DENDRITECH, INC.
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www.Dendritech.com

In case of a Chemical Emergency involving a spill, leak, fire, exposure, or accident contact Chemtrec® at 1-800-424-9300.

----------SECTION I - PREPARATION/PRODUCT INFORMATION----------

Producer's Name: Dendritech®, Inc.
3110 Schuette Drive
Midland, MI 48642
(989) 496-2016

Preparation Date: March 5, 2013
Revision Date: Not applicable

Product Name: Polyamidoamine (PAMAM) Dendrimer, Succinamic Acid Surface
(*AQUEOUS SOLUTION – All Generations/Molecular Weights)*

----------SECTION II - INGREDIENTS----------

INGREDIENTS	CAS#	%	ACGIH TLV	OSHA PEL	CARCINOGEN LIST IARC	NTP	OSHA	SARA 313
A) HAZARDOUS INGREDIENTS								
None								
B) NON-HAZARDOUS INGREDIENTS:								
Polyamidoamine Succinamic acid surface	Not assigned	5-90%	NONE	NONE	NO	NO	NO	NO
Water	7722-18-5	10-95%	NONE	NONE	NO	NO	NO	NO

HMIS Rating: Health = 2, Flammability = 0, Reactivity = 0, Protection = B

----------SECTION III - PHYSICAL AND CHEMICAL DATA----------

Boiling Point - 100°C (212°F)

Solubility in Water - Very Soluble

Vapor Pressure - Not determined

Vapor Density - Not Determined

Odor - Essentially Odorless

Appearance - Yellow, viscous liquid

Decomposition Temperature - 150°C

Melting/Softening Pt. - Not determined

Specific Gravity - Not determined

pH - Acidic (3-4)

----------SECTION IV - FIRE AND EXPLOSION HAZARD----------

Flash Point - None; aqueous solution

Flammable Limits - Not determined

Auto-Ignition Temperature - Not determined

Special Fire Fighting Procedure - None

Extinguishing Media - Water spray, carbon dioxide, foam, dry powder

Hazardous Combustion Products - May produce irritant fumes

----------SECTION V - REACTIVITY DATA----------

Stability - Stable under normal conditions

Hazardous Decomposition Products - Carbon oxides; nitrogen oxides

Hazardous Polymerization - Does not occur

Conditions to Avoid: Prolonged storage or heating above normal room temperature can lead to some deterioration in product quality, but hazardous decomposition does not occur.

Incompatibility - Oxidizing agents, bases, halogenated organic compounds. Mixtures with these materials will result in temperature and/or pressure increases. Polymer contains tertiary amines; ensure metal equipment for storage or piping is compatible.

--SECTION VI - HEALTH HAZARD DATA/TOXICOLOGICAL PROPERTIES--

Hazards to Humans - Irritation of skin and eyes is the primary route of exposure during handling. When dry, the polymers are very viscous, nonvolatile syrups so vapor hazards or airborne dust exposure are unlikely at normal temperatures.

Dendrimer hazards:
Note: Properties shown here are based on a primary amine surface polyamidoamine dendrimer tested as a 50% aqueous solution. Generally, non-amine surfaces (like this succinamic acid surface product) are less toxic then the amines. However, the toxicological properties of this dendrimer have not been specifically determined so all reasonable handling precautions should be taken.

LD_{50} Oral/Rats: >5000mg/kg.
LD_{50} Dermal/Rabbit: >2000mg/kg

Skin irritation: Slight irritant
Eye irritation: Slight Irritant

Additional Information:
Mutagenicity: Negative, not a bacterial mutagen by the Ames test.
Skin sensitization: Using a modified Buehler technique, neutralized solutions (pH=7) of dendrimer showed no sensitization reactions in guinea pigs under test conditions.

----------SECTION VII - EMERGENCY/FIRST AID PROCEDURES----------

Inhalation - Remove to fresh air. Support breathing if necessary and contact a physician.
Skin - Promptly wash with soap and water.
Eyes - Flush eyes with large quantities of water for at least 15 minutes. If irritation is present after washing contact a physician.
Ingestion - Seek medical attention.

--------SECTION VIII - SAFE HANDLING/PREVENTATIVE MEASURES--------

Personal protective equipment: Good ventilation, nitrile rubber gloves, and safety glasses are minimum protective equipment. Goggles and protective clothing should be used if contact with large quantities is possible. Self contained breathing equipment should be used in fire situations.

Waste Disposal: Incineration recommended; dispose of in accordance with all Federal, State, and Local regulations.

Leak/Spill Procedures: Soak up with inert absorbant material (sand, silica gel, or clay). Dispose of in accordance with all regulations. Flush area with water after cleanup.

Storage: To maintain product quality, store at room temperature. For prolonged storage, refrigeration (5-10°C) under a nitrogen pad is recommended.

Handling Procedures: Normal precautions; ensure availability of safety showers and eyewash stations.

----------SECTION IX - TRANSPORTATION REQUIREMENTS----------

Proper Shipping Name - None Hazard Class - None

Identification Number - None Reportable Quantity - None

Packing Group - None

International Air Transportation Association (IATA) requirements: None