
2021 SERDP AFFF Challenge Fire Testing

Test Report

Issued to Carver Labs, Inc.

Product ID Carver Ice

Scope of Evaluation

Testing in accordance to the 2021 SERDP AFFF Challenge: Legacy Aqueous Film Forming Foam (AFFF) used by the Department of Defense (DoD).

Test Report Number

RTL0201-1

Test Period

September 24, 2021

Report Issued on

September 27, 2021

Record Kept until

September 24, 2025



Test Report: RTL0201-1

Client: Carver Labs, Inc.

Issue Date: September 27, 2021

Report Issued To:

Carver Labs, Inc.
1008 Dry Pond Rd.
Jefferson, GA 30549
USA

Proposal Number: SSP-09172021-01

Acceptance Date: September 24, 2021

Accepted By: Carver Anderson

Product ID

Carver Ice

(See Appendix C – Diagrams for more information)

Results:

The **Carver Labs, Inc** fire extinguishing component **CARVER ICE** when tested in accordance to the procedures outlined in the 2021 SERDP AFFF Challenge as modified in this report extinguished the fire in the times noted in the below table:

Quantity of Fire Retardant (Grams)	Average Time for Flame Pre-Burn (Seconds)	Average Time to Pour (Seconds)	Average Time to Extinguish (Seconds)
101	11.7	4.7	14.0
127	11.0	5.8	16.0
150	11.5	5.5	19.0
175	11.5	4.5	9.5

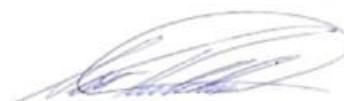
**See Details of this evaluation on the subsequent pages of this report.*

Prepared By



Drew Mersereau
Senior Project Manager
September 24, 2021

**Signed for and on the behalf of
Right Testing Laboratories, LLC.**



Scott Parkhurst
Laboratory Manager
September 27, 2021

Section 1: Product Details**1.1 Sampling Detail:**

The test samples were delivered to Right Testing Labs directly by client. No product sampling during manufacture or construction was witnessed by Right Testing Labs.

1.2 Sample Receiving Date: September 24, 2021

1.3 Sample Condition as Received: Good Condition

1.4 Sample Received Details:

Sample Type:	CO2 Pellets
Quantity of Samples received	Small Cooler filled with dry Ice Pellets

1.5 Sample Conditioning **The test sample type did not require special laboratory conditioning.*

Section 2: Product and Test Sample Details

Test Specimen Description

The test specimen consisted of an 1/8" extruded dry Ice Pellet delivered to the lab in a cooler. The individual test specimens were scooped out of the container with a beaker. No Preparation or witness of construction was observed by RTL.

See Appendix B-Photographs and Appendix C -Diagrams Section of this report for more information on the specimen configuration evaluated in this report.

Section 3: Procedure / Evaluation Method**Procedure:**

The test was conducted as outlined in the AFFF Challenge Guide utilizing a fuel pan which is ignited for a period of 10-seconds, then the technician pours a fire-retardant solution down an angled ramp between 5-10 seconds to determine the time it takes to extinguish the fire.

The Fuel Pan consisted of a seamless, stainless steel cake pan provided by the client measuring 12-inch X 9-1/8-inch x 3-1/8-inch deep. During the test, the pan was placed on a test table positioned underneath a 3m X 3m (10-foot X 10-foot) exhaust hood to collect the products of combustion

A standard 16-inch nominal cinder block was placed 16-inch from the side of the pan. A 24-inch long X 3-5/8-inch wide x 1-inch leg piece of metal framing track was positioned from on top of the cinder block to the fire pan which resulted in a 36.5° Slope from the brick toward the pan. A small notch was

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placed in the lower edge of the steel track (1" wide, 5/8" deep, bent downward at 90 degrees) to keep it the track from sliding into the fire pan. *See Photograph No. 1 below for the overall test setup and Photographs in the Appendix of this document for more details.*

The pan was filled to a 1-inch depth tap water, then 500 ml of ethanol free gasoline was poured/floatated on the water substrate. The dry ice pellets were removed from the storage container with a laboratory grade beaker to an approximate volume with the weight of the pellets recorded. The test technician ignited the fuel pan and allowed it to burn for a minimum of 10-seconds to fully establish the flame pool. Then the dry ice pellets were poured down the ramp continuously to completely empty the beaker between 5 to 10 seconds. The time to extinguish the fire starting when the beaker is first poured to the time when no visible flames or products of combustion was observed and were recorded and reported.

