MATERIAL SAFETY DATA SHEET
Vortex® Activator

Vortex® Sprayliners, Inc
27161 Burbank Street
Foothill Ranch, CA 92610
Contact: John Kott

Emergency Contact: 949-770-2316
24 Hour Phone: 949-459-0956
24 Hour Phone: 949-500-8881

Section — 1 — Chemical Product and Company Identification

Product Name: Vortex® Activator
Product Use: Components of polyurethane

Company:
Vortex® Sprayliners, Inc
27161 Burbank Street
Foothill Ranch, CA 92610

Trade Secret*

Section — 2 — Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Hazardous Ingredient(s)</th>
<th>(w/w)</th>
<th>ACGIH TLV</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,4’-Diphenylmethane (4,4’ MDI)</td>
<td>30 — 60</td>
<td>0.005 ppm</td>
<td>101-68-8</td>
</tr>
<tr>
<td>Modified MDI</td>
<td>30 — 60</td>
<td>Not listed</td>
<td>Not disclosed</td>
</tr>
<tr>
<td>Proprietary ingredient</td>
<td>5 — 15</td>
<td>Not listed</td>
<td>Not disclosed</td>
</tr>
</tbody>
</table>

Section — 3 — Hazards Identification

Health hazards: Irritating to eyes, respiratory system and skin. Inhalation at levels above the occupational exposure limit could cause respiratory sensitization and risk of damage to respiratory system. 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. Sensitized persons should not be exposed to any mixture containing unreacted MDI.

Physical Hazards: React slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures.

Appearance: Clear liquid
Odor: Slightly musty.

Read the entire MSDS for a more thorough assessment of the hazard information on this product.
Section — 4 — First Aid Measures

General: In case of accident or if you feel unwell, seek medical advice IMMEDIATELY.

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

Skin Contact: Remove contaminated clothing. Immediately wash affected areas thoroughly with soap and water. Some organic materials such as corn oil or propylene glycol are effective in decontaminating MDI from the skin when applied immediately. If irritation, redness or a burning sensation develops and persists, obtain medical advice. Contaminated clothing should be thoroughly cleaned before reuse.

Eye Contact: Immediately flush eyes with running water for at least 15 minutes, while lifting up the eyelids. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

Ingestion: DO NOT INDUCE VOMITING! Provide the patient is conscious, wash out mouth with water then give 1 or 2 glasses of water to drink. Do not give anything by mouth to an unconscious or convulsing person. Refer person to medical personnel for immediate attention.

Note to Physician: Symptomatic and supportive therapy as needed. Following severe exposure, medical follow-up should be monitored for at least 48 hours.

Section — 5 — Fire Fighting Measures

Fire and Explosion Hazards: Containers may burst under intense heat. Due to reaction with water, a hazardous build-up of pressure could result if contaminated containers are resealed.

Extinguishing Media: Water, carbon dioxide, dry chemical or appropriate foam. If water is used, very large quantities are required. Reaction between water and hot isocyanate may be vigorous. Contain run-off water with temporary barriers.

Fire Fighting Protective Equipment: Use self-contained breathing apparatus and full protective clothing (Bunker gear).

Flash Point: >230F (110°C)
Flammable Limits (Lower): Not available
Flammable Limits (Upper): Not available
Auto Ignition Temperature: 240°C (464°F) (4,4'-Diphenylmethane Diisocyanate)
Decomposition Temperature: Not available
Rate of Burning: Not available
Explosive Power: None
Sensitivity to Mechanical Impact: None
Sensitivity to Static Discharge: None
Combustion Products: Carbon monoxide, carbon dioxide, nitrogen oxides and some HCN.

