Operator Manual
HEFA

Fan Coils 80, 200, 600

S.N. 1546-01 -

DRYAIR Manufacturing Corp.
Box 126, 400 Service Road
St. Brieux, SK, Canada
S0K 3V0
Tel: (306) 275-4848 1-888-750-1700
Fax: (306) 275-4664

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1. Warranty Policies & Claim Procedures

DRYAIR MANUFACTURING CORP. (referred to within as DRYAIR) warranties its new, unused equipment to be free of defects in material and workmanship at the time of delivery to the original retail purchaser.

Warranty Policies

Basic Warranty Policy

- DRYAIR will repair or replace, at its option, without charge, any defective part of the equipment for a period of twelve (12) months from delivery to the first retail purchaser, F.O.B St. Brieux, SK., Canada.
- Any parts that are covered by an extended warranty published by DRYAIR are an exception to the Basic Warranty policy and are to be warrantied as per the details of the Extended Warranty Policy.
- Labour is covered as per DRYAIR flat labour rate.
- The Warranty Policy, terms and conditions, may change from time to time without prior notice.
- Warranty terms and conditions are transferable in the event of the sale to a second owner.
- Replacement parts will be warrantied for 90 days from the repair date. Bill of sale must accompany the warranty claim.
- The terms of this Warranty Policy are subject to provincial and state legislation. DRYAIR reserves the right to make modifications in accordance with provincial and state legislation without prior notice or obligation.

Extended Warranty Policy

Heat Exchanger

- An extended warranty is available on the heat exchanger unit of the water heater assembly. The available warranty for a part, under the extended warranty policy, is prorated by 20% per year.
- Shipment date is the date to be used for the commencement of the warranty period.
- Coverage schedule

Year 1 - 100%
Year 2 - 80%
Year 3 - 60%
Year 4 - 40%
Year 5 - 20%

Exceptions to the Warranty Policies

- Under no circumstance shall the owner be entitled to recover costs for incidental, special or consequential damages such as, but not limited to: loss of profit or revenue, other commercial losses, inconvenience and/or replacement equipment rental cost.
- Maintenance, repair or service items not related to warrantable defects.
- Loss or damage during shipping.
- Failure resulting from lack of or improper maintenance.
- Damage caused by operator abuse, negligence or improper operation.
- Damage resulting from improper voltage supply.
- Damage from improper installation. Installation done by other than the manufacturer.
- Non-defective items replaced at the request of the customer.
- Damage due to accidents.
- Damage resulting from improper fuel supply (i.e. pressure or contamination).
- Damage resulting from cracked or broken lines occurring during transport.
- Damage resulting from use of inadequate or improper fluids (i.e. Glycol or oil).
- Mileage is not covered.
- Glycol is considered a consumable and will not be covered under the warranty policy.
- Generators carry their own warranty coverage through their own manufacturers. Please refer generator issues to the OEM. Contact information may be found in the Service & Operators Manual under Optional Equipment.

Owner Obligations

- It is the responsibility of the owner, at the owner's expense, to transport the equipment to the service facility of an authorized DRYAIR distributor/dealer or alternately to reimburse the distributor/dealer, for any traveling expenses incurred in fulfilling this warranty.
- The terms of this Warranty Policy are subject to provincial and state legislation. DRYAIR reserves the right to make modifications in accordance with provincial and state legislation without prior notice or obligation.
- It is the responsibility of the owner to read, understand and implement the maintenance, safety and operational guidelines as laid out in the Operation and Maintenance Guide.
- All parts are to be tagged with warranty claim number and shipped prepaid to DRYAIR within 30 days.

Manufacturer Obligations

- DRYAIR reserves the right to continually improve the product’s parts or specifications at any time without notice or obligation.
- The terms of this Warranty Policy are subject to provincial and state legislation. DRYAIR reserves the right to make modifications in accordance with provincial and state legislation without prior notice or obligation.

Warranty Claim Procedure

- All warranty credits must be processed with the DRYAIR Warranty Claim Form.
- All warranty parts, unless otherwise specified, are to be returned to DRYAIR along with a completed Warranty Claim Form.

Note: *Prior to returning warranty parts, please call for an authorization number and shipping instructions from the Warranty department in Canada.*

Location of Warranty Depots:

USA	**Canada**
DRYAIR Manufacturing Corp.	DRYAIR Manufacturing Corp.
410 Douglas Road, Box 264	400 Service Road, Box 126
Bradner, OH 43406	St. Brieux, SK S0K 3V0
Ph. 1 (888) 750-1700	Ph. 1 (888) 750-1700

- Each warranty claim should only refer to one Serial or Production Schedule numbered unit.
- Warranty parts are to be tagged with warranty claim number.
- When claiming for warranty labour, the allowable warranty labour rate will be $85.00/hour. The factory reserves the right to adjust the number of hours claimed where deemed necessary.
- The factory may at times specify allowable labour for certain warranty procedures.
- Mileage and travel time to/from the customer are not eligible for warranty credit.
- Freight charges for warranty parts are not eligible for warranty credit.
- Labour flat rates for component changes:
- Electrical Components - 0.5hr
    - Relays
    - Switches
    - Thermostats
    - Breakers
- Plumbing Components - 1hr
    - Flow Reverser
    - Flow Switch
    - Valves
- Electric Motor Changes - 1hr
    - Hose Reel
- Glycol Pump Changes - 2hrs

Note: *Other labour charges will be at the discretion of DRYAIR.*

2. Safety Concerns

General Safety Guidelines

- Make certain that the operator reads and understands all the information in this manual.
- All unauthorized people must be kept away from the equipment when in operation.
- All guards must be in place when the equipment is in operation**.**
- Maintain instructional and safety decals. Replace damaged decals *(Figure 1)*.
- Use caution when moving Portable Heat Exchangers (Fan Coils). See: Appendix - Product Dimensions for full measurements.

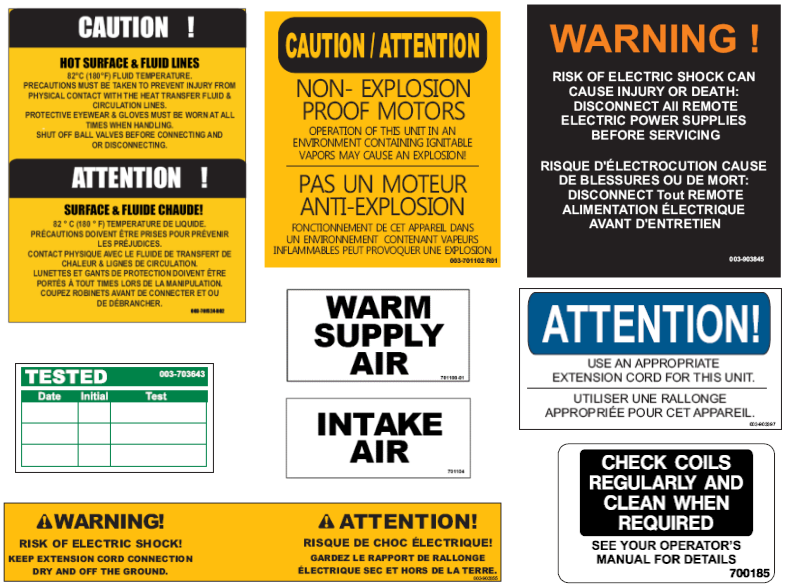


Figure 1 - Safety Decals

Heat Appliance

CAUTION! *This unit is a heating appliance.*

- Observe all posted warnings and cautions when dealing with any heating appliance.
- Keep children and pets away from all piping and fuel accessories.
- While the system is operating the water heater housing panels must be kept closed to prevent drafts from affecting water heater operation.
- Hot Heat Transfer Fluid is supplied to the unit via circulation lines and the heat is distributed by the fan motor.

