Zero Gravity Third Rail®: Material Specification Sheet

Anti-Icer

SCOPE

This specification cover requirements for third rail anti-icing fluid utilized for ice and snow removal and protection from ice formation.

DEFINITION

Environmentally Friendly Third Rail Anti-Icing (PG) Smart Fluid - material produced in accordance with U.S. Patent No. 5,772,912. The smart fluid is an environmentally friendly, non-toxic, non-corrosive single-phase composition consisting of water, propylene glycol, and a synergistic exocellular poylsaccharide. The resulting homogenous smart fluid has a exceptionally high "zero" shear viscosity, which exhibits non-Newtonian psuedo plactic behavior when sheared.

Zero Gravity NASA Technology Patent No. 5,772,912

REQUIREMENTS

3.1. *Qualification* - The material furnished under this specification shall meet all requirements of this specification. Documentation substantiating conformance to the qualifying factors in this specification shall be available for review by the procuring activity.

3.2. *Material* - The material used to manufacture environmentally friendly Third Rail Anti-Icing (PG) smart fluid supplied under this specification shall be of such quality to produce fluid conforming to the requirements of this specification.

3.3. *Physical Properties* -

PROPERTY	TEST METHOD	REQ.
Appearance	Visual	Coral
Viscosity cSt@20°C	ASTM D445	150-250
Viscosity cSt@-25°C	ASTM D445	250-400
Density, kg/L@15°C	ASTM D1298	1.055-1.070
Pour Point, °C	ASTM D97	<-30
Conductivity, uS	ASTM D1125	<300

3.4. *Toxicity* - The manufacturer shall test and certify that the fluid supplied under this specification meet the toxicity requirements listed below. A Material Safety Data Sheet (MSDS) shall be prepared and submitted in accordance with 29 CFR 1910.1200.

PROPERTY	TEST METHOD	REQ.
Acute Oral Toxicity, gm/kg	LD50 to rats	33.7
Aquatic Toxicity, mg/l	LC50	>100
Biodegradation, p/p	BOD^3- 20 Day	1.45

QUALIFIED PRODUCTS LIST

Midwest Industrial Supply, Inc.
Product Name: Zero Gravity Third Rail® Anti-Icer (PG)

Midwest Industrial Supply, Inc.
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MIDWEST