Section — 6 — Accidental Release Measures

For major spills call CHEMTREC (800-424-9300)

Spill, leaks or releases: Clean-up should only be performed by trained personnel. People dealing with major spillages should wear full protective clothing, including appropriate respiratory protection. Evacuate the area. Prevent further leakage, spillage or entry into drains. Contain and absorb large spillages into an inert, non-flammable adsorbent carrier (such as earth or sand). Shovel into open-top drums or plastic bags for further decontamination, if necessary. Wash the spillage area clean with liquid decontaminant. Test atmosphere for MDI. Neutralize small spillages with decontaminant. Remove and properly dispose of residues. (See Section 13 for disposal considerations) Notify applicable government authorities if release is reportable. The CERCLA RO for MDI is 5,000 lbs (see CERCLA in Section 15).

Preparation of Decontamination Solution: Prepare a decontamination solution of 0.2 — 0.5% liquid detergent and 3 — 8% concentrated ammonium hydroxide in water (5 — 10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's material safety data sheets when preparing and using solution.

Use of Decontamination Solution: Allow deactivated material to stand for at least 30 minutes before shoveling into drums. Do not tighten the bungs. Mixing with wet earth is also effective, but slower.

Section — 7 — Handling and Storage

Handling Precautions: Avoid personal contact with the product or reaction mixture. Use only with adequate ventilation to ensure that the occupational exposure limit is not exceeded. The efficiency of the ventilation system must be monitored regularly because of the possibility of blockage. Avoid breathing aerosols, mists and vapors. (See Section 8 Exposure Control for details)

Storage Requirements: Keep containers properly sealed and when stored indoors, in a well ventilated area. Keep contents away from moisture. Due to reaction with water, producing CO2 gas, a hazardous build-up of pressure could result if contaminated containers are resealed. Do not reseal contaminated containers. Uncontaminated containers, free of moisture, may be resealed only after placing under a nitrogen blanket. Do not store in containers made of copper, copper alloys or galvanized surfaces.
Storage Temperature:  
Ideal storage temperature is 16 - 38°C (60 — 100°F)  
Keep stocks of decontaminant (See Section 6) readily available.

Section — 8 — Exposure Controls/Personal Protection

Preventive Measures: Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: Use local exhaust ventilation to maintain airborne concentrations below the TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it. For guidance on engineering control measures, refer to publications such as the ACGIH current edition of "Industrial Ventilation, a Manual of Recommended Practice".

Personal Protective Equipment: Eye Protection Requirements: Chemical safety goggles. If there is a potential for splashing, use a full face shield.

Skin Protection Requirements: The following protective materials are recommended: Gloves — Neoprene, nitrile rubber, butyl rubber. Thin latex disposable gloves should be avoided for repeated or long term use.  
Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective Clothing" published by ACGIH.

Respirator Protection Requirements: When the product is sprayed or heated without adequate ventilation, an approved MSHA/NIOSH positive-pressure, supplied-air respirator may be required. Air purifying respirators equipped with organic vapor cartridges and a HEPA (P100) particulate filter may be used under certain conditions when a cartridge change-out schedule has been developed in accordance with the OSHA respiratory protection standard (29 C.F.R. 1910.134).

Exposure Guidelines: Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Persons with respiratory problems including asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or skin allergies should be evaluated for their suitability of working with this product. Once a person is diagnosed as sensitized, no further exposure to the material that caused the sensitization should be permitted.

Hazardous Ingredient(s): 4,4'-Diphenylmethane Diiaocyanate:

<table>
<thead>
<tr>
<th></th>
<th>ACGIH TLV</th>
<th>OSHA PEL CEILING</th>
<th>NIOSH REL/TWA</th>
<th>NIOSH REL/CEILING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.05 mg/M³ (8-hour, 40 hours/week)</td>
<td>0.20 mg/M³</td>
<td>0.05 mg/M³ (10-hour, 40 hours/week)</td>
<td>0.20 mg/M³ (10-minute)</td>
</tr>
</tbody>
</table>

NOTE: The Occupational Exposure Limits listed for isocyanates do not apply to previously sensitized individuals.
Section — 9 — Physical and Chemical Properties