Note: This test method is developed for fire retardant foams and was adapted to the dry ice fire retardant product to meet the intent of the test method.

Four different quantities of the fire extinguishing dry ice pellets were subject to this evaluation: 100 grams, 126 grams, 150 grams and 175 grams. **See Data on the subsequent pages of this report for more information.*



Photograph No. 1: Test setup used during this evaluation.

4.0 Test Results:

Quantity 1: 100 grams of Carver Ice:

Test No:	Water Level (in)	Fuel Quantity (ml)	Approximate Volume of Fire Extinguishing Component (ml)	Weight of Fire Extinguishing Component (grams)	Exhaust hood Suction Volume (m ³ /sec)	Pre-Burn Time (seconds)	Pouring Time (Seconds)	Time to Extinguish from start of Pouring. (Seconds)
6	1	500	125	100.58	0.54	12	4	16
7	1	500	125	99.97	0.54	12	6	Not Extinguished
8	1	500	125	101.76	0.54	11	4	12
Average				100.77	0.54	11.7	4.7	14.0
Standard Deviation				0.91	0.00	0.58	1.15	2.83
Coefficient of Variation				1%	0%	5%	25%	20%

Quantity 2: 125 grams of Carver Ice:

Test No:	Water Level (in)	Fuel Quantity (ml)	Approximate Volume of Fire Extinguishing Component (ml)	Weight of Fire Extinguishing Component (grams)	Exhaust hood Mass Air Flow (m ³ /sec)	Pre-Burn Time (seconds)	Pouring Time (Seconds)	Time to Extinguish from start of Pouring. (Seconds)
1	1	500	150	126.00	0.84	11	7	22
2	1	500	150	126.04	0.73	11	7	18
3	1	500	150	127.58	0.54	11	5	12
4	1	500	150	127.30	0.54	11	4	12
Average				126.73	0.66	11.0	5.8	16.0
Standard Deviation				0.83	0.15	0.00	1.50	4.90
Coefficient of Variation				1%	23%	0%	26%	31%

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Quantity 3: 150 grams of Carver Ice:

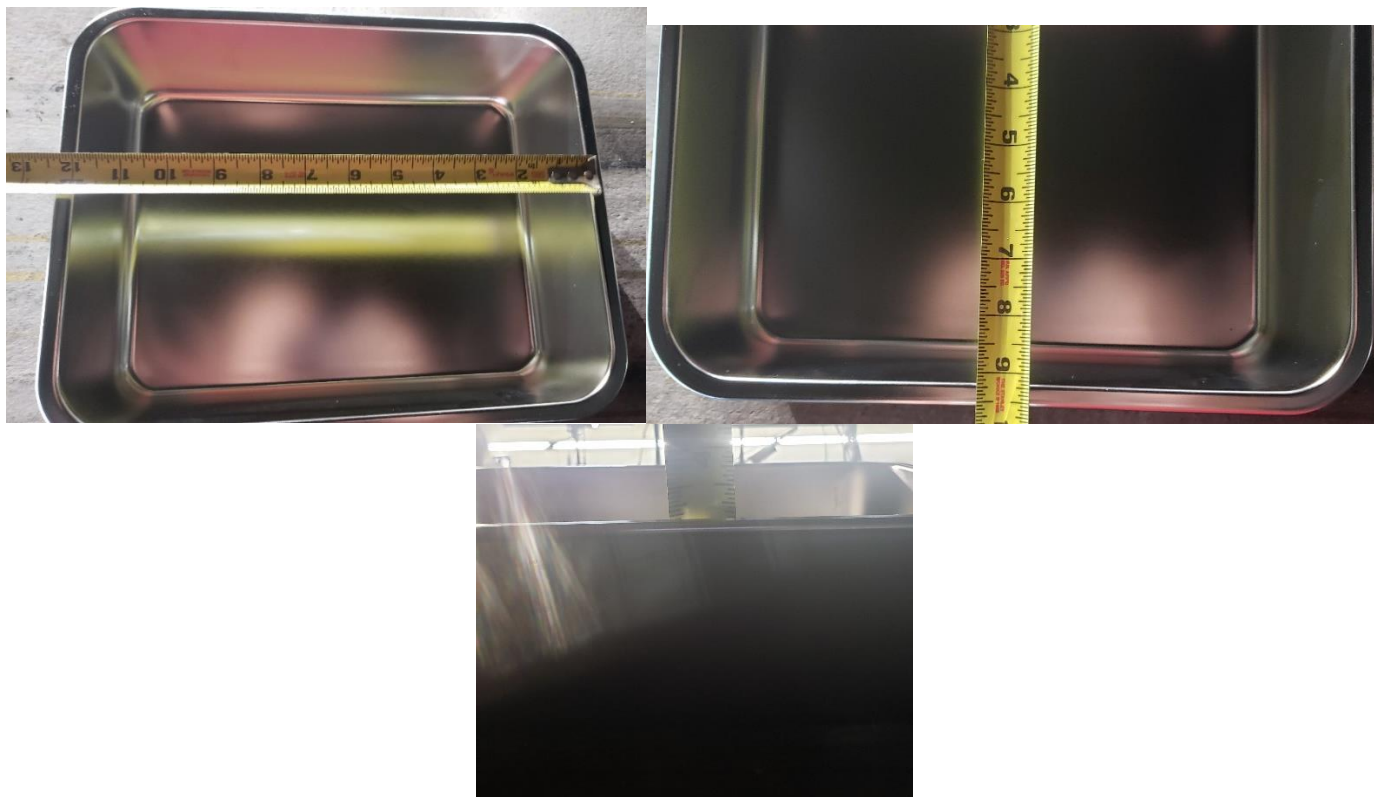
Test No:	Water Level (in)	Fuel Quantity (ml)	Approximate Volume of Fire Extinguishing Component (ml)	Weight of Fire Extinguishing Component (grams)	Exhaust hood Suction Volume (m ³ /sec)	Pre-Burn Time (seconds)	Pouring Time (Seconds)	Time to Extinguish from start of Pouring. (Seconds)
5	1	500	200	149.65	0.54	12	6	20
9	1	500	200	150.09	0.54	11	5	18
Average				149.87	0.54	11.5	5.5	19.0
Standard Deviation				0.31	0.00	0.71	0.71	1.41
Coefficient of Variation				0%	0%	6%	13%	7%

Quantity 4: 175 grams of Carver Ice:

Test No:	Water Level (in)	Fuel Quantity (ml)	Approximate Volume of Fire Extinguishing Component (ml)	Weight of Fire Extinguishing Component (grams)	Exhaust hood Suction Volume (m ³ /sec)	Pre-Burn Time (seconds)	Pouring Time (Seconds)	Time to Extinguish from start of Pouring. (Seconds)
10	1	500	225	175.29	0.54	12	5	11
11	1	500	225	174.43	0.54	11	4	8
Average				174.86	0.54	11.5	4.5	9.5
Standard Deviation				0.61	0.00	0.71	0.71	2.12
Coefficient of Variation				0%	0%	6%	16%	22%

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APPENDIX A – Photographs



Photograph No. 2: Test Pan dimensions as received at Right Testing Labs for length (top left), width (top right), and depth (bottom).

