SAFETY DATA SHEET
ACCORDING TO US CFR 1910.1200

1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

GHS Product Identifier METHYLENE CHLORIDE
CAS No. 000075-09-2
Alternative names Dichloromethane

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

Identified use(s) Colouring agent, Foaming or blowing agent, anti-set off and adhesive agent, Heat transfer agent, Chemical intermediate, Laboratory chemical, Solvent, Plating agent, Metal surface treating agent, Processing aid.

Uses advised against None

1.3 Details of the supplier of the safety data sheet

Company Identification
INOVYN Americas Inc
21255A LA Hwy 1 South
Block 5501
Plaquemine, LA 70764
Tel No (866) 296-0146

E-Mail (competent person) msds@inovyn.com

1.4 Emergency telephone number

call CHEMTREC (+1) 800-424-9300
For medical emergencies call (+1) 800-317-9643

2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

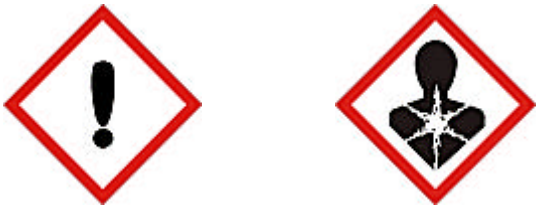
Regulation US CFR 1910.1200 Carc. 2, Skin Irrit. 2, Eye Irrit. 2, STOT SE 3

2.2 Label elements

Hazard statement(s)
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H336: May cause drowsiness or dizziness.
H351: Suspected of causing cancer.

Signal word(s) WARNING

Hazard pictogram(s)



Precautionary statement(s)
P260: Do not breathe mist/vapours/spray.
P262: Do not get in eyes, on skin, or on clothing.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Additional label requirements
None

2.3 Other hazards

Continued or high exposures by inhalation will cause anaesthetic effects. This may result in a loss of consciousness and could prove fatal. Methylene chloride is converted to carbon monoxide in the body, which reduces the oxygen carrying capacity of the blood. Due to the risk of explosion DO NOT weld, cut or burn drums or other vessels which contain or have contained methylene chloride.

2.4 Additional Information

None

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Hazardous ingredient(s)	%(w/w)	CAS No.	H - Codes	GHS Classification
Dichloromethane (Methylene Chloride)	100	000075-09-2	H315, H319, H335 H336, H351	Carc. 2, Skin Irrit. 2, Eye Irrit. 2, STOT SE 3

4. SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation — Remove patient from exposure, keep warm and at rest. Administer oxygen if necessary. Apply artificial respiration if breathing has ceased or shows signs of failing. In the event of cardiac arrest apply external cardiac massage. Obtain immediate medical attention.

Skin Contact — Remove contaminated clothing. After contact with skin, wash immediately with plenty of water. If symptoms (irritation or blistering) occur obtain medical attention.

Eye Contact — Immediately irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 10 minutes. Obtain immediate medical attention.

Ingestion — Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink. Obtain immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed

High atmospheric concentrations will lead to anaesthetic effects and adverse effects on the central nervous system. Symptoms may include lightheadedness, nausea, vomiting and headache. Exposure to concentrations of 1000ppm for 20 minutes causes lightheadedness. Continued or high exposures by inhalation will cause anaesthetic effects. This may result in a loss of consciousness and could prove fatal.

4.3 Indication of any immediate medical attention and special treatment needed

Remove contaminated clothing immediately. In case of accident by inhalation remove casualty to fresh air and keep at rest. Seek medical treatment when anyone has symptoms apparently due to inhalation, contact with skin or eyes, or swallowing. Adrenaline and similar sympathomimetic drugs should be avoided following exposure as cardiac arrhythmia may result with possible subsequent cardiac arrest.

5. SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing Media — Normal extinguishing media. As appropriate for surrounding fire. Water spray should be used to cool containers.

Unsuitable Extinguishing Media — None anticipated

5.2 Special hazards arising from the substance or mixture

Explosive mixtures of methylene chloride and air can be formed, but are difficult to ignite and require high intensity sources of heat, such as welding arcs, sparks and flames or high temperatures and pressures; addition of small amounts of flammable substances to methylene chloride (such as flammable liquids or gases) and / or an increase in the oxygen content of the local atmosphere, may strongly enhance these effects. Thermal decomposition and burning will evolve toxic and corrosive vapours of hydrogen chloride and phosgene. Containers may burst if overheated due to thermal expansion of the contents.