Heat Transfer Fluid (HTF)

Follow the following precautions and measures when working with "heat transfer fluid" ("DOWFROST* HTF" & "BOSS CHILL PG").

Fluid Handling Precautions

- Ventilation ..... Good general ventilation should be sufficient for most conditions.
- Respiratory protection No respiratory protection should be needed.
- Skin protection ..... For brief contact, no precautions other than clean, body-covering clothing should be needed.
  ..... Use impervious gloves when prolonged or frequently repeated contact should occur.
- Eye protection ..... Use safety glasses.

First Aid Measures

- Eyes ..... Flush eyes with plenty of water.
- Skin ..... Wash off in flowing water or shower.
- Ingestion ..... Induce vomiting if large amounts are ingested.
  ..... Consult medical personnel.
- Inhalation ..... Remove to fresh air if effects occur.
  ..... Consult a physician.
- Note to Physician ..... No specific antidote.
  ..... Supportive care.
  ..... Treatment based on judgment of the physician in response to reactions of the patient.

For complete "heat transfer fluid" information, refer to the Material Safety Data Sheets for "Dowfrost HTF" & "Boss Chill PG" included with the manuals package

3. Introduction

Portable Heat Exchangers (Fan Coils)

Portable heat exchangers are the ideal way to heat and/or dry enclosed structures. Their compact and mobile design allows them to be positioned where they are required on the job site. The efficient Fan Coil design provides a high rate of heat transfer. High volume fans then deliver this heat evenly throughout a large area. The clean, low relative humidity heat delivery minimizes energy costs by eliminating the need to draw in fresh outside air. With the DRYAIR system, you just reheat warm internal air, rather than heating cold external air.

Figure 2 - Model 80 Slim-Line Fan Coil

Figure 3 - Model 80 Fan Coil

Note: *These units are designed to connect to DRYAIR water heaters. Specifications, including BTU output, cannot be guaranteed using other water heaters.*

Figure 4 - Model 200 Fan Coil

Features

- Provides the low humidity environment control essential for inhibiting mold growth.
- Provides the optimum project application environment for interior finish work.
- Allows for daily application of joint compound or finish texture to drywall.
- Minimizes expansion and contraction of wallboard.
- Reduces amount of downtime between finished drywall and paint application.
- Eliminates shading of paint caused by residue from open flame heaters.
- Allows better adhesion of caulking materials.
- Provides a drier surface for application of water-based carpet and tile adhesives, epoxy and urethane coatings and epoxy joint fillers.
- Reduces the chance of shrinkage at mitered joints in finish trim materials.

Figure 5 - Model 600 Fan Coil

Accessories

Extension Reservoir Assembly

The Extended Reservoir Tank is required in scenarios when "portable heat exchangers" are higher than the top level of the 200 GTS glycol reservoir tank. If the Extended Reservoir tank is not used, the following can occur:

Figure 6 - Extended Reservoir Tank

- **Insufficient Fluid in the System**
  Fluid can drain back to the heat transfer reservoir tank from the over-elevated fluid lines when the pump is shut off. The heat transfer reservoir tank will show adequate fluid, but when the pump is started, extra fluid will be required to recharge the over-elevated fluid lines and portable heat exchangers and the system will then have insufficient fluid in the reservoir.
- **Fluid Overflow**
  If fluid is added to maintain proper fluid levels while the pump is running, overflow at the reservoir tank may occur when the pump is shut off. This would occur because of the drain back from the over-elevated fluid lines.

Mixing/Booster Pump

The multifunctional Mixing/Booster ensures maximum flexibility in the use of this system.

Figure 7 - Mixing/Booster Unit

- Tempering mode supplies lower temperature fluid for concrete cure and radiant floor heat applications eliminating the need to reduce the water heater operating temperatures below safe operating ranges.
- When operating in booster mode the system can increase flow rates or function as a pumping station to increase pumping distances by over 300 feet per station.
- The system also allows for dual-temperature control. High temperature fluid can be provided to portable heat exchangers, along with a lower temperature fluid for concrete cure and radiant floor heat applications.
- The multifunctional Mixing Booster ensures maximum flexibility in the use of this system.

Note: *Disengage Flow Reverser when using this accessory.*

Optional Remote Manifold

- The optional remote manifold allows for additional distribution and/or separation between the central heating trailer and the manifold.

Figure 8 - Optional Remote Manifold

Insulated Line Jackets

- Insulated circulation line jackets are also available. These insulated jackets will prevent exposed circulation line heat loss in extreme sub-zero conditions.

Plate Heat Exchanger

The Plate Heat Exchanger module creates two separate fluid loops. It can extend the range of the HTF distribution and eliminate the need for extended reservoirs in elevated applications. The plate heat exchanger, combined with a central heating module can be used:

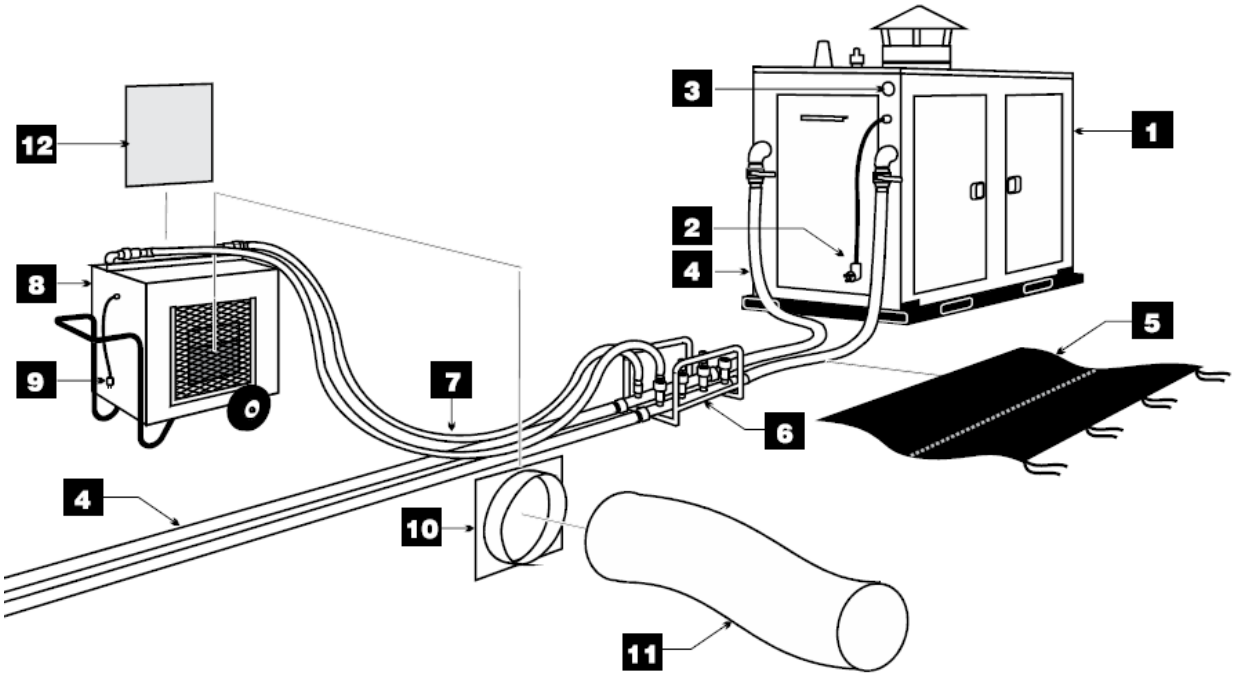
- To extend the effective range and lengths of the primary distribution lines.
- In a multi-story application to extend the vertical distance from the heating module that a portable heat exchanger.