Alternate Name(s): Not applicable
Chemical Name: Not applicable (mixture)
Chemical Family: Diisocyanate
Molecular Formula: Not applicable (mixture)
Appearance: Clear liquid
Odor: Slightly musty
Odor Threshold: 4.0 mg/M³ (4,4′-Diphenylmethane Diisocyanate) — 400 ppb
pH: Not applicable
Flash Point: >230°F (110°C)
Vapor Pressure (mm Hg at 20°C): Approx. 4 x 10⁻⁵
Vapor Density (Air=1): 8.5 approx.
Boiling Point: Not applicable
Melting Point: Not available
Solubility (Water): Reacts with water
Solubility (Other): Soluble in most organic solvents
Specific Gravity: 1.14 @ 25°C
Evaporation Rate: Not available
Viscosity: 450 cps

Section — 10 — Stability and Reactivity

Hazardous Decomposition Products: Highly unlikely under normal industrial use. See Section 5.
Chemical Stability: Stable at room temperature.
Conditions to Avoid: Avoid high temperatures. Avoid freezing.
Incompatibility with other Substances: This product will react with any materials containing active hydrogens such as water, alcohol, amines, bases and acids. The reaction with water is very slow under 50°C (122°F) but is accelerated at higher temperatures.
Hazardous Polymerization: Polymerization may occur at elevated temperatures in the presence of alkalis, tertiary amines and metal compounds.

Section — 11 — Toxicological Information

Polymeric MDI:
Oral LD₅₀ (rat): >5,000 mg/kg Dermal
LD₅₀ (rabbit): >5,000 mg/kg

Potential Health Effects:
Inhalation: This product is a respiratory irritant and potential respiratory sensitizer. Inhalation of vapor or aerosol at levels above the occupational exposure limit could cause respiratory sensitization and lung injury. 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 and/or flu-like symptoms. 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. In a single evaluation of 5 men occupationally exposed to MDI and hydrocarbon solvent vapors under conditions where adequate ventilation or other safety precautions were not used, neuropsychological findings were attributed to MDI.

Skin Contact: Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization. There is limited evidence from animal studies that skin contact may play a role in respiratory sensitization. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

Eye Contact: The aerosol, vapor or liquid will irritate human eyes following contact.

Ingestion: Ingestion may cause irritation of the gastrointestinal tract. Based on the acute oral LD50, this product is considered practically non-toxic by ingestion.

Chronic Effects: A study was conducted where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol at concentrations of 0, 0.2, 1 or 6 mg/M³. No adverse effects were observed at 0.2 mg/M³. At the 1 mg/M³ concentration, minimal nasal and lung irritant effects were seen. Only at the top concentration (6.0 mg/M³) was there an increased incidence of a benign tumor of the lung (adenoma). One malignant pulmonary tumor (Aden carcinoma) was seen in the 6.0 mg/M³ group. MDI administration to rats in this study did not change the distribution and incidence of tumors from those seen in control animals. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

There are reports that excessive chronic exposure to diisocyanates may result in permanent decrease in lung function.

Carcinogenicity: The ingredients of this product are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.

Mutagenicity: There is no substantial evidence of mutagenic potential.

Reproductive Effects: No adverse reproductive effects were anticipated.

Teratogenicity and Fetotoxicity: 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 well in excess of the defined occupational limits.

Section — 12 — Ecological Information

Environmental Fate and Distribution: It is unlikely that significant environmental exposure in the air or water will arise, based on consideration of the production and use of the substance.

Persistence and Degradation: Immiscible with water, but will react with water to produce inert and non-biodegradable solids.

Toxicity: Polymeric MDI
LD50 (Zebra Fish) > 1000 mg/l (At the highest level tested of 1000 mg/l there were no deaths)
EC50 (Daphnia magna)(24 hour) >1000 mg/l
EC50 (E.Coll) 100 mg/l

Section — 13 — Disposal Considerations

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

Disposal should be in accordance with local, state, provincial or national regulations. This material is not a hazardous waste under RCRA 40 CFR 261. Small quantities should be treated with a decontaminant solution (See Section 6). The treated waste is not a hazardous material under RCRA 40 CFR 261. Chemical waste, even small quantities, should never be poured down drains, sewers or waterways.

