SAFETY DATA SHEET

Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58/EC & 1272/2008/EC Standards | MSDS Revision: 2.0 | MSDS Revision Date: 08/22/2012

1. PRODUCT IDENTIFICATION

1.1 Product Name:
DustALL™ PRO, 0% VOC, (P/