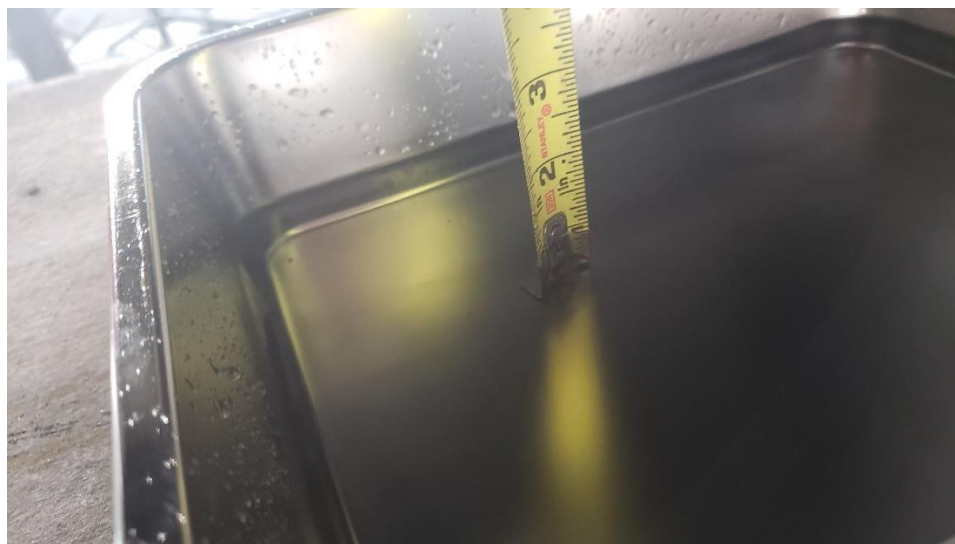


Photograph No. 3: Metal Track Ramp angle of 36.5° after installation onto test pan and block.

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Photograph No. 4: Test pan spacing from brick as measured from both sides of pan to ensure squareness (typical for all tests).



Photograph No. 5: Test pan water level of 1-inch as measured prior to pouring gasoline in pan (typical for all tests).

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Photograph No. 6: Test setup prior to pouring gasoline into test pan (typical for all tests).



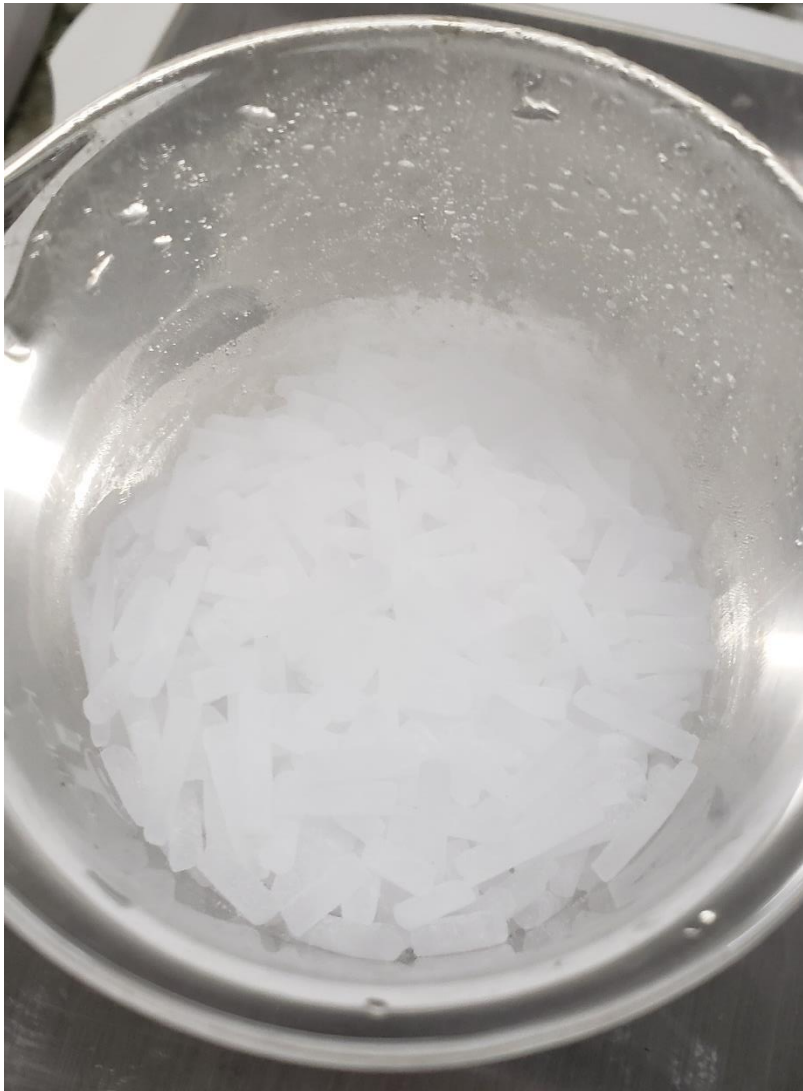
Photograph No. 7: Beaker being weighed immediately prior to igniting the test pan (typical for all tests).