Figure 9 - Plate Heat Exchanger Unit

Note: *Disengage Flow Reverser when using this accessory.*

How the System Works

Portable Heat Exchangers (Fan Coils) are compact, mobile structures ideal for heating, drying and climate control applications. Hot heat transfer fluid flows through the heat transfer coil, where heat is transferred to the air being drawn through the coil by the fan. The coil is specially designed for optimum heat transfer, without adding any moisture or fuel combustion by-products to the air.

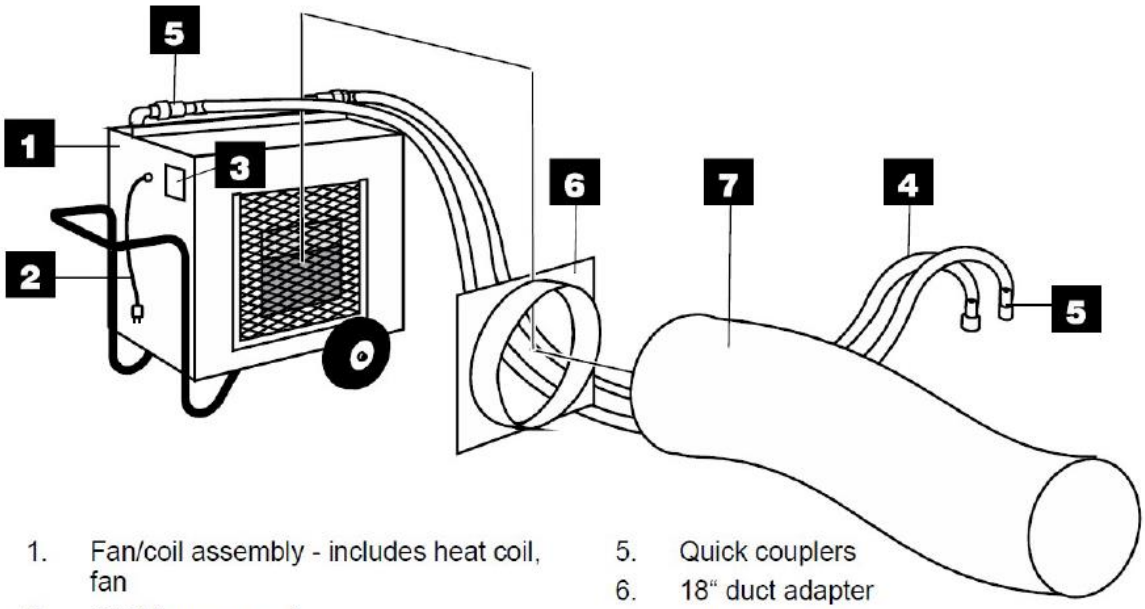


1. Boiler cabinet - includes hydronic boiler, pump & system controls
2. 115/230V power cord
3. Gas inlet
4. 2“ primary circulation line
5. Insulated wrap
6. Circulation manifold (can run up to 6 fan coils)
7. 1“ secondary circulation line
8. Fan/coil assembly - includes heat coil, fan, thermostatic control
9. 115V power cord
10. 18“ duct adapter (optional)
11. 18“ poly air duct (optional)
    18“ coil air duct (optional)
12. Air filter (optional)

Figure 10 - Typical System Setup

4. Setup

There are only electrical and heat transfer fluid connections to connect to a Fan Coil *(Figure 11)*. Each unit can be placed into position by one person and the connections can be made in only a few minutes.



1. Fan/coil assembly - includes heat coil, fan
2. 115 V power cord
3. Thermostatic control
4. 1" circulation lines
5. Quick couplers
6. 18“ duct adapter
7. 18“ poly air duct
   18“ coil air duct

Figure 11 - Fan Coil Connections
(Illustration shown with Model 200)

Required Safety Clearance

Fan Coils are heating appliances, therefore safe heat clearances must be observed from combustible materials and for service access.

- Fan Coils must have a minimum clearance of 1 ½ feet on the air intake side.
- See **Appendix – Product Dimensions** for full dimensions.

Electrical Requirements & Connection

- Fan Coils require a 110V, 15amp power supply.
- Each unit is factory equipped with a two-foot 110V appliance cable and plug.
- A maximum of 100ft. 14 AWG (or equivalent) extension cord can be run to each Fan Coil.
- Electrical schematics for each model can be found in **Appendix - Electrical Schematics**.

Heat Transfer Fluid (HTF)

CAUTION! *At no time should you use automobile antifreeze in your system. The use of automobile antifreeze will void your warranty.*

HTF Specifications

- DRYAIR pre-mixed "HTF" fluid is made up of 50% "Dowfrost ® HTF" or "Boss Chill PG" and 50% water, by weight - freeze protection down to -28°F (-33°C).
- The "glycol/water mixture chart" will provide you with more information on the proper mixture for your area *(Figure 12)*.
- Soft water with a neutral pH level (#7) must be used.

Percent Propylene Glycol		Freezing Point	
By Mass	By Volume	ºF	ºC
0.0	0.0	32.0	0.0
10.0	9.6	26.1	-3.2
20.0	19.4	17.9	-7.8
30.0	29.4	6.7	-14.0
40.0	39.6	-8.1	-22.3
50.0	49.9	-28.9	-33.8
60.0	60.0	-54.9	-48.3

Figure 12 - Glycol Mixing Guide

CAUTION! *Whenever coupling or uncoupling quick couplers, make sure that the isolation valves are closed, and the pump is off. Failure to do so may put you at risk of injury from eye and/or skin exposure to hot glycol.*

Fluid Connections

- Each Fan Coil is shipped complete with heat transfer fluid.
- Connect the Fan Coil to the ¾" (Model 80), 1" (Model 200), or 1" (Model 600) circulation lines and then to the circulation manifold using quick couplers.
- Circulation lines of different sizes can be purchased to allow connection to other DRYAIR units.

5. Operation

Once the unit has been connected to both power and fluid lines, follow the operation guidelines below to adjust the temperature of the outlet air. Be sure to entirely read and understand this section before trying to start and run your new DRYAIR system.

Controls

Thermostatic Control – Model 80 & 200

- The thermostatic control is adjusted with a screwdriver.
- Simply adjust to the desired temperature.
- When the desired temperature is reached, the thermostatic control will shut off the fan, thus shutting down heat transfer from the coil.
- Demand for heat will re-activate the fan.

