

ACRI-BOND 105 - Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product name: **ACRI-BOND 105**
Solvent adhesive for plastics

2. HAZARDS IDENTIFICATION

ACRI-BOND 105 IS HAZARDOUS SUBSTANCE ACCORDING TO NOHSC “SAFE WORK AUSTRALIA” CRITERIA

Product is classified as Dangerous Goods for the purpose of transport by road or rail.
Refer to relevant regulations for storage and transport requirements.

	DCM	TCE	MMM
Class:	6.1 Toxic	6.1 Toxic	3
Poison Schedule	S3	S6	N/A
R-phrases(s):	R40	R68	R11; R36/37/38; R43
S-phrases(s):	S23; S24/25 S36/37		

3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition: Mixture of organic solvents
CAS-No.75-09-2 Dichloromethane – **DCM** - approx. 80-90%
CAS-No.79-01-6 Trichloroethylene (stabilized) - **TCE**- approx. 8-15%
CAS-No.80-62-6 Methyl Methacrylate Monomer (stabilized) - **MMM** approx. 2-5%

Recommended use: Industrial adhesive for various plastic materials

Appearance: Clear colourless liquid with a characteristic sweetish, ether like odour

4. FIRST AID MEASURES

Ingestion: Immediately rinse mouth with water. Give water to drink. Do NOT induce vomiting. If vomiting occurs give further water. Do not give milk, oils or alcohol. Seek immediate medical assistance.

Eye contact: Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Remove clothing if contaminated and wash skin. Urgently seek medical assistance.

Skin contact: Immediately wash contaminated skin with plenty of water. Remove contaminated clothing and wash before reuse. If swelling, redness, blistering or irritation occurs seek medical advice.

Inhalation: Remove victim from exposure-avoid becoming a casualty. Remove contaminated clothing and wash before reuse. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If breathing laboured and patient cyanotic (blue), ensure airways are clear and have qualified person give oxygen through face mask. If breathing has stopped apply artificial respiration at once. In event of cardiac arrest, apply external cardiac massage. Seek medical advice.

Notes to physician: Treat symptomatically. Adrenaline and similar sympathomimetic drugs should be avoided. Following exposure a cardiac arrhythmia may result, with possible subsequent cardiac arrest (1). Treat as for exposure to chlorinated hydrocarbons (solvents). Gastric lavage may be effective when performed within 4 hours of ingestion. Following ingestion adsorbents such as activated charcoal may be of value (6).

5. FIRE FIGHTING MEASURES

Specific hazard: Not classified as flammable under normal working conditions. Certain mixtures in air can be ignited with high intensity sources of heat (1). Welding or cutting should not be carried out on any vessel likely to contain this solvent mixture.

Fire Fighting advice: Not combustible. Vapourises rapidly on heating. Can decompose upon contact with a flame or very hot surface liberating toxic fumes including those of hydrogen chloride, carbon oxides and phosgene. Fire fighters to wear self-contained breathing apparatus if risk of exposure to products of decomposition.

Extinguishing media: Water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder).

6. ACCIDENTAL RELEASE MEASURES

Work up wind. Increase ventilation. Clear area of all unprotected personnel. Wear protective equipment to prevent skin and eye contamination and inhalation of vapours. Contain-prevent contamination of drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled drums for disposal. If contamination of sewers or waterways has occurred advise the local emergency services. In the event of spillage notifies the local environmental protection authority or emergency services.

7. HANDLING AND STORAGE

Storage: Store in a cool place and out of direct sunlight. Store in well ventilated area. Store away from nitric acid, amines, alkalis, food stuffs and sources of heat and ignition. Store in original container only. Keep containers closed at all times and check regularly for leaks. This material is a Toxic Substance S3 and Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National occupational exposure limits:	TWE		STEL		CARCINOGEN CATEGORY
	ppm	mg/m3	ppm	mg/m3	
Dichloromethane - DCM	50	174			A2
Trichloroethylene - TCE	50	270	200	1080	
Methyl Methacrylate Monomer - MMM	100	410			

As published by National Occupational Health and Safety Commission (Safe Work Australia)

WES-TWE **Work Exposure Standard** - is the **Time Weighted Average** airborne concentration over an eight hour working day, for a five day working week, over an entire working life. According to current knowledge this concentration should neither impair the health nor, not cause undue discomfort to nearly all workers.

WES-STEL **Work Exposure Standard - Short Term Exposure Limit** is the average airborne concentration over a 15 minute period, which should not be exceeded at any time during a normal eight hour work day.

CARCINOGEN CATEGORY A2 Suspected Human Carcinogen

These Workplace Exposure Standards are guidelines to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable.

WES should not be used as fine dividing lines between safe and dangerous concentration of chemicals. They are not a measure of relative toxicity.

