MATERIAL SAFETY DATA SHEET
RUNWAY DEICING FLUID: GEN3 64™

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Effective Date: October 26, 2015

RUNWAY DEICING FLUID (GEN3 64™**)** Formulation is non-hazardous (RCRA), non-glycol, non-sorbitol based deicing fluid (blend of polyol(s) & organic salts) concentrate.

Data provided assumes material is used for its intended use and according applicable use guidelines.

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SECTION 2: Hazards Identification

Signal Word		Warning				
Hazard Statements		May be harmful if swallowed or contact with skin. Harmful if inhaled.				
NFPA Rating	**Health**	1	**Fire**	0	**Reactivity**	0
Symbols						

SECTION 3: Composition/Information on Ingredients

Synonyms/Common Name	RDF
Formula/Chemical Identity	Trade Secret Mixture

Components

Chemical Name	Percent	Chemical Abstract System (CAS) Registry Number
Non-Toxic Proprietary Polyol	35-45%	Trade Secret
Organic Salts	20-30%	Trade Secret
Water	30-40%	7732-18-5

SECTION 4: First-aid Measures

Inhalation	Acute Effects	Inhaling mist may cause respiratory tract irritation.	
	Delayed Effects	Unknown	
	First-Aid	General	If inhaled, remove to fresh air. Seek medical attention for any breathing difficulty.
		Immediate/Special (If Applicable)	None known.
Skin	Acute Effects	Extended contact with skin may cause irritation.	
	Delayed Effects	Unknown	
	First-Aid	General	If contact occurs, flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Seek medical attention if irritation develops.
		Immediate/Special (If Applicable)	Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye	Acute Effects	May cause irritation.	
	Delayed Effects	Unknown	
	First-Aid	General	Immediately flush with a steady stream of water for at least 15 minutes. Get medical attention if irritation persists.
		Immediate/Special (If Applicable)	None known.
Ingestion	Acute Effects	If large amounts are ingested, it may cause irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.	
	Delayed Effects	Unknown	
	First-Aid	General	Never give anything by mouth to an unconscious person. DO NOT induce vomiting. Get medical attention if large amounts are swallowed or if there is abdominal pain, sore throat, nausea, and/or vomiting.
		Immediate/Special (If Applicable)	None known.

SECTION 5: Fire-fighting Measures

Suitable (and unsuitable) extinguishing media:	Dry chemical, carbon dioxide, foam, water fog or spray
Hazardous combustion products/special hazards:	Unknown
Special protective equipment/ precautions for fire fighters:	None

SECTION 6: Accidental Release Measures

Personal precautions/ protective equipment/ emergency procedures	See Section 8: "Exposure Controls/Personal Protection."
Environmental precautions	Handle in accordance with federal, state and local regulations.
Methods/materials for containment and clean-up	Product has low toxicity and is soluble in water. Absorbent materials could be used to soak up any liquid spills. Handle in accordance with federal, state and local regulations.

SECTION 7: Handling and Storage

Precautions for safe handling	Avoid breathing mist. Avoid contact with eyes, skin or clothing. Wash thoroughly after use.
Conditions for safe storage	Store in a cool, dry location away from incompatible materials.
Incompatibilities	Avoid contact with strong oxidizing agents (such as Nitric Acid or other strong acids), Chromium Trioxide, Potassium Chlorate, Potassium Permanganate, and strong bases.

SECTION 8: Exposure Controls/ Personal Protection

Occupational Exposure Limits*

Component	CAS Number	% w/w	Exposure Limits in Air				
			ACGIH-TLVs		OSHA-PELs		OTHER
			TWA	STEL	TWA	STEL	TWA
Non-Toxic Proprietary Polyol	Trade Secret	35-45%	10 mg/m^3	Not Established	5 mg/m^3 (Respirable) 15 mg/m^3 (Total Dust)	Not Established	Not Established
Organic Salts	Trade Secret	20-30%	Not Established	Not Established	Not Established	Not Established	Not Established
Water	7732-18-5	30-40%	Not Established	Not Established	Not Established	Not Established	Not Established

*** NOTE: Occupational Exposure Limits are provided for individual components of the mixture.**

Personal Protective Equipment

Appropriate engineering controls:	Use in well ventilated area if aerosolizing.	
Personal Protective Equipment (PPE) (minimum):	**Respiratory Protection**	If mists could be generated above the occupational exposure, an appropriate NIOSH/MSHA approved respirator should be used. A NIOSH/MSHA approved self-contained breathing apparatus or air-supplied respirator is recommended if the concentration exceeds the capacity of the cartridge respirator.
	Dermal/Hand Protection:	Compatible chemical gloves. When transferring bulk material, if splash is possible upgrade to chemical apron or chemical resistant suit (as appropriate).
	Eye/Face Protection:	Safety Glasses with side shields. If splash is possible, upgrade to goggles with face shield.