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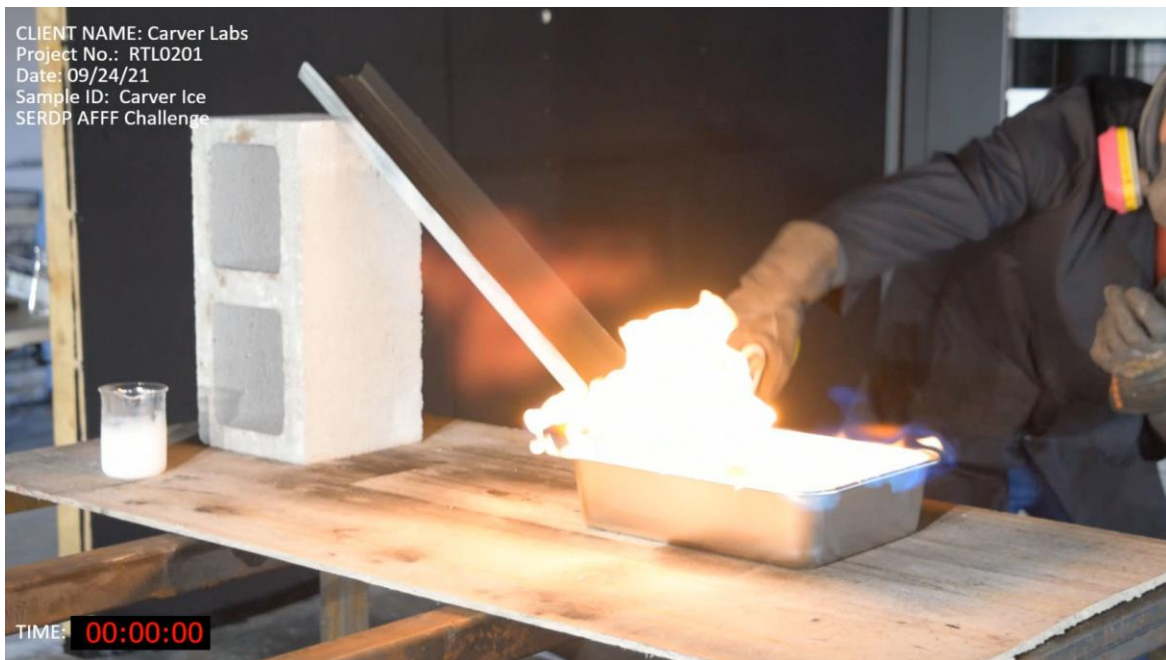
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Photograph No. 8: Carver Ice dry ice pellets inside beaker immediately prior to igniting the test pan (typical for all tests).



Photograph No. 9: Ignition of the test pan (typical for all tests).



Photograph No. 10: Test Flame after pre-burn period of at least 10-seconds (typical for all tests).

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Photograph No. 11: Start of pouring fire extinguishing component Carver Ice pellets down ramp (typical for all tests).



Photograph No. 12: Test Number 2 three seconds after pouring of carver Ice down ramp.

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Photograph No. 13: Test Number 2 five seconds after pouring of carver Ice down ramp.



Photograph No. 14: Typical flame immediately prior to flame fully extinguished.

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Photograph No. 15: Typical flame immediately after flame fully extinguished.

APPENDIX B – Equipment

Asset Number	Equipment Description	Tolerance/Usable Range	Date of Calibration	Calibration Due Date
B1005	UL 1973 Module Stand	Standard Specified	N/A	VBU
F1002	Anemometer	50 to 7800 fpm, 1%	12-30-20	12/30/2021
M1006	Angle indicator	0 -360°	8/29/21	12/13/2022
M1009	Graduated Cylinder (500 mL)	0 to 500 mL	9-6-18	01/22/2046
M1029	Stop Watch	1 second : 24 Hour	6-29-21	06/29/2022
M1037	Measuring Tape	30 ft, 1/32 of an inch	5-21-2021	05/21/2022
S1001	Calorimeter	Test Method	VBU	VBU
W1007	Balance, 10200 gram	0.01g to 10200g	8-30-2021	08/30/2022