Figure 13 - Model 80 Slim-Line (Stainless Steel Edition) Connections and Control

Ball Valve Flow Adjustment – Model 600

- The ball valve is used as a throttling control for the flow of heat transfer fluid through the Fan Coil. Changes can be made at the water heater for a more precise temperature adjustment (note that making changes at the water heater will affect all units attached to it).

Figure 14 - Model 200 (Stainless Steel Edition) Connections and Control

Figure 15 - Model 600 Connections and Control

6. Troubleshooting

Fan Does Not Start

No Power

- Check that power supply is connected.
- Check the condition of the power connection cable (appliance cable).
- Check that the thermostat temperature is above ambient temperature *(if equipped)*.
- Check that the capacitor is good.

Fan is Running but No Heat

a) If fluid inlet is cold:
Check that all quick couplers are open, and fluid is circulating. If valves are closed, open valves to initiate flow. If valves are open and there is circulation, but the fluid is cold, the problem lies with the water heater.

b) If fluid inlet is hot but the outlet is cold and still no heat:
Check the heat exchanger coil for flow obstructions. If flow is obstructed, disconnect the module from the circulation system and flush.

Heat Transfer Fluid is Leaking

- Check all connections, fittings, and hoses. Tighten as required.
- Shut down the fan and check the coil for leaks. Replace coil if leaks are found.

FOR ADDITIONAL ASSISTANCE CALL DRYAIR TECHNICAL SUPPORT 1 (888) 750-1700

7. Maintenance

DRYAIR products are designed to be low maintenance systems. All assemblies are assembled using extensively tested and certified components. Following these maintenance procedures will ensure the maximum benefit and least amount of downtime for the system. The daily maintenance schedule is designed to be a quick system check and ensures a low risk of operating interruptions.

Daily Checklist

Check the Heat Coil for Cleanliness or Clogging

- Clean as required.

Note: *Do not use high pressure air or water to clean the coil as this will cause damage to the coil fins.*

Check All Fluid Fittings and Connections Daily

- Tighten or replace as required.

Storage

Hardware

- Exercise reasonable care when handling.
- Fan Coils should be sheltered when stored for extended periods of time.

Hose & Poly

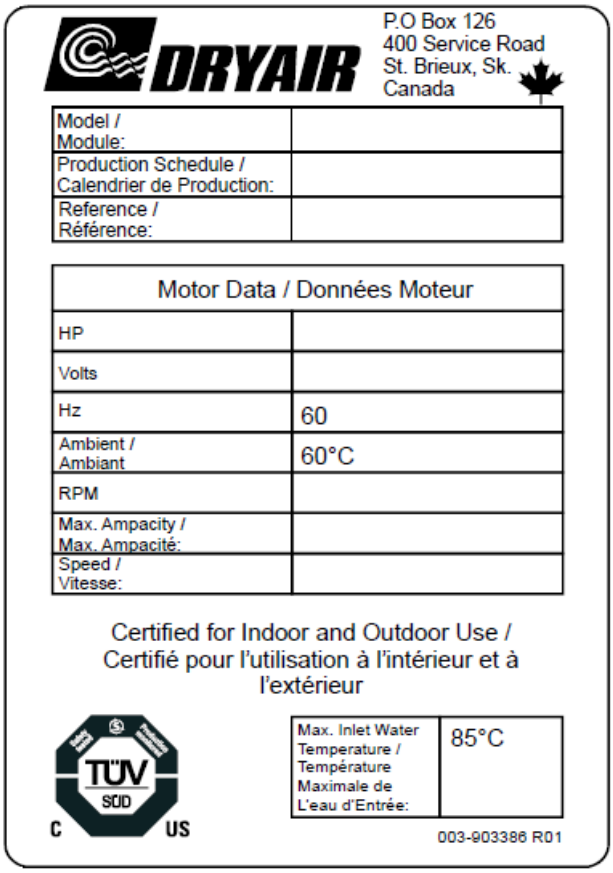
- To extend the life of the rubber and poly components of the system (hoses and air tubes), it is recommended that they be stored out of the sun when not in use.

Heat Transfer Fluid

- See **Appendix - Material Safety Data Sheets**.

8. Appendix

Certification & Fan Coil Specifications



DRYAIR

P.O Box 126
400 Service Road
St. Brieux, Sk.
Canada

Model / Module:	
Production Schedule / Calendrier de Production:	
Reference / Référence:	

Motor Data / Données Moteur	
HP	
Volts	
Hz	60
Ambient / Ambiant	60°C
RPM	
Max. Ampacity / Max. Ampacité:	
Speed / Vitesse:	

Certified for Indoor and Outdoor Use / Certifié pour l'utilisation à l'intérieur et à l'extérieur