SECTION 9: Physical and Chemical Properties

Physical State	Liquid	**Evaporation Rate**	Unknown	
Color	Clear or Blue	**Flammability**	Unknown	
Odor	Odorless	**Upper/Lower explosive limit**	**LEL (%)**	**UEL (%)**
			Unknown	Unknown
Odor Threshold	Unknown	**Vapor Pressure (torr)**	Unknown	
pH	10-11	**Vapor Density**	Unknown	
Melting Point (ºF/ºC)	Unknown	**Specific Gravity (H_2O = 1)**	1.24 to 1.27 g/ml	
Freezing Point (ºF/ºC)	< -54°F	**Solubility(ies)**	Water	
Initial Boiling Point (ºF/ºC)	>120 °C	**Partition Coefficient (n-octanol/ water)**	Unknown	
Boiling Range (ºF/ºC)	Unknown	**Auto-ignition Temperature (ºF/ºC)**	Unknown	
Flash Point (ºF/ºC)	>100 °C	**Decomposition Temperature (ºF/ºC)**	Unknown	

SECTION 10: Stability and Reactivity

Chemical Stability	Stable at normal temperature and pressure (NTP). Hazardous polymerization will not occur.
Possible Hazardous Reactions	Unknown
Conditions to Avoid	Heat and Chemical incompatibilities.
Incompatible Materials	Avoid contact with strong oxidizing agents (such as nitric acid or other strong acids), Chromium Trioxide, Potassium Chlorate, Potassium Permanganate, and strong bases.
Hazardous Decomposition Products	May release acrolein at temperatures above 400 ºF, oxides of nitrogen, carbon and phosphorus, phenol, or benzene.

SECTION 11: Toxicological Information*

Toxicological Information Based Upon Exposure Route		
Inhalation	**Acute**	Unknown
	Chronic	Unknown
Ingestion	**Acute**	Unknown
	Chronic	Unknown
Skin	**Acute**	Unknown
	Chronic	Unknown
Eye	**Acute**	Unknown
	Chronic	Unknown

Toxicological Testing Data			
Unknown	----------	**Unknown**	----------

Carcinogen Status			
OSHA	Not Listed	**NTP**	Not Listed
IARC	Not Listed	**Other (Identify)**	None

***Note: Toxicological information for the mixture has not been determined. No individual ingredients are listed as a carcinogen.**

SECTION 12: Ecological Information

Ecotoxicity	Aquatic Toxicity LC_{50} (Daphnia Magna, 48 hr) >12,000 mg/L LC_{50} (Pimephales Promelas, 96 hr) >11,000 mg/L
Persistence and Degradability	BOD_5 20ºC = 0.30 kgO_2/kg fluid COD = 0.66 kgO_2/kg fluid
Bioaccumulative Potential	Unknown
Mobility in Soil	Unknown
Other Adverse Effects	Unknown

SECTION 13: Disposal Considerations

Waste Handling Procedures (including contaminated packaging)	Dispose of spill clean-up material and packaging in accordance with Federal, State and Local regulations.

SECTION 14: Transport Information

UN Number	Not a DOT Hazardous Material
UN Proper Shipping Name	Not a DOT Hazardous Material
Transport Hazard Class(es)	Not a DOT Hazardous Material
Packing Group (if applicable)	Not a DOT Hazardous Material
Marine Pollutant (Yes/No)	Unknown
Emergency Response Guide Number	None
Special Precautions	None

SECTION 15: Regulatory Information

Safety/Health Regulations	29 CFR 1910.1000 (OSHA Exposure Limits)
Environmental Regulations	Not considered a RCRA hazardous waste
Other Regulations	None

SECTION 16: Other Information

This is a research material. There has not been a specific occupational exposure limit established for this material. See Section 8 for published exposure limits of chemical components.

Exposures to this material would most likely be due to skin/eye contact or inhalation of mist. Engineering controls, administrative procedures and personal protective equipment should be implemented to minimize employee exposure.

References

1. 29 Code of Federal Regulations 1910.1000 (Subpart Z- Toxic and Hazardous Substances)
2. American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices, 2005.

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
IARC	International Agency for Research on Cancer
LEL	Lower Explosive Limit
mg/m^3	Milligrams per cubic meter
N/A	Not Applicable.
NTP	National Toxicology Program
ºC	Degree Celsius
ºF	Degree Fahrenheit
OSHA	Occupational Safety and Health Administration
PEL	OSHA Permissible Exposure Limit
ppm	Parts Per Million
STEL	Short Term Exposure Limit
TLV	ACGIH Threshold Limit Value
TWA	Time Weighted Average
UEL	Upper Explosive Limit
UN	United Nations

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