APPENDIX C – Diagrams



Diagram No. 1: Details on Specimen Tested

SAFETY DATA SHEET



Carbon Dioxide, Solid or Dry Ice

Section 1. Identification

GHS product identifier : Carbon Dioxide, Solid or Dry Ice
Chemical name : Carbon dioxide, solid
Other means of identification : Dry ice; carbonic anhydride
Product type : Solid.
Product use : Synthetic/Analytical chemistry.
Synonym : Dry ice; carbonic anhydride
SDS # : 001091
Supplier's details : Airgas USA, LLC and its affiliates
 259 North Radnor-Chester Road
 Suite 100
 Radnor, PA 19087-5283
 1-610-687-5253
24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : Not classified.
Classification of the substance or mixture : Not classified by Globally Harmonized System of Classification and Labeling (GHS).
GHS label elements
Signal word : Warning
Hazard statements : May displace oxygen and cause rapid suffocation.
 May increase respiration and heart rate.
 May cause frostbite.
Precautionary statements
General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
Prevention : Not applicable.
Response : Not applicable.
Storage : Not applicable.
Disposal : Not applicable.
Hazards not otherwise classified : Contact with cryogenic liquid can cause frostbite and cryogenic burns.

Section 3. Composition/information on ingredients

Substance/mixture : Substance
Chemical name : Carbon dioxide, solid
Other means of identification : Dry ice; carbonic anhydride
Product code : 001091

CAS number/other identifiers

CAS number : 124-38-9

Ingredient name	%	CAS number
Carbon Dioxide	100	124-38-9

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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Diagram 2 No. 2: MSDS Page 1

Carbon Dioxide, Solid or Dry Ice

Section 3. Composition/information on ingredients

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- Ingestion** : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : May cause eye irritation.
- Inhalation** : May be harmful if inhaled. May cause respiratory irritation.
- Skin contact** : Harmful if absorbed through the skin. May cause skin irritation.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Ingestion** : May be harmful if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

Specific hazards arising from the chemical

- Hazardous thermal decomposition products** : No specific fire or explosion hazard.
 : Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide

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Diagram No. 4: MSDS Page 2

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Carbon Dioxide, Solid or Dry Ice

Section 5. Fire-fighting measures

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8).
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

- Control parameters
Occupational exposure limits

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Diagram No. 5: MSDS Page 3

Carbon Dioxide, Solid or Dry Ice	
Section 8. Exposure controls/personal protection	
Ingredient name	Exposure limits
Carbon Dioxide	<p>ACGIH TLV (United States, 3/2017). STEL: 54000 mg/m³ 15 minutes. STEL: 30000 ppm 15 minutes. TWA: 9000 mg/m³ 8 hours. TWA: 5000 ppm 8 hours.</p> <p>NIOSH REL (United States, 10/2016). STEL: 54000 mg/m³ 15 minutes. STEL: 30000 ppm 15 minutes. TWA: 9000 mg/m³ 10 hours. TWA: 5000 ppm 10 hours.</p> <p>OSHA PEL (United States, 6/2016). TWA: 9000 mg/m³ 8 hours. TWA: 5000 ppm 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). STEL: 54000 mg/m³ 15 minutes. STEL: 30000 ppm 15 minutes. TWA: 18000 mg/m³ 8 hours. TWA: 10000 ppm 8 hours.</p>

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

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Diagram 6 No.: MSDS Page 4

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Carbon Dioxide, Solid or Dry Ice

Section 9. Physical and chemical properties

Appearance

Physical state	: Solid. [WHITE SNOW-LIKE SOLID]
Color	: White.
Odor	: Not available.
Odor threshold	: Not available.
pH	: Not available.
Melting point	: Sublimation temperature: -78.5°C (-109.3 to °F)
Boiling point	: Not available.
Critical temperature	: 31°C (87.8°F)
Flash point	: Not available.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Specific Volume (ft ³ /lb)	: 0.6579
Gas Density (lb/ft ³)	: 1.52
Relative density	: Density Solid (Dry Ice) 97.5189 lb./ft.3 at -109.3° F
Solubility	: Not available.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Flow time (ISO 2431)	: Not available.
Molecular weight	: 44.01 g/mole

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Diagram No. 7: MSDS Page 5

Carbon Dioxide, Solid or Dry Ice

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : May cause eye irritation.

Inhalation : May be harmful if inhaled. May cause respiratory irritation.

Skin contact : Harmful if absorbed through the skin. May cause skin irritation.

Ingestion : May be harmful if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

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Diagram No 8: MSDS Page 6

Carbon Dioxide, Solid or Dry Ice

Section 11. Toxicological information

Not available.