Empty containers should be decontaminated and either passed to an approved drum recycler or destroyed.

Section — 14 — Transport Information

DOT: Single containers less than 5,000 lbs are not regulated. Single containers with 5,000 lbs or more of 4,4-MDI are regulated as: Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082, PFIII, RQ.

Transportation Emergency Telephone Number: 800-424-9300 (CHEMTREC)

TDO: Not regulated
IMO: Not regulated
IATA/ICAO Class: Not regulated
Section — 15 — Regulatory Information

USA Classification:
OSHA Classification: This product is classified as a hazardous material under the criteria outlined in the OSHA Hazard Communication Standard (HCS)(29 CFR 1910.1200).

TSCA (Toxic Substances Control Act) Regulations: All ingredients are on the TSCA Chemical Substance Inventory.

EPCRA Section 313 (40 CFR 372): This product contains the following chemical(s) subject to reporting requirements: -36% Diisocyanate compounds (Category Code W120)

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act): 4,4-Methylene diphenyl diisocyanate (CAS 101-68-8) has a 5,000 lb RQ (reportable quantity). Any spill or release above the RQ must be reported to the National Response Center (800-424-8802). The % of 4,4’-MDI in this product is listed in Section 2 of this MSDS.

This product does not contain nor is it manufactured with ozone depleting substances.

Other Regulations/Legislation which apply to this product: Massachusetts Right-to-Know, Pennsylvania Right-to-Know, New Jersey Right-to-Know, CERCLA.

Canadian Classification:
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.

Controlled Products Regulations (WHMIS) Classification: D-1A; D-2A and D-2B.

CEPA/Canadian Domestic Substances List (DSL): The substance(s) in this product is/are on the Canadian Domestic Substances List (CEPA DSL).

Section — 16 — Other Information

*TRADE SECRET:

*Trade Secret: (Also see Section I. Federal Register Vol 48 No 228 Nov. 25, 1983. Rules and Regulations)

OSHA has given special consideration to chemical information that the chemical manufacturer or distributor considers to be a trade secret (29 CFR 1910.1200(4 Products for which trade secrecy has been claimed must be accompanied by a material safety data sheet. The manufacturer must also specify on the MSDS that the chemical's identity is a trade secret.
MATERIAL SAFETY DATA SHEET
Vortex® Color Resin Base

Vortex® Sprayliners, Inc
27161 Burbank Street
Foothill Ranch, CA 92610
Contact: John Kott

Emergency Contact: 949-770-2316
24 Hour Phone: 949-459-0956
24 Hour Phone: 949-500-8881

Section — 1— Chemical Product Identification

Product Name: Vortex® Color Resin Base
Family Name: Polyol System
Polyurethane Polyol System

Section — 2 — Hazardous Ingredients

Diethyltoluenediamine (DETA)
CAS: 68479-98-1 OSHA — Not established
Threshold limit values have not been established for this product

Section — 3 — Hazards Identification
Color: Yellow Form: Liquid
Odor: Amine Type

Potential Health Effects:
Route of Entry: Inhalation, skin contact, skin absorption, eye contact.
Effects of Overexposure:
Acute Inhalation: This material has very low vapor pressure. It is unlikely that inhalation exposure will occur when handling this product. However, during heating or spray application it is possible that an exposure could occur. It can cause irritation of the respiratory tract, mouth, nose and throat. Symptoms may include coughing, headache, nausea and chest pain. Fresh air hood system is recommended to be used when applying this product.

Acute skin contact: Upon contact, irritation of the skin is possible. Skin sensitizing may occur and may cause an allergic skin reaction. Rubber disposable gloves are recommended when handling this product.

Acute eye contact: This product can cause severe irritation to the eyes. Eye goggles or air transfer hood should be used when applying this product.

Acute ingestion: None reported for this product. Irritation of the mouth, throat, esophagus and stomach is possible.

Carcinogenicity: NTP not listed; IRAC not listed; OSHA not regulated.
Section — 4 — First Aid Measures

Eyes: Flush with clean, lukewarm water for at least 15 minutes, while lifting up the eyelids. Contact physician.