TÜV SÜD C US

Max. Inlet Water Temperature / Température Maximale de L'eau d'Entrée:	85°C

003-903386 R01

Figure 16 - Fan Coil Data & Serial Plate

Electrical Schematics

Model 80 Slim-Line

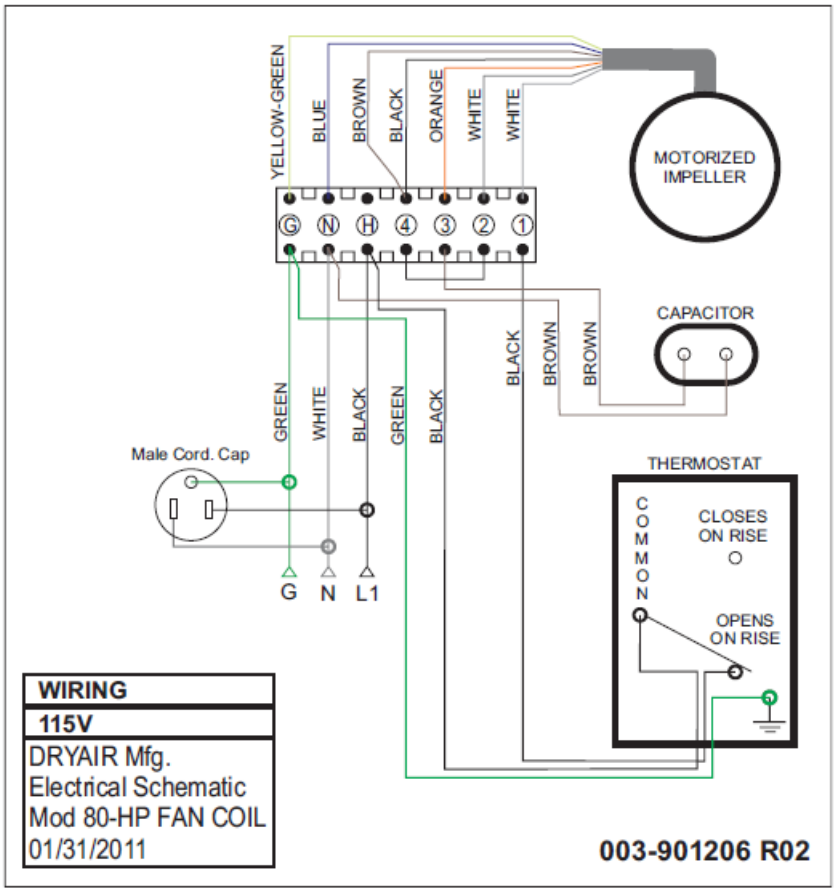


Figure 17 - Model 80 Slim-Line Electrical Schematic

Model 80/Model 200

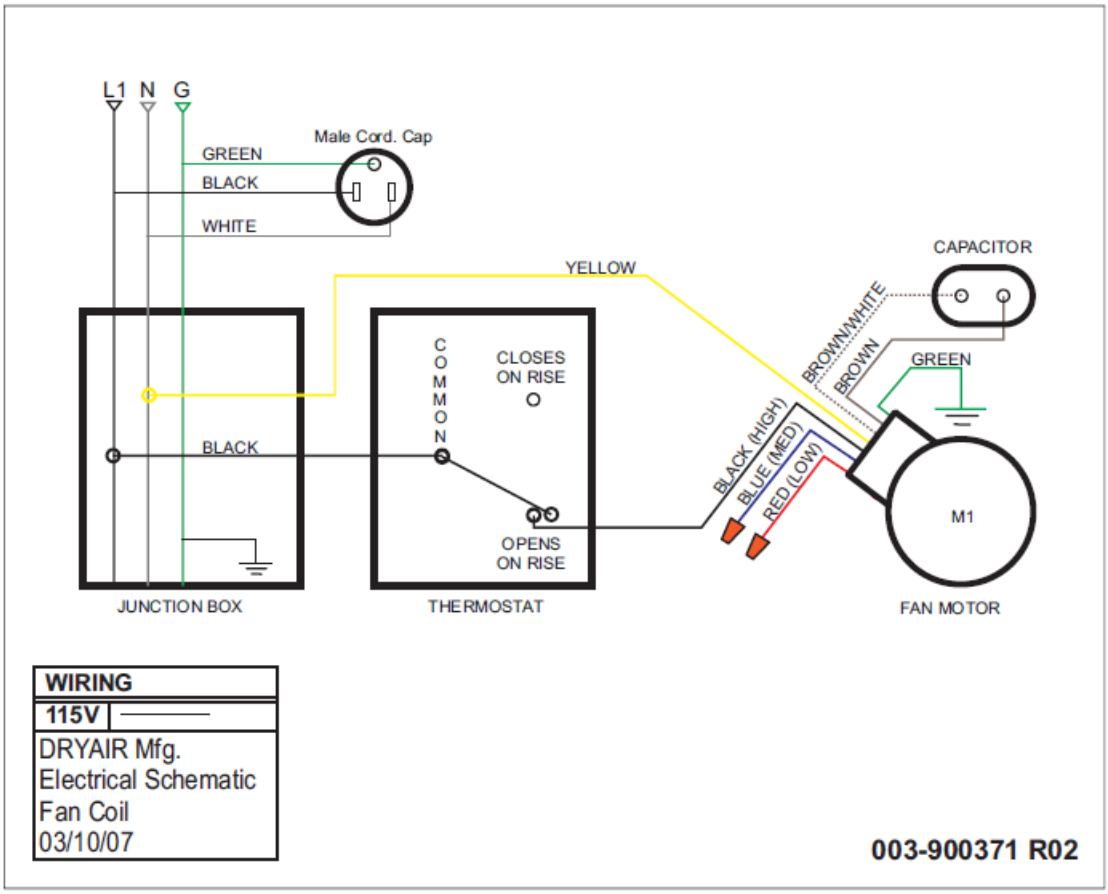


Figure 18 - Model 80/Model 200 Electrical Schematic

Model 600

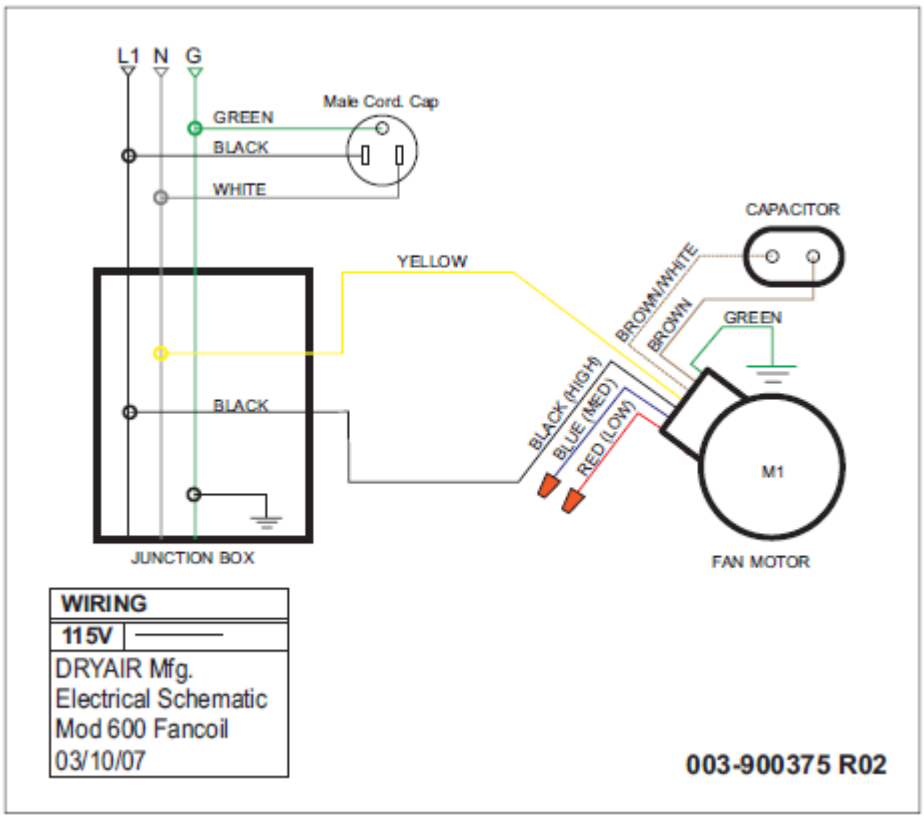


Figure 19 - Model 600 Electrical Schematic

Product Dimensions

Model 80 Slim-Line

Weight = 95lbs (43kg)

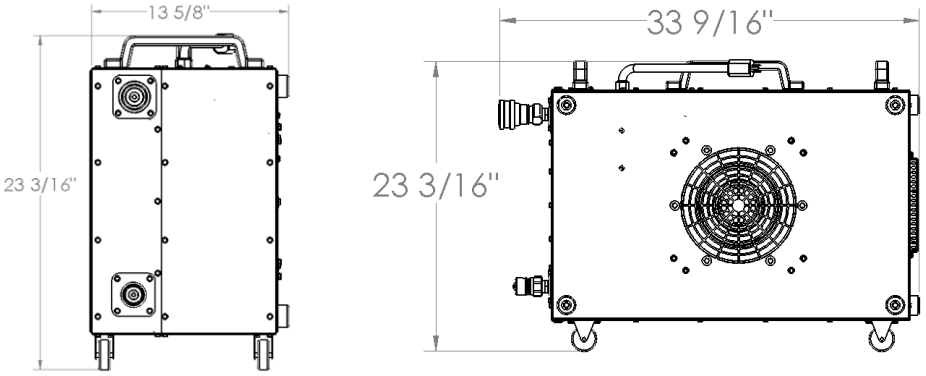


Figure 20 - Model 80 Slim-Line Dimensions

Model 80

Weight = 90lbs (41kg)