Personal Protection**Equipment:**

H-Overalls, Safety shoes, Chemical goggles, Gloves (S), Respirator.
 Avoid skin and eye contact and inhalation of vapour. Wear overalls, chemical goggles and impervious gloves.
 Use with adequate ventilation. Available information (5) suggests that gloves made from supported polyvinyl alcohol should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, a final assessment should be made by the user. If inhalation risk exists wear organic vapour respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing

9. PHYSICAL AND CHEMICAL PROPERTIES

Form/Colour/Odour: Clear, colourless liquid with a characteristic ether-like odour

Chemical	DCM	TCE	MMM
Specific gravity	1.33 (4°C)	1.46 (20°C)	0.949 (15.5°C)
Rel. Vapour Density (air=1)	2.93	4.54	3.5 @ 20°C
Vapour Pressure (20°C)	47 kPa	7.87 kPa	3.6 kPa
Vapour Pressure (30°C)	66.7 kPa	Not Available	Not Available
Flammability Limits (%)	14-22	Not Available	2.1-12.5
Autoignition Temperature (°C)	556	420	435
Melting Point (°C)	-96.7	-73	-48
Boiling Point (°C)	39.6	87.2	101
Viscosity	0.449	0.58	0.6
Solubility in Water (g/L)	13	1.28	15
Evaporation Rate	Not Available	Not Available	Not Available
Conversion Factor (in air)	1 ppm=3.53 mg/m ³	Not Available	Not Available
Flash Point (°C)	NONE	NONE	2
Decomposition Point (°C)	Not Available	Not Available	Not Available
pH	Not Available	Not Applicable	Not Applicable
% Volatile by volume	Not Available	100	100

10. STABILITY AND REACTIVITY

DCM forms detonable mixtures with nitric acid. It may react with certain amines like polyurethane catalysts. Prolonged contact with aluminum or light alloys may cause a reaction with gas generation and pressure buildup (1). More data available at http://en.wikipedia.org/wiki/Methylene_chloride

TCE can decompose to dichloroethylene, phosgene, carbon monoxide and chloroacetylenes on contact with strong alkalis. It is also photo reactive. More data available at <http://en.wikipedia.org/wiki/Trichloroethylene>

MMM is stable in the presence of inhibitor. It is liable to polymerize in the presence of catalyst or prolonged heating. Incompatible with strong acids, alkalis, oxidizing agents and polymerization catalyst. It does not decompose up to the auto-ignition temperature.(9)
 More data available at http://en.wikipedia.org/wiki/Methyl_methacrylate_monomer

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and product label. Symptoms that may arise if the product is mishandled are:

- Ingestion :** Swallowing large amounts can result in nausea, vomiting, headaches, dizziness, gastrointestinal irritation, drowsiness, unconsciousness (1) and central nervous system depression.
- Eye contact :** DCM liquid is a moderate eye irritant (1). Liquid splashes may result in transient eye damage (1). No eye irritation was reported by volunteers exposed to about 1000 ppm vapour for two hours. Marked irritative conjunctivitis and lacrimation were noted at vapour concentrations high enough to produce unconsciousness (2). TCE vapour and liquid are mild to moderate irritants. Permanent damage is unlikely (6). MMM is eye irritant. High vapour concentration will cause irritation (9)
- Skin contact :** The liquid can be absorbed through the skin. Contact with skin may result in slight to mild irritation (6). Will have degreasing action on the skin. Repeated or prolonged contact may cause reddening, burning and blistering of the skin (1).
- Inhalation :** Vapour may be irritant to mucous membranes and respiratory tract. Inhalation of high concentrations will lead to Anesthetic effects and adverse effects to the central nervous system. Symptoms may include lightheadedness (1000 ppm for 20 minutes), dizziness, nausea, vomiting and headache. Inhalation of very high concentrations can result in loss of consciousness and irregular heart beat and proves suddenly fatal (1). 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 (1).
- Long term effects :** Repeated exposure to high levels of DCM and/or TCE may produce liver and kidney damage (1). Evidence available indicates that DCM is an animal carcinogen and therefore should be considered a possible human carcinogen. This data are not considered relevant to normal industrial use but emphasize the need for care in handling. A condition known as " Degreaser's Flush ", a pronounced redness of the skin, may occur on the face, hands, arms, feet and trunk of some individuals following repeated exposure to TCE and consumption of alcohol. This effect can intensify over a 30 minute period but usually disappears completely after 1 hour. The symptoms may occur up to 6 weeks after the last exposure to TCE and can reoccur if exposure continues. There is no reason to believe that MMM represents a carcinogenic or mutagenic hazard to man based upon evidence from well conducted animal studies and adequate epidemiology studies in relevant cohorts. Recent studies in animals have shown that high exposures do not produce embryo or foetotoxic nor teratogenic effects in the presence of maternal toxicity (9).