5.3 Advice for fire-fighters

A self contained breathing apparatus and full protective clothing must be worn in fire conditions.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Ensure suitable personal protection during removal of spillages. Do not breathe vapor. Avoid contact with skin and eyes.

6.2 Environmental precautions

Avoid release to the environment. Use appropriate containment to avoid environmental contamination.

6.3 Methods and material for containment and cleaning up

Do not allow to enter drains, sewers or watercourses. Adsorb onto earth or sand and remove to safe place. Transfer to a container for disposal or recovery.

6.4 Reference to other sections

See Section: 8, 13

6.5 Additional information

Spillages or uncontrolled discharges into waterways must be alerted to the Environment Protection Agency or other appropriate regulatory body.

7. SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Do not breathe vapor. Use only in well ventilated areas. The vapor may be invisible, heavier than air and spread along ground. Avoid contact with skin and eyes. Keep away from sources of ignition - No smoking.

7.2 Conditions for safe storage, including any incompatibilities

Keep only in the original container in a cool, well-ventilated place. Keep away from direct sunlight.
All bulk storage vessels should be made of steel and require a suitable vent or pressure relief valve and secondary containment to prevent uncontrolled losses from accidental release. Do not use aluminium or its alloys in the construction of storage vessels, pipework and ancillary equipment, including internal components e.g. pump impellers. Due to the risk of explosion DO NOT weld, cut or burn drums or other vessels which contain or have contained methylene chloride.

7.3 Specific end use(s)

See Section: 16

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

HAZARDOUS INGREDIENT(S)	CAS No.	OSHA PEL	ACGIH	Company 8 hr LTEL	Company 15 min STEL	Notes
Dichloromethane (Methylene Chloride)	000075-09-2	25 ppm (8hr TWA) 125 ppm (15 min STEL)	50 ppm (8 hr TWA)	-	-	A3 BEI

8.2 Exposure controls

Appropriate engineering controls

Provide adequate ventilation to ensure that the occupational exposure limit is not exceeded.

Personal Protection

Eye/face protection — Wear eye/face protection.

Skin protection — Wear suitable protective clothing and gloves. Gloves should be changed when permeation is likely. PVC has a breakthrough time of approximately 5 minutes for methylene chloride. PVA gives longer protection, but is weakened by alcohols and water and will provide less effective protection as a result. Check with protective equipment manufacturer's data.

Respiratory protection — Wear suitable respiratory protective equipment if exposure to levels above the occupational exposure limit is likely. Positive air supplied RPE is recommended.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Form	volatile liquid
Color	clear
Odor	Sharp penetrating
Odor Threshold (ppm)	approx 200ppm
Boiling Point (Deg C)	40
Melting Point (Deg C)	-97
Vapor Pressure (mm Hg)	355 at 20 Deg C , 529 at 30 Deg C
Solubility (Water)	slightly soluble 1.3% at 25 Deg C
Solubility (Other)	Miscible with most organic solvents.
Specific Gravity	1.32 (Water = 1 at 4 Deg C)
Vapor Density (Air= 1)	2.93
Additional properties	Flash point (BS EN 22719:1994) : None Small Scale Test for Combustibility (BS 3900) : Non-combustible. Explosive limits (Company test method) : at 25 Deg C LEL 18.8% v/v, UEL 19.5% v/v at 50 Deg C LEL 17.5% v/v, UEL 20.1% v/v at 100 Deg C LEL 16.1% v/v, UEL 21.5% v/v

9.2 Other information

Explosive limit data from Company measurements using 5 litre ASTM flask with 6 Amp hot wire or fusing wire ignition source.

10. SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Keep away from direct sunlight.
Keep away from moisture.

10.2 Chemical Stability

Stable in the presence of inhibitor.

10.3 Possibility of hazardous reactions

Forms a detonable mixture with nitric acid.
May react with certain amines, e.g. polyurethane catalysts.

10.4 Conditions to avoid

Avoid contact with heat and ignition sources.

10.5 Incompatible materials

Prolonged contact with aluminium or light alloys may cause a reaction resulting in the generation of hydrogen chloride gas and heat.

