Material Safety Data Sheet

1. Product and Company Identification

Trade Name : **SPUF 300™**
Product Name : **2 COMPOENTS SPRAY-ON POLYURETHANE FOAM**
Chemical Name : **A- Diphenylmethane Diisocynate Composition & B- Compounded Polyol blend**
Use : A-Component of Polyurethane system
Application : B – use together with polymer MDI to produce rigid polyurethane foam
Restriction on use : Not determined

Manufacturer/Supplier/Distribution Information:

Name : **POLYCELL SDN BHD**
Address : **NO. 14, JALAN PJS 1/30, TAMAN PETALING UTAMA, 46000 PETALING JAYA, SELANGOR, Malaysia**
Emergency Phone number : **Tel : +603-7783 4368, Fax : +603-7783 4369**

2. Composition/Information on ingredients

PART A- Diphenylmethane Diisocynate Composition

Chemical Name	%	CAS No.
POLYMERIC DIPHENYLMETHANE DIISOCYANATE	100	9016-87-9

PART B- Compounded Polyol blend

Chemical Name	%	CAS No.
POLYETHER POLYOL	70-85	9003-11-6
HCFC 141B	<12%	001717-00-6
AMINE CATALYST	1 -3	9894-2
TCPP	8 -10	

3. Hazards Identification

PART A:

The preparation is classified as dangerous according to Directive 1994/45/EC and its amendments.

Classification: Xn; R20
Xi: R36/37/38
R42/43

Emergency Overview: Reacts slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures.

Appearance: Liquid.

Colour: Brownish-red.

Potential Acute Health Effects: This product is respiratory irritant and potential respiratory sensitizer; repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitization. The onset of the respiratory symptoms may be delayed for several hours after exposure. A Hyper-reactive response to even minimal concentrations of MDI develops

PART B:

Consideration of the composition of this product indicates that it does not present a significant health hazard to users.

4. First Aid Measures

In case of accident or is you feel unwell, seek medical advice immediately. Show the safety data sheet

Inhalation :Remove patient from exposure, keep warm and at rest. Obtain immediate medical attention. Treatment is symptomatic for primary irritation or bronchospasm. If breathing is laboured, oxygen should be administered by qualified personnel. Apply artificial respiration if breathing has ceased or shows signs of failing.

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Skin Contact	:Remove contaminated clothing. After contact with skin, wash immediately with plenty of warm soapy water. If symptoms develop, obtain medical attention. Contaminated clothing should be thoroughly cleaned. An MDI study has demonstrated that polyglycol-based skin cleanser or corn oil may be more effective than soap and water.
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. Do not swallow. Provide the patient is conscious, wash out mouth with water. Obtain immediate medical attention.

Further Medical Treatment

Symptomatic treatment and supportive therapy as indicated.
Following severe exposure the patient should be kept under medical review for at least 48 hours.
Adrenaline and similar sympathomimetic drugs should be avoided following exposure as cardiac arrhythmia may result with possible subsequent cardiac arrest.

5. Fire Fighting Measures

Part A

Extinguishing Media	: Foam, CO2 or dry powder. Water may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous. Prevent washings from entering water courses, keep fire exposed containers cool by spraying with water.
Unusual fire/explosion Hazards	: Not classed as flammable. If involved in a fire, it may emit noxious and toxic fumes. Containers may burst if overheated. Due to reaction with water producing CO2 gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Combustion products may include; carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN.
Fire Fighting Protective Equipment	: Suitable respiratory protection with full face piece and positive air supply. PVC boots, gloves, safety helmet and protective clothing should be worn.

Part B

Not classified as flammable.
Extinguishing Media : Normal extinguishing media.
Fire Fighting Protective Equipment: Full protective equipment including suitable respiratory protection.

6. Accidental Release Measures

Personal Precautions	: Splash goggles. Full suit. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product.
Cleanup methods	: Evacuate the area. Keep upwind to avoid inhalation of vapours. Clean-up should only be performed by trained personnel. People dealing with major spillages should wear full protective clothing including respiratory protection. Prevent further leakage, spillage or entry into drains. Absorb spillages onto sand, earth or any suitable absorbent material. Leave to react for at least 30minutes. Do not absorb onto sawdust or other combustible materials. Shovel into open-top drums for further decontamination. Wash the spillage area with water. Test atmosphere for MDI vapour. Neutralize small spillages with decontaminant. Remove and dispose of residues. The compositions of liquid decontaminants are given in section 16.

Caution - spillages may be slippery.
Absorb spillages onto sand, earth or any suitable absorbent material.
Transfer to a container for disposal.
Wash the spillage area clean with water and detergent.
Do not allow spillage to enter drain, sewer or water source.