DCM Acute Toxicity/Chronic Toxicity :

Oral LD50 (rat): 2100 mg/kg (3)

Inhalation LD50 (rat): 200mg/m³/15 minutes (3)

No adverse effects on blood count, blood pressure, pulmonary function, neurological function cognitive function, alertness and coordination were detected when healthy adults were exposed repeatedly to up to 250 ppm of DCM for 7.5 hrs/day, 5 days/week for two weeks or in the case of the male subjects, at 500 ppm on two consecutive days (4). Several major studies on human workers showed no casual relationship between exposure to DCM and an increase in the evidence of cancer (1).

A chronic inhalation study in the mouse has shown that DCM is carcinogenic in this species, when exposed to levels well above the exposure level, causing tumours' both in the liver and the lung (1). Additional studies in the mouse, rat and the hamster have shown no further significant evidence of carcinogenic effect. The effect in mice is specific to this species and is very unlikely to occur in humans. This is due to well established differences in the metabolic pathways between rodents and humans (1). DCM has been classified (IARC) as group 2B agent - The agent is possibly carcinogenic to humans.

TCE Acute Toxicity/Chronic Toxicity : Oral LD50 (rats, cats and rabbits): 6000-7000 mg/kg (7)
 A volunteer exposed to 1000 ppm of TCE for two hours experienced adverse effects on visual perception and motor skill. When the volunteer was exposed to 100 and 300 ppm for two hours no significant effects were reported (7).
 Long term daily exposure of animals with high oral doses has resulted in liver and kidney damage. Repeated exposure of humans in the workplace appears to have no marked toxic effects on the kidney or liver (4). The genotoxic potential of TCE has been studied widely using in vivo and in vitro test systems; many of these extensively reported studies used material containing potentially mutagenic epoxide stabilizers. Overall there is no convincing evidence that TCE is genotoxic (8). TCE has been associated with cancer in rodents. Extensive evaluations of possible mechanisms have led to the conclusion that they are of little, if any, relevance to humans even at high exposure levels. Studies in workers have failed to demonstrate a relationship between exposure to TCE and cancer (6). TCE has been classified by the International Agency for Research on Cancer (IARC) as a Group 2A agent - The agent is probably carcinogenic to humans. Classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as A5- Not suspected as a human carcinogen (7).

MMA Acute Toxicity/Chronic Toxicity : Oral LD50 (rat): 7872 mg/kg (10)
 Inhalation LC50 (mouse): 18500 mg/m³/2 hrs (10)
 Inhalation Lowest Toxic Concentration (human): 50 ppm (10).
 Results from animal studies that are relevant to occupational exposure indicate that there is no evidence of carcinogenicity (1,3). Based on the above mutagenicity and carcinogenicity results, MMA is not expected to pose a carcinogenic hazard to humans. MMA has been classified by the IARC as a Group 3 agent. Group 3 - The agent is not classifiable as to its carcinogenicity to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Not available.
BOD5 and COD: Not available.
Water hazard: Slightly hazardous (Self-assessment).
Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the product itself.

If contamination of sewers or waterways has occurred advise the local emergency services.
 In the event of spillage notify the local environmental protection authority or emergency services.

13. DISPOSAL CONSIDERATIONS

Refer to Local City, District or regional Council Waste Management Authority. Transfer solvent residues to a labeled, sealed container for disposal or recovery. Waste disposal must be an accredited contractor.

14. TRANSPORT INFORMATION

ACRI-BOND 105 is classified as Dangerous Goods for the purpose of transport by road or rail. Refer to relevant regulations for storage and transport requirements.

	ACRI-BOND 105 as a mixture	DCM	TCE	MMM
UN-No :	2810	1593	1710	1247
Class	6.1 Toxic	6.1 Toxic	6.1 Toxic	3 Flammable Liquid
Hazchem code :	2Z	2Z	2Z	3[Y]
Packing group :	3	3	3	2
EPG :			6B7	3A1:
Shipping Name	Toxic Liquid, Organic, N.O.S.			

15. REGULATORY INFORMATION

Obey the general safety regulation while dealing with chemicals.

According to the guidebook about hazardous raw material this products should not follow marking regulations.

However, Acrylic Technologies Australia Pty Ltd is using marking and labeling in accordance with NOHSC: 2012 (1994) as follows:

Hazard symbol(s)

F Highly flammable

Xi Irritant

R-pharse(s)

R40: Limited evidence of a carcinogenic effect

R68 - Possible risks of irreversible effects.

R11- Highly flammable.

R36/37/38- Irritating to eyes, respiratory system and skin.

R43: May cause sensitisation by skin contact

S-pharse(s)

S23 - Do not inhale gas/fumes/vapour/spray

S24/25 - Avoid contact with skin and eyes

S36/37 - Wear suitable protective clothing and gloves