10.6 Hazardous Decomposition Product(s)

hydrogen chloride , Phosgene.

11. SECTION 11: TOXICOLOGICAL INFORMATION

Test result / data

Acute oral toxicity	The swallowing of small splashes is unlikely to cause any adverse effects. Large amounts may produce internal irritation, nausea, vomiting and diarrhoea and can lead to drowsiness and unconsciousness. LD50 (rat, oral) >2000 mg/kg
Acute inhalation toxicity	High concentrations of vapor may be irritant to the respiratory tract. High atmospheric concentrations will lead to anaesthetic effects and adverse effects on the central nervous system. Symptoms may include lightheadedness, Exposure to high atmospheric concentrations (>1000 ppm) methylene chloride may cause lightheadedness. Exposure to very high concentrations may result in loss of consciousness and may cause an abnormal heart rhythm and prove suddenly fatal. Methylene chloride is converted to carbon monoxide in the body, which reduces the oxygen carrying capacity of the blood. This is reflected by a raised carboxyhaemoglobin concentration in the blood. Value used for Chemical Safety Assessment LC50 (8 hr mouse) 56230 mg/m^3
Acute dermal toxicity	Can be absorbed through skin but not in sufficient amounts to cause adverse effects. LD50 (rat, dermal) >2000 mg/kg bw

Skin irritation.	Irritating to skin. Will remove the natural greases resulting in dryness, cracking and dermatitis. Repeated and/or prolonged skin contact may cause reddening, burning and blisters.
Serious eye damage/irritation	Irritating to eyes.
Respiratory irritation	Classified as irritating to the respiratory system.
Sensitisation	Skin. : No animal data available. Following many years of use no cases of skin sensitisation are noted. There is no evidence that methylene chloride causes respiratory tract sensitisation.
Germ cell mutagenicity	Methylene chloride induces gene mutations in bacteria, but not in mammalian cells. It is clastogenic in vitro at high concentrations but not clastogenic in vivo via several routes of exposure and there is no evidence of it causing gene mutation in vivo. It is not classified as genotoxic.
Carcinogenicity	Chronic inhalation studies in mice have shown increases in lung and liver tumours, when exposed to concentrations of methylene chloride well in excess of the occupational exposure limit. Extensive mechanistic research has shown that these carcinogenic effects are specific to the mouse and are not relevant to human health. This is due to well established differences in metabolic pathways between rodents and man. Several major studies on humans occupationally exposed to methylene chloride have shown no demonstrable link with cancer.
Reproductive toxicity	No effects in fertility were seen in a two generation toxicity study. No developmental effects were seen in studies of rats and mice.
Specific target organ toxicity — single exposure (STOT SE)	Vapors may cause drowsiness and dizziness. May cause respiratory irritation.
Specific target organ toxicity — repeated exposure (STOT RE)	Not classified
Aspiration hazard	Not an aspiration hazard

12. SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Acute aquatic toxicity
LC50 (96 hour) (Fish) Fresh water 193 mg/l
LC50 (96 hour) (Fish) Marine water 97 mg/l
LC50 (48 hour) Aquatic invertebrates: Fresh water 27 mg/l
LC50 (48 hour) Aquatic invertebrates: Marine water 109 mg/l
NOEC Fresh water Algae 550 mg/l

12.2 Persistence and degradability

Methylene chloride is not hydrolysed under normal environmental conditions.
The product is slowly biodegradable in water.
Methylene chloride is photochemically oxidised in the troposphere (half life, DT50 is calculated at 79.3 days).
Biodegradability : half-life (bacteria) approximately 18 months. Biodegradability : psuedomonas strain - 0.8g/l/hr.
The product is slowly biodegradable in soil. (TD50 = 14.2 d) The product is substantially removed in biological treatment processes.
There is no evidence of inhibition to the aerobic treatment process at a concentration (mg/l) of 200

12.3 Bioaccumulative potential

The product has low potential for bioaccumulation. Bioconcentration factor (BCF) : 0.91 to 40 l/kg

12.4 Mobility in soil

The product is predicted to have high mobility in soil.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Other adverse effects

None

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal should be in accordance with local, state or national legislation. Transfer solvent residues to a labelled, sealed container for disposal or recovery. Waste disposal must be by an accredited contractor. Large volumes may be suitable for redistillation by solvent recovery contractors. Solvent residues must not be allowed to enter drains, sewers or watercourses or to contaminate the ground.