- General** : No known significant effects or critical hazards.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

- Soil/water partition coefficient (K_{oc})** : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

- Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

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Diagram No. 9: MSDS Page 7

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UN number	UN1845	UN1845	UN1845	UN1845	UN1845
UN proper shipping name	CARBON DIOXIDE, SOLID OR DRY ICE	CARBON DIOXIDE, SOLID; OR DRY ICE	CARBON DIOXIDE, SOLID OR DRY ICE	CARBON DIOXIDE, SOLID (DRY ICE)	CARBON DIOXIDE, SOLID
Transport hazard class(es)	9 	9 	9 	9 	9 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

- DOT Classification** : **Limited quantity** Yes.
Quantity limitation Passenger aircraft/rail: 200 kg. Cargo aircraft: 200 kg.
- TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9).
Explosive Limit and Limited Quantity Index 5
Passenger Carrying Ship Index 200
Special provisions 18
- IATA** : **Quantity limitation** Passenger and Cargo Aircraft: 200 kg. Cargo Aircraft Only: 200 kg.
- Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
- Transport in bulk according to Annex II of MARPOL and the IBC Code** : Not available.

Section 15. Regulatory information

- U.S. Federal regulations** : **TSCA 8(a) CDR Exempt/Partial exemption:** This material is listed or exempted.
- Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed
- Clean Air Act Section 602 Class I Substances** : Not listed
- Clean Air Act Section 602 Class II Substances** : Not listed
- DEA List I Chemicals (Precursor Chemicals)** : Not listed
- DEA List II Chemicals (Essential Chemicals)** : Not listed
- SARA 302/304**
- Composition/information on ingredients**
- No products were found.

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<i>Carbon Dioxide, Solid or Dry Ice</i>									
Section 15. Regulatory information									
SARA 304 RQ	: Not applicable.								
SARA 311/312									
Classification	: Refer to Section 2: Hazards Identification of this SDS for classification of substance.								
State regulations									
Massachusetts	: This material is listed.								
New York	: This material is not listed.								
New Jersey	: This material is listed.								
Pennsylvania	: This material is listed.								
International regulations									
Chemical Weapon Convention List Schedules I, II & III Chemicals									
Not listed.									
Montreal Protocol (Annexes A, B, C, E)									
Not listed.									
Stockholm Convention on Persistent Organic Pollutants									
Not listed.									
Rotterdam Convention on Prior Informed Consent (PIC)									
Not listed.									
UNECE Aarhus Protocol on POPs and Heavy Metals									
Not listed.									
Inventory list									
Australia	: This material is listed or exempted.								
Canada	: This material is listed or exempted.								
China	: This material is listed or exempted.								
Europe	: This material is listed or exempted.								
Japan	: Japan inventory (ENCs) : This material is listed or exempted. Japan inventory (ISHL) : This material is listed or exempted.								
Malaysia	: Not determined.								
New Zealand	: This material is listed or exempted.								
Philippines	: This material is listed or exempted.								
Republic of Korea	: This material is listed or exempted.								
Taiwan	: This material is listed or exempted.								
Thailand	: Not determined.								
Turkey	: This material is listed or exempted.								
United States	: This material is listed or exempted.								
Viet Nam	: Not determined.								
Section 16. Other information									
Hazardous Material Information System (U.S.A.)									
<table border="1"> <tr> <td>Health</td> <td>/</td> <td>3</td> </tr> <tr> <td>Flammability</td> <td></td> <td>0</td> </tr> <tr> <td>Physical hazards</td> <td></td> <td>0</td> </tr> </table>	Health	/	3	Flammability		0	Physical hazards		0
Health	/	3							
Flammability		0							
Physical hazards		0							
<p>Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.</p>									
Date of issue/Date of revision	: 11/10/2018								
Date of previous issue	: 0/20/2018								
Version	: 1								
	0/10								

Diagram No. 11: MSDS Page 9

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Carbon Dioxide, Solid or Dry Ice

Section 16. Other information

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

[National Fire Protection Association \(U.S.A.\)](#)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

[Procedure used to derive the classification](#)

Classification	Justification
Not classified.	

[History](#)

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 Version : 1

[Key to abbreviations](#)

: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

[References](#)

: Not available.

[Notice to reader](#)

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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>>>END OF TEST EVALUATION>>>