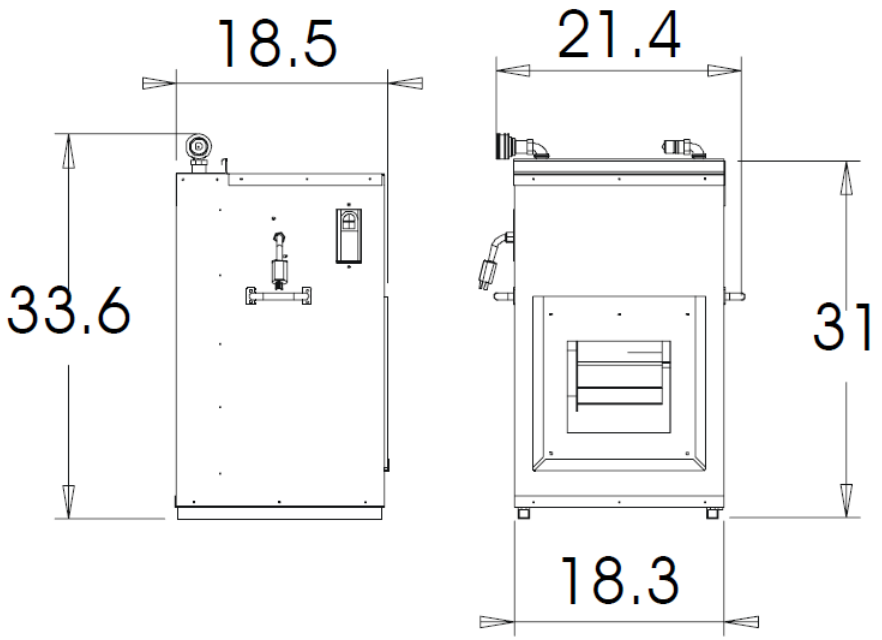


Figure 21 - Model 80 Dimensions

Model 200

Weight = 210lbs (95kg)

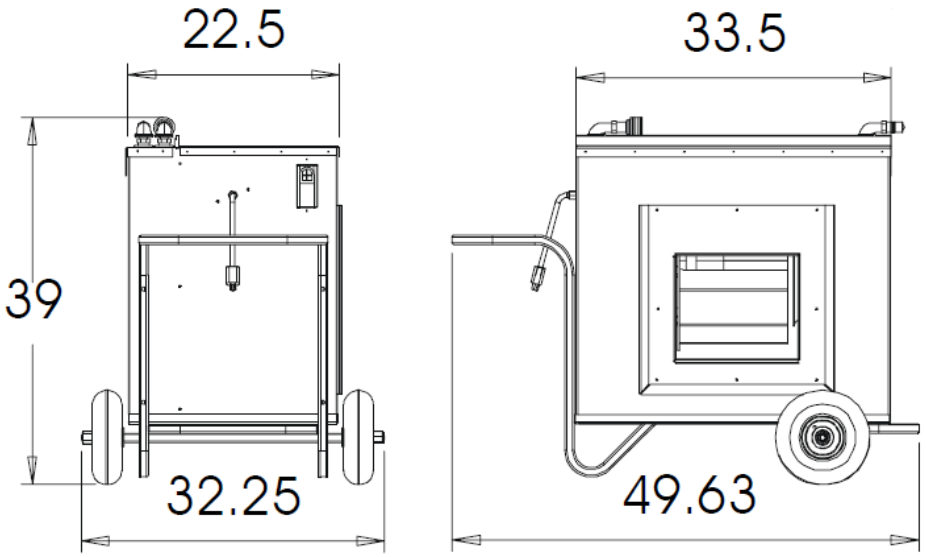


Figure 22 - Model 200 Dimensions

Model 600

Weight = 560lbs (254kg)

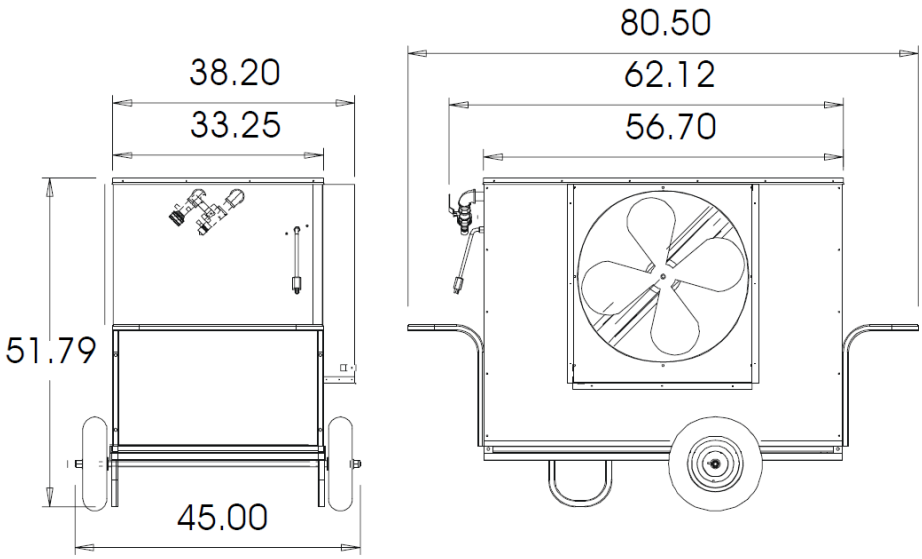


Figure 23 - Model 600 Dimensions

Material Safety Data Sheets

The Material Safety Data Sheets (MSDS) included with this manual have been provided by DRYAIR's suppliers.

SAFETY DATA SHEET

Issuing Date 03-Jun-2019 **Revision date** 03-Jun-2019 **Revision Number** 1

1. Identification

Product identifier

Product Name BOSS Chill Propylene Glycol

Other means of identification

Product Code(s) GHSRBS-041

UN/ID no. UN 3082

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended use Heat transfer medium

Restrictions on use No information available

Details of the supplier of the safety data sheet

Initial supplier identifier
BOSS Lubricants

Manufacturer Address
6303 30 ST SE Calgary, AB T2C 1R4

Emergency telephone number

Initial supplier phone number (800) 844-9457
Emergency Telephone Chemtrec 1-800-424-9300

2. Hazard(s) identification

Classification

Not a hazardous substance or mixture according to the Globally Harmonized System (GHS) and Canada's Hazardous Products Regulations

Label elements

Hazard statements

Not a hazardous substance or mixture according to the Globally Harmonized System (GHS) and Canada's Hazardous Products Regulations.

Precautionary Statements - Disposal
Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Other information

3. Composition/information on ingredients

Substance

Chemical name	CAS No.	Weight-%	Hazardous Material Information Review Act registry number (HMIRA registry #)	Date HMIRA filed and date exemption granted (if applicable)
Water	7732-18-5	0.1 - 1	-	
Propylene glycol	57-55-6	80 - 100	-	
PROPRIETARY ADDITIVES	PROPRIETARY	1 - 5	-	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First-aid measures

Description of first aid measures

Inhalation Remove to fresh air. If not breathing, give artificial respiration. IF exposed or concerned: Get medical advice/attention.

