P: -40 to -86°F	UEL: 5.9%	LEL: 1.1%	

Flammable Liquid

Incompatibilities & Reactivities
Strong oxidizers

Measurement Methods
NIOSH 1550
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation	**First Aid** (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
Up to 850 ppm: (APF = 10) Any supplied-air respirator
Up to 1100 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode*/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front-

or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Exposure Routes inhalation, ingestion, skin and/or eye contact
Symptoms Irritation eyes, nose, throat; dizziness, drowsiness, headache, nausea; dry cracked skin; chemical pneumonitis (aspiration liquid)
Target Organs Eyes, skin, respiratory system, central nervous system
See also: INTRODUCTION

NIOSH Pocket Guide to Chemical Hazards

2-Aminopyridine	CAS 504-29-0
$NH_2C_5H_4N$	RTECS US1575000
Synonyms & Trade Names alpha-Aminopyridine, alpha-Pyridylamine	**DOT ID & Guide** 2671 153

Exposure Limits	
	NIOSH REL: TWA 0.5 ppm (2 mg/m^3)
	OSHA PEL: TWA 0.5 ppm (2 mg/m^3)

IDLH 5 ppm See: 504290	**Conversion** 1 ppm = 3.85 mg/m^3

Physical Description
White powder, leaflets, or crystals with a characteristic odor.

MW: 94.1	BP: 411°F	MLT: 137°F	Sol: >100%
VP(77°F): 0.8 mmHg	IP: 8.00 eV		Sp.Gr: ?
Fl.P: 154°F	UEL: ?	LEL: ?	

Combustible Solid

Incompatibilities & Reactivities
Strong oxidizers

Measurement Methods
NIOSH S158 (II-4)
See: NMAM or OSHA Methods

Personal Protection & Sanitation	**First Aid** (See procedures)
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily Provide: Quick drench	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA
Up to 5 ppm: (APF = 10) Any supplied-air respirator*/(APF = 50) Any self-contained breathing apparatus with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, nose, throat; headache, dizziness; excitement; nausea; high blood pressure; respiratory distress; lassitude (weakness, exhaustion); convulsions; stupor
Target Organs central nervous system, respiratory system
See also: INTRODUCTION See ICSC CARD: 0214

NIOSH Pocket Guide to Chemical Hazards

Isobutyl alcohol	**CAS** 78-83-1
$(CH_3)_2CHCH_2OH$	**RTECS** NP9625000
Synonyms & Trade Names IBA, Isobutanol, Isopropylcarbinol, 2-Methyl-1-propanol	**DOT ID & Guide** 1212 129

Exposure Limits	NIOSH REL: TWA 50 ppm (150 mg/m^3)
	OSHA PEL†: TWA 100 ppm (300 mg/m^3)

IDLH 1600 ppm See: 78831	**Conversion** 1 ppm = 3.03 mg/m^3

Physical Description
Colorless, oily liquid with a sweet, musty odor.

MW: 74.1	BP: 227°F	FRZ: -162°F	Sol: 10%
VP: 9 mmHg	IP: 10.12 eV		Sp.Gr: 0.80
Fl.P: 82°F	UEL(202°F): 10.6%	LEL(123°F): 1.7%	

Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.

Incompatibilities & Reactivities
Strong oxidizers

Measurement Methods
NIOSH 1401, 1405; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation	**First Aid** (See procedures) Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
Up to 500 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*/(APF = 10) Any supplied-air respirator*
Up to 1250 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode*/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
Up to 1600 ppm: (APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s)*/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000)

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus **Escape**: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Exposure Routes inhalation, ingestion, skin and/or eye contact
Symptoms Irritation eyes, skin, throat; headache, drowsiness; skin cracking; in animals: narcosis
Target Organs Eyes, skin, respiratory system, central nervous system
See also: INTRODUCTION See ICSC CARD: 0113

International Chemical Safety Cards

ISOBUTANOL

ICSC: 0113

2-Methyl-1-propanol
Isopropyl carbinol
Isobutyl alcohol
$C_4H_{10}O/(CH_3)_2CHCH_2OH$
Molecular mass: 74.1

ICSC # 0113
CAS # 78-83-1
RTECS # NP9625000
UN # 1212
EC # 603-004-00-6

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Foam, alcohol-resistant foam, powder, carbon dioxide.
EXPLOSION	Above 28°C explosive vapour/air mixtures may be formed.	Above 28°C use a closed system, ventilation, and explosion-proof electrical equipment.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Cough. Dizziness. Drowsiness. Headache.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain. Blurred vision.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Diarrhoea. Nausea. Vomiting (further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Wash away remainder with plenty of water (extra personal protection: A filter respirator for organic vapour).	Fireproof. Separated from strong oxidants.	Note: C Xn symbol R: 10-20 S: 2-16 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK	
ICSC: 0113	Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1998. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values

International Chemical Safety Cards

ISOBUTANOL

ICSC: 0113

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Reacts with strong oxidants, such as chromium trioxide, causing fire hazard. Attacks some plastic and rubber. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 50 ppm; 152 mg/m^3 (as TWA) (ACGIH 1994-1995). MAK: 100 ppm; 300 mg/m^3 (1994). OSHA PEL: TWA 100 ppm (300 mg/m^3) NIOSH REL: TWA 50 ppm (150 mg/m^3) NIOSH IDLH: 1600 ppm	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** The vapour of this substance irritates the eyes and the respiratory tract. The substance may cause effects on the central nervous system. Exposure to high concentrations could cause lowering of consciousness. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis.
PHYSICAL PROPERTIES	Boiling point: 108°C Melting point: -108°C Relative density (water = 1): 0.8 Solubility in water, g/100 ml at 20°C: 8.7 Vapour pressure, kPa at 20°C: 1.2 Relative vapour density (air = 1): 2.6	Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 28°C c.c. Auto-ignition temperature: 415°C Explosive limits, vol% in air: 1.7-10.9 Octanol/water partition coefficient as log Pow: 0.8
ENVIRONMENTAL DATA		

NOTES

Transport Emergency Card: TEC (R)-583
NFPA Code: H1; F3; R0

ADDITIONAL INFORMATION

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NIOSH Pocket Guide to Chemical Hazards

Pyridine	**CAS** 110-86-1
C_5H_5N	**RTECS** UR8400000
Synonyms & Trade Names Azabenzene, Azine	**DOT ID & Guide** 1282 129

Exposure Limits	NIOSH REL: TWA 5 ppm (15 mg/m^3)
	OSHA PEL: TWA 5 ppm (15 mg/m^3)

IDLH 1000 ppm See: 110861	**Conversion** 1 ppm = 3.24 mg/m^3

Physical Description
Colorless to yellow liquid with a nauseating, fish-like odor.

MW: 79.1	BP: 240°F	FRZ: -44°F	Sol: Miscible
VP: 16 mmHg	IP: 9.27 eV		Sp.Gr: 0.98
Fl.P: 68°F	UEL: 12.4%	LEL: 1.8%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers, strong acids

Measurement Methods
NIOSH 1613; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash, Quick drench	**First Aid** (See procedures) Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA
Up to 125 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode[£]/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)[£]
Up to 50 ppm: (APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s)[£]/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece
Up to 1000 ppm: (APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000)

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus **Escape**: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact
Symptoms Irritation eyes; headache, anxiety, dizziness, insomnia; nausea, anorexia; dermatitis; liver, kidney damage
Target Organs Eyes, skin, central nervous system, liver, kidneys, gastrointestinal tract,
See also: INTRODUCTION See ICSC CARD: 0323 See MEDICAL TESTS: 0200