Due to the risk of explosion DO NOT weld, cut or burn drums or other vessels which contain or have contained methylene chloride.

13.2 Additional information

Dispose of this material and its container as hazardous waste.

14. SECTION 14: TRANSPORT INFORMATION

14.1 UN number

UN No. (ADR/RID/ADN)	1593
UN No. (IMDG)	1593
UN No. (ICAO/IATA)	1593
ID no. (DOT/TDG)	UN 1593

14.2 Proper Shipping Name

Proper Shipping Name	Dichloromethane

14.3 Transport hazard class(es)

ADR/RID Class	6.1
IMDG Class	6.1
ICAO-TI Class	6.1
TDG / DOT Class	6.1
ADN Label.	6.1
IMDG Label.	6.1
ICAO Label.	6.1

14.4 Packing Group

ADR Packing Group	III
IMDG Packing Group	III
ICAO Packing Group	III
TDG/DOT Packing Group	III

14.5 Environmental hazards

Marine Pollutant	Not classified as a Marine Pollutant.

14.6 Special precautions for user

Hazardous Substances (RQ)	1000 lbs / 454 kg
Tunnel Restriction Code	(E)

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Product Name	Dichloromethane
Ship Type	3
Pollution Category	Y

15. SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

US FEDERAL REGULATIONS

OSHA Classification	This product is classified as a "Hazardous Chemical" by definition of Hazard Communication Standard (29 CFR 1910.1200) Occupational exposures to methylene chloride are specifically regulated under 29 CFR 1910.1052
Carcinogen Status	Methylene chloride is listed by NTP as 'reasonably anticipated to be a human carcinogen' and by IARC as a Group 2B carcinogen.

TSCA Inventory Status Yes

CERCLA This material is listed in Table 302.4 of 40 CFR Part 302 as a hazardous substance with a reportable quantity of 1000 lbs. Releases to air, land or water which exceed the RQ must be reported to the National Response Centre, 800-424-8802.

SARA Sections 313 and 40 CFR 372: This product is subject to reporting requirements.

SARA SECTIONS 311/312 (40CFR370.2):
ACUTE: Y
CHRONIC: Y
FIRE: Y
REACTIVE: N
SUDDEN RELEASE: N

Canadian Regulations This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all the information required by the CPR.

The substances in this product are on the Canadian Domestic Substances List (CEPA DSL).

Controlled Products Regulations (WHMIS) Classification:
Class D1B: Toxic material causing immediate and serious toxic effects.
Class D2A: Very toxic material causing other toxic effects.

EU EINECS No. 200-838-9

US State Regulations CALIFORNIA PROPOSITION 65: Methylene chloride is listed as a chemical known to the State of California to cause cancer.

State Right to Know Lists : Massachusetts, Minnesota, New Jersey, New York, Pennsylvania.

NFPA ratings: Health 2, Flammability 1, Reactivity 0

Inventory Status
Listed in: Australia (AICS), Canada (DSL/NDSL), China (IECSC), European Union (EINECS/ELINCS), Japan (ENCS), South Korea (KECI), Philippines (PICCS), New Zealand Inventory (NZIoC), United States (TSCA).

15.2 Chemical Safety Assessment

A Chemical Safety Assessment (CSA) has been completed for this substance.

16. SECTION 16: OTHER INFORMATION

Indication of changes All sections revised according to GHS requirements.

LEGEND

ACGIH - American Conference of Governmental Industrial Hygienists
BEI - Biological Exposure Index
CAS - Chemical Abstracts Service Registry Number
CFR - Code of Federal Regulations
DOT - Department of Transportation
EINECS - European Inventory of Existing Commercial Chemical Substances
OSHA - Occupational Safety & Health Administration
SARA - Superfund Amendments and Reauthorization Act of the U.S. EPA
TDG - Transportation of Dangerous Goods Act/Regulations
TLV - Threshold Limit Value
TSCA - Toxic Substances Control Act
TWA - Time-Weighted Average
PBT Persistent, Bioaccumulative and Toxic
vPvB very Persistent very Bioaccumulative

Key literature references
GESTIS - database on hazardous substances
Chemical Safety Report: Dichloromethane

Further information

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