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if symptoms occur.

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Symptoms Prolonged contact may cause redness and irritation.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media	Carbon dioxide (CO2). Foam. Dry chemical. Water spray or fog. Alcohol resistant foam.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.
Specific hazards arising from the chemical	Use water spray to cool fire-exposed containers and structures. Isolate and restrict area access. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Container may rupture from gas generation in a fire situation. Fight fire from a safe distance and from a protected location. Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity. Consider use of unmanned hose holder or monitor nozzles.

Explosion data

Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.

Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions	Use personal protective equipment as required. See section 8 for more information. Ensure adequate ventilation.

Methods and material for containment and cleaning up

Methods for containment	Stop leak if you can do it without risk. Keep out of drains, sewers, ditches and waterways. Ventilate the area. Avoid breathing vapors or mists.
Methods for cleaning up	Cover liquid spill with sand, earth or other noncombustible absorbent material. Prevent product from entering drains.

7. Handling and storage

Precautions for safe handling

Advice on safe handling	Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin, eyes or clothing. Use only with adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Do not ingest. If swallowed then seek immediate medical assistance. For industrial use only.

Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep container tightly closed in a dry and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Do not contaminate food or feed stuffs. Store only in containers resistant to alkaline solutions with a pH of 9.0 to 12.0.

8. Exposure controls/personal protection

Control parameters

Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Appropriate engineering controls

Engineering controls Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). If splashes are likely to occur, wear safety glasses with side-shields. Avoid contact with eyes.

Hand protection Wear suitable gloves.

Skin and body protection Wear suitable protective clothing.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	No information available
Color	purple
Odor	Odorless
Odor threshold	No information available

Property	**Values**	**Remarks • Method**
pH	9.0– 10.5	
Melting point / freezing point	No data available	None known
Boiling point / boiling range	188 °C / 317 °F	ASTM D7213
Flash point	116 °C / 240 °F	ASTM D93
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	No data available	None known
Water solubility	completely soluble	
Solubility in other solvents	No data available	None known

Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

Explosive properties	No information available.
Oxidizing properties	No information available.
Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Liquid Density	No information available
Bulk density	No information available

10. Stability and reactivity

Reactivity No information available.

Chemical stability Stable under normal conditions.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid Heat, flames and sparks.

Incompatible materials Strong oxidizing agents. Strong acids.

Hazardous decomposition products Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. Toxicological information

Information on likely routes of exposure

Product Information

Inhalation No known effects under normal use conditions.

Eye contact Irritating to eyes.

Skin contact Avoid contact with skin and clothing.

Ingestion Harmful if swallowed. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache). Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause adverse kidney effects.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Acute toxicity

Numerical measures of toxicity
No information available

Unknown acute toxicity No information available

Product Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Propylene glycol 57-55-6	= 20 g/kg (Rat)	= 20800 mg/kg (Rabbit)	Not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Respiratory or skin sensitization Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicity Based on available data, the classification criteria are not met.

STOT - single exposure Based on available data, the classification criteria are not met.

STOT - repeated exposure Based on available data, the classification criteria are not met.

Aspiration hazard No information available.

12. Ecological information

Ecotoxicity Harmful to aquatic life.

Persistence and degradability No information available.

Bioaccumulation No information available.

Other adverse effects No information available.

13. Disposal considerations

Waste treatment methods

Waste from residues/unused products Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

14. Transport information

Transport Canada Not regulated

TDG Not regulated

DOT Not regulated unless shipping container holds at least 5,000 pounds.
- **UN/ID no.** UN 3082
- **Hazard class** 9
- **Packing group** III

MEX Not regulated

ICAO (air) no data available

IATA no data available

IMDG no data available

RID no data available

ADR no data available

ADN no data available

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

International Inventories

TSCA	Complies.
DSL/NDSL	Complies.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
IECSC	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AICS	Contact supplier for inventory compliance status.

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

16. Other information

NFPA	**Health hazards** 2	**Flammability** 1	**Instability** 0	**Physical and chemical properties** -
HMIS	**Health hazards** 2	**Flammability** 1	**Physical hazards** 0	**Personal protection** X

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Issuing Date 03-Jun-2019

Revision date 04-Jun-2019

Revision Note No information available.

Disclaimer

The information provided in this 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 a 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

Data for Regulatory Rules

Region	Template name	Revision Note
Canada	HGHS	2.0

GHS Product Information

pH	9.0– 10.5
Physical state	Liquid
Flash point °C	116
Boiling point / boiling range °C	188

Component Information

Canada

GHS Classification

Not Hazardous	Not a hazardous substance or mixture according to the Globally Harmonized System (GHS) and Canada's Hazardous Products Regulations
Precautionary Statements - Disposal	Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

SAFETY DATA SHEET

DOW CHEMICAL CANADA ULC

Product name: DOWFROST™ Heat Transfer Fluid

Issue Date: 12/16/2019
Print Date: 12/17/2019

DOW CHEMICAL CANADA ULC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: DOWFROST™ Heat Transfer Fluid

Recommended use of the chemical and restrictions on use
Identified uses: Intended as a heat transfer fluid for closed-loop systems. This product is acceptable for use where there is possibility of incidental food contact and as a product for use in the immersion or spray freezing of wrapped meat and packaged poultry products. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

COMPANY IDENTIFICATION
DOW CHEMICAL CANADA ULC
#2400, 215 - 2ND STREET S.W.
CALGARY AB T2P 1M4
CANADA

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact (transportation emergencies only): 1-800-424-9300
Local Emergency Contact (transportation emergencies only): 1-800-424-9300
24-Hour Emergency Contact: 1-989-636-4400

2. HAZARDS IDENTIFICATION

Hazard classification
This product is not hazardous under the criteria of the Hazardous Products Regulation (HPR) as implemented under the Workplace Hazardous Materials Information System (WHMIS 2015).

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration (w/w)
Propylene glycol	57-55-6	> 95.0 %
Inorganic corrosion inhibitor	not hazardous	< 3.0 %
Water	7732-18-5	< 3.0 %

4. FIRST AID MEASURES

Description of first aid measures
General advice:
If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: Rinse mouth with water. No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed:
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Water fog or fine spray.. Dry chemical fire extinguishers.. Carbon dioxide fire extinguishers.. Foam.. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective..

Unsuitable extinguishing media: Do not use direct water stream.. May spread fire..

Special hazards arising from the substance or mixture

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.. Combustion products may include and are not limited to:. Carbon monoxide.. Carbon dioxide..

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation.. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids..

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry.. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles.. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container.. Burning liquids may be extinguished by dilution with water.. Do not use direct water stream. May spread fire.. Move container from fire area if this is possible without hazard.. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage..

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).. If protective equipment is not available or not used, fight fire from a protected location or safe distance..

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Cat litter. Sawdust. Vermiculite. Zorb-all®. Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. Recover spilled material if possible. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: No special precautions required. Keep container closed. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Conditions for safe storage: Do not store in: Galvanized steel. Opened or unlabeled containers. Store in original unopened container. See Section 10 for more specific information. Additional storage

and handling information on this product may be obtained by calling your sales or customer service contact.

Storage stability
Shelf life: Use within 60 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Consult local authorities for recommended exposure limits.