Skin: Remove contaminated clothing and shoes. Wash affected areas thoroughly with soap and water including hair. Wash with soap and water and polyethylene glycol 400 to remove heavy residue. Use COLD water. Get medical attention as necessary.

Inhalation: Remove person to fresh air if breathing becomes difficult. If breathing has stopped, administer artificial respiration. Contact physician immediately if breathing is difficult or has stopped.

Ingestion: DO NOT INDUCE VOMITING! If ingested, consult a physician. Give two glasses of water for dilution. Do not give anything by mouth to an unconscious or convulsing person.

Section — 5 — Fire Fighting Measures

Flash Point: 342F (172°C)
Auto-Ignition Temperature: Not established
Special Fire Fighting Procedures: Full emergency equipment with self-contained breathing apparatus and protective clothing should be worn by fire fighters. Use cold water spray to cool fire exposed containers to minimize risk of rupture. Material supports combustion. During a fire, irritating and toxic gases such as carbon monoxide may be generated by thermal decomposition or combustion. Do not spray fire directly. A solid stream of water directed into the hot burning liquid could cause frothing.

Section — 6 — Accidental Release Measures

Spill or leak procedures: Remove all sources of flames, heating elements, etc. Clean up personnel should wear self-contained breathing apparatus and protective clothing. Dam up to prevent spreading and contamination of surround ground waters and drinking supplies. Notify local health authorities. Use vermiculite absorbent to absorb as much as possible of the remaining product. Scoop up and dispose of in accordance with local and state waste regulations. Clean up the spilled areas with soap and water. Ventilate area to remove the remaining vapor.

Section — 7 — Handling and Storage

Storage Temperature: Ambient
Shelf Life: 12 months
Special Sensitivity: Material is hygroscopic and may absorb small amounts of Atmospheric moisture. Store in clean, dry area.
Handling/Storage Precautions: Containers should be tightly closed to prevent contamination with foreign materials and moisture. Avoid skin and eye contact. Avoid breathing vapors if generated.

Section — 8 — Personal Protection

Eye Protection Requirements: Wear safety goggles. Face shields can also be worn. Contact lenses should not be worn by person handling this product.

Skin Protection Requirements: Disposable rubber gloves are recommended. Ventilation Protection Requirements: Local exhaust ventilation system is required.

Respirator Protection Requirements: Air Transfer Hood is recommended when applying and handling this product.

Section — 9 — Physical Properties

Physical Form: Liquid Solubility in Water: Partially soluble
Color: Yellow/Amber Specific Gravity: 1.0279 @, 77°F (25°C)
Odor: Amine Type Odor Bulk Density: 8.12 lbs per gallon
pH: Approx 10 Vapor Density: Not established
Boiling Point: Not established VOC by weight: None
Melting/Freezing Point: Not established Hazardous Polymerization: Will not occur

Section — 10 — Stability and Reactivity

Incompatibilities: Oxidizing materials, halogens, isocyanates and acids
Instability Conditions: Avoid high temperatures, sparks and flame.
Decomposition Temperature: Not established
Decomposition Products: By Fire — CO, CO2, oxides of nitrogen, amines and other aliphatic fragments which have not been determined.

Section — 11 — Disposal Methods

Waste Disposal Method: Waste must be disposed of in accordance with federal, state and local environmental regulations. If incinerated, toxic and corrosive combustion gases must be properly handled.
Section — 12 — Transportation

Technical Shipping Name: Polyether Polyol System containing Aromatic Diamine DOT
Class: Non Hazardous. Not regulated
Freight Class Bulk: Propylene Glycol
Air Class: Non Regulated

HMIS Rating: 2 — 1 — 0

This information is furnished without warranty, expressed or implied, except that it is accurate to the best of the knowledge of the Vortex® Sprayliners Corporation. The data on this sheet relates only to the specific material designated herein. Vortex® Sprayliners, Inc. assumes no legal responsibility for use or reliance upon these data.

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