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7. Handling and Storage

PART A

Handling : Do not breathe vapour/spray. Avoid contact with skin and eyes. Atmospheric concentrations should be minimized and kept as low as reasonably practicable below the occupational exposure limit, The efficiency of the ventilation system must be monitored regularly because of the possibility of blockage. When the product is sprayed or heated, suitable respiratory protection equipment with positive air supply may be required. Keep equipment clean. A basic essential in sampling, handling and storage is the prevention of contact with water. Keep stocks of decontaminant readily available. The compositions of liquid decontaminants are given in section 16.

Storage : Keep containers properly sealed and store indoors in a well ventilated area. Keep away from frost. Keep away from moisture. If a container is contaminated, do not reseal it. Due to reaction with water producing CO2 gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Suitable containers: stainless steel or mild steel Storage temperature: 15°C – 30°C.

PART B

Handling : Keep away from heat and sources of ignition. Care should be taken to release any internal pressure slowly. Take precautionary measures against static discharges.

Storage : Keep in cool, well-ventilated place away from direct sunlight. Keep containers properly sealed when not in use.

8. Exposure Controls / Personal Protection

Wear suitable protective clothing, gloves and eye/face protection. Atmospheric concentrations should be minimized and kept as low as reasonably practicable below the occupational exposure limit. MDI can only be smelled if the occupational exposure limit has been exceeded considerably. Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Personnel with a history of asthma-type conditions, bronchitis or skin sensitization conditions should not work with MDI based products. The Occupational Exposure Limits listed below do not apply to previously sensitized individuals. Sensitized individuals should be removed from any further exposure.

Occupational Exposure Limit

HAZARDOUS INGREDIENT (S)	**LTEL 8HR TWA ppm mg/m3**	**STEL ppm mg/m3**	**Notes**
Diphenylmethane 4, 4'-diisocyanate	0.02	0.07	EH40-MEL (UK, 2001)

Personal protective equipment

Respiratory System : Suitable respiratory equipment with positive air supply should be used in cases of insufficient ventilation or where operational procedures demand it.

Skin and body : Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C', Tyvek-Pro 'F' disposable coverall. Contaminated clothing should be thoroughly cleaned before re-use.

Hands : The following protective materials are recommended:
Neoprene
Nitrite butadiene rubber
Butyl rubber
PVC Heavy duty
Laminated polyethylene
Thin disposable gloves should be avoided for repeated or long term use. Protective gloves should be worn when handling freshly made polyurethane products to avoid contact with trace residual materials which may be hazardous in contact with skin.

Eyes : Chemicals safety glasses. Full face shield if splashing is possible.

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9. Physical and Chemical Properties

	PART A	PART B
Appearance	Brownish-red Liquid	Yellowish liquid
Odour	Slightly musty	Not applicable
Slightly musty	Not applicable	
Boiling Point (Deg° C)	> 300 decomposes	Not applicable
Melting Point (Deg° C)	Not available	
Flash point	Closed Cup: > 192°C (377.6°F). Open Cup: 192°C (377.6°F)	
Explosive properties	Not explosive	
Vapour pressure	Not available	
Octanol/water partition coefficient	Not applicable. React with water and octanol	
Specific Gravity	1.2 (water = 1)	
Solubility Water	Insoluble in water	
Solubility Other	Soluble in most organics solvents	
Vapour density :	8.5	
Evaporation Rate	140 – 200 mPa.s (25°C)	
Saturated Vapour Concentration	>32 ug/m3 @ 20°C	
Auto-ignition Temperature	>600°C	
Flammable Limits (Lower) (%v/v)	Not applicable	7.4
Flammable Limits (Upper) (%v/v)	Not applicable	15.5

10. Stability and Reactivity

Stability : Stable at room temperature. Reaction with water (moisture) produces CO2 gas. Exothermic reaction with materials containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents. MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface. A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.

Conditions to Avoid : Avoid high temperatures.

Materials to avoid : Water, alcohols, amines, bases and acids.

Hazardous Reactions : None known.

Hazardous decompositions product: Unlikely under normal Industrial use. None at ambient temperature.

11. Toxicological Information

PART A

This health hazard assessment is based on information available on similar products.

Acute toxicity

Ingredient Name	Test	Result	Route	Species
Diphenylmethane 4, 4'-diisocyanate	LD50	>500 mg/kg	Oral	Rat
	LD50	>500 mg/kg	Dermal	Rabbit
	LC50	0.49 mg/l (4 hours)	INHALATION	Rat

Inhalation : This product is a respiratory irritant and potential respiratory sensitizer: repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons.

Ingestion : Low oral toxicity. Ingestion may cause irritation of the gastrointestinal tract.

Eye irritation : The vapour, aerosol and liquid are irritants.

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Sensitization : Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization. Animal studies have shown that respiratory sensitization can be induced by skin contact with known respiratory sensitizers including diisocyanate. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

Chronic toxicity : Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m3), there was a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m3 and no effects at 0.2 mg/m3. Overall, the tumour incidence, both benign and malignant, and the number of animals with the tumours were not different from controls. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur. Industrial experience in humans has not shown any links between MDI exposure and cancer developments. There are reports that chronic exposure by inhalation may result in permanent decreases in lung function. No birth defects were seen in two independent animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations, which are well in excess of defined occupational exposure limits. There is no substantial evidence of mutagenic potential.

PART B

Inhalation : The vapor has anesthetic properties and when inhaled at concentrations above the occupational exposure limit it may cause headache, fatigue, dizziness, incoordination and loss of consciousness.

Skin Contact : Slight/mild irritant.

Eye Contact : Irritating to eyes.

Ingestion : Highly unlikely under normal industry use. Adverse effects similar to inhalation may occur.

12. Ecological Information

PART A

Mobility : By considering the production and use of the substance, it is unlikely that significant environment exposure in the air or water will arise.

Persistence/degradability : Immiscible with water, but will react with water to produce inert and non-biodegradable solids. Conversion to soluble products, including diaminodiphenylmethane (MDA), is very low under the optimal laboratory conditions of good dispersion and low concentration. In air, the predominant degradation process is predicted to be a relatively rapid OH radical attack by calculation and by analogy with related diisocyanate.

Ecotoxicity Data

Ingredient Name	Species	Period	Result
Diphenylmethane 4,4'-diisocyanate	Zebra Fish (LC50)	96 hours	>1000 mg/l
	Daphnia magna (EC50)	48 hours	>1000 mg/l
	E. coll (IC50)	48 hours	> 100 mg/l

Ecotoxicity Other : By comparison with an analogous product, the following values are anticipated. The measured ecotoxicity is that of the hydrolised product, generally under conditions maximizing production of soluble species. Even so, the observed ecotoxicity is low/very low. A pond study showed gross contamination caused no significant toxic effects on a wide variety of flora in all trophic levels (Including fish), no detectable diaminodiphenylmethane (MDA), and no evidence of bioaccumulation of MDI or MDA.

PART B

Environmental Pets and Distribution

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No information available.

Toxicity

No data.

Effect on Effluent Treatment

No data.

13. Disposal Considerations

The generation of waste should be avoided or minimized wherever possible. Untreated material is not suitable for disposal. Waste, even small quantities, should never be poured down drains, sewers or water courses. Small quantities and empty drums – pre-treated to neutralize prior to disposal. Large quantities – incinerate under approved controlled conditions, using incinerators suitable for the disposal of noxious chemical waste. Empty drums should be decontaminated and either passed to an approved drum reconditioner or destroyed.

The relevant local, regional and national regulations must be complied with for any waste disposal.

The generation of waste should be avoided or minimized wherever possible.

Disposal should be in accordance with local, state or national legislation.

Waste, even small quantities, should never be poured down drains, sewers or water sources.

14. Transport Information

International transport regulations

Land – Road/Railway	Not regulated
Sea	Not regulated
Air	Not regulated

Not Classified as Dangerous for Transport.

15. Regulatory Information

PART A

EC Classification : Harmful

Hazard symbol :

Risk phrase : R20 - Harmful by inhalation.
R36/37/38 – Irritating to eye, respiratory system and skin.
R42/43 – May cause sensitization by inhalation and skin contact.

Safety phrase : S23 – Do not breathe vapour/spray.
S36/37 – Wear suitable protective clothing and gloves.
S38 – In case of insufficient ventilation, wear suitable respiratory equipment.

Contains : Diphenylmethane 4, 4'-diisocyanate

PART B

Not Classified as Dangerous for Supply/Use.

EC Classification : Not Classified

Hazard symbol : None required

Risk phrase : None required

Safety phrase : None required

15. Other information, Including Date or Preparation of The Last Revision

PART A

Liquid decontaminates (percentages by weight or volume):

Decontaminant 1 : *- sodium carbonate: 5 – 10% * - liquid detergent: 0.2 – 2% *-water: to make up to 100%
React slower with diisocyanate but is more environment friendly than decontaminant 2.

Decontaminant 2 : *- concentrate ammonia solution: 3 – 8% *liquid detergent: 0.2 – 2% *- water: to make up to 100%
This contains ammonia. Ammonia presents health hazards.

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The product is intended for use in the construction repairing industries. For other uses, or where food contact is involved, advice should be sought from Polycell Sdn Bhd.

Issue Date : 23-Nov-2015
Revision Date : 10-Mar-2016
Revision Note : No information available

Disclaimer: The information provided in this Material 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 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.

End of Safety Data Sheet

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