Component	Regulation	Type of listing	Value
Propylene glycol	US WEEL	TWA	10 mg/m3
	CA ON OEL	TWAEV Total	155 mg/m3 50 ppm
	CA ON OEL	TWAEV	10 mg/m3
	Further information: C: For assessing the visibility in a work environment where 1,2-propylene glycol aerosol is present.		
	CA ON OEL	TWA	155 mg/m3 50 ppm
	CA ON OEL	TWA	10 mg/m3
	Further information: (c): For assessing the visibility in a work environment where 1,2-propylene glycol aerosol is present		
	CA ON OEL	TWA Vapour and aerosols	155 mg/m3 50 ppm
	CA ON OEL	TWA aerosol	10 mg/m3
	Further information: (c): For assessing the visibility in a work environment where 1,2-propylene glycol aerosol is present		

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Avoid gloves made of: Polyvinyl alcohol ("PVA"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit

requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Colorless
Odor	Characteristic
Odor Threshold	No test data available
pH	10.0 50% *Literature*
Melting point/range	Not applicable to liquids
Freezing point	supercools
Boiling point (760 mmHg)	152 °C *Literature*
Flash point	**closed cup** 104 °C *Pensky-Martens Closed Cup ASTM D 93* (based on major component), Propylene glycol. **open cup** *Cleveland Open Cup ASTM D92* None
Evaporation Rate (Butyl Acetate = 1)	<0.5 *Estimated.*
Flammability (solid, gas)	Not applicable to liquids
Flammability (liquids)	Not expected to be a static-accumulating flammable liquid.
Lower explosion limit	2.6 % vol *Literature* Propylene glycol.
Upper explosion limit	12.5 % vol *Literature* Propylene glycol.
Vapor Pressure	2.2 mmHg *Literature*
Relative Vapor Density (air = 1)	>1.0 *Literature*
Relative Density (water = 1)	1.05 at 20 °C / 20 °C *Literature*
Water solubility	*Literature* completely soluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	371 °C *Literature* Propylene glycol.
Decomposition temperature	No test data available
Kinematic Viscosity	43.4 cSt at 20 °C *Literature*
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	76.9 g/mol *Literature*

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7. Hygroscopic

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid direct sunlight or ultraviolet sources.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials.. Decomposition products can include and are not limited to:. Aldehydes.. Alcohols.. Ethers.. Organic acids..

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Information on likely routes of exposure
Ingestion, Inhalation, Skin contact, Eye contact.

Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)

Acute oral toxicity
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

For the major component(s): Propylene glycol.
LD50, Rat, > 20,000 mg/kg

Information for components:

Propylene glycol
LD50, Rat, > 20,000 mg/kg

Inorganic corrosion inhibitor
LD50, Rat, female, > 2,000 mg/kg No deaths occurred at this concentration.

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

For the major component(s): Propylene glycol.
LD50, Rabbit, > 20,000 mg/kg

Information for components:

Propylene glycol
LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

Inorganic corrosion inhibitor
LD50, Rabbit, > 5,000 mg/kg

Acute inhalation toxicity
At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of upper respiratory tract (nose and throat).

For the major component(s):
LC50, Rat, 4 Hour, vapour, 6.15 mg/l No deaths occurred following exposure to a saturated atmosphere.
Information for components:

Propylene glycol
LC50, Rabbit, 2 Hour, dust/mist, 317.042 mg/l No deaths occurred at this concentration.

Inorganic corrosion inhibitor
Based on information for a similar material: Maximum attainable concentration. LC50, Rat, male and female, 4 Hour, dust/mist, > 0.83 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Based on information for component(s):
Prolonged contact is essentially nonirritating to skin.
Repeated contact may cause flaking and softening of skin.

Information for components:

Propylene glycol
Prolonged contact is essentially nonirritating to skin.
Repeated contact may cause flaking and softening of skin.

Inorganic corrosion inhibitor
Prolonged contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation
Based on information for component(s):
May cause slight temporary eye irritation.
Corneal injury is unlikely.

Information for components:

Propylene glycol
May cause slight temporary eye irritation.
Corneal injury is unlikely.
Mist may cause eye irritation.

Inorganic corrosion inhibitor
May cause slight eye irritation.
May cause slight temporary corneal injury.

Dust may irritate eyes.
Mist may cause eye irritation.

Sensitization
For the major component(s):
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

Information for components:

Propylene glycol
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

Inorganic corrosion inhibitor
For similar material(s):
Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Information for components:

Propylene glycol
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

Information for components:

Propylene glycol
Based on physical properties, not likely to be an aspiration hazard.

Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

Information for components:

Propylene glycol
In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

Inorganic corrosion inhibitor
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity
Similar formulations did not cause cancer in laboratory animals.

Information for components:

Propylene glycol
Did not cause cancer in laboratory animals.

Inorganic corrosion inhibitor
No relevant data found.

Teratogenicity
For the major component(s): Did not cause birth defects or any other fetal effects in laboratory animals.

Information for components:

Propylene glycol
Did not cause birth defects or any other fetal effects in laboratory animals.

Inorganic corrosion inhibitor
For similar material(s): Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
For the major component(s): In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Information for components:

Propylene glycol
In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Inorganic corrosion inhibitor
For similar material(s): In animal studies, did not interfere with reproduction.

Mutagenicity
In vitro genetic toxicity studies were negative. For the major component(s): Animal genetic toxicity studies were negative.

Information for components:

Propylene glycol
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Inorganic corrosion inhibitor
In vitro genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Propylene glycol

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 40,613 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
LC50, Ceriodaphnia dubia (water flea), static test, 48 Hour, 18,340 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 19,000 mg/l, OECD Test Guideline 201

Toxicity to bacteria
NOEC, Pseudomonas putida, 18 Hour, > 20,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, number of offspring, 13,020 mg/l

Inorganic corrosion inhibitor

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Leuciscus idus (Golden orfe), static test, 48 Hour, > 900 mg/l, Method Not Specified.

Persistence and degradability

Propylene glycol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).
10-day Window: Pass
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
10-day Window: Not applicable
Biodegradation: 96 %
Exposure time: 64 d
Method: OECD Test Guideline 306 or Equivalent

Theoretical Oxygen Demand: 1.68 mg/mg

Chemical Oxygen Demand: 1.53 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	69.000 %
10 d	70.000 %
20 d	86.000 %

Photodegradation
Atmospheric half-life: 10 Hour
Method: Estimated.

Inorganic corrosion inhibitor
Biodegradability: Biodegradation is not applicable.

Bioaccumulative potential

Propylene glycol
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -1.07 Measured
Bioconcentration factor (BCF): 0.09 Estimated.

Inorganic corrosion inhibitor
Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility.

Mobility in soil

Propylene glycol
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): < 1 Estimated.

Inorganic corrosion inhibitor
No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR

UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

TDG

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code

Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Canadian Domestic Substances List (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

16. OTHER INFORMATION

Hazard Rating System

NFPA

Health	Flammability	Instability
0	1	0

Revision

Identification Number: 11045208 / A208 / Issue Date: 12/16/2019 / Version: 8.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

CA ON OEL	Canada. Ontario OELs
TWA	8-hr TWA
TWAEV	time-weighted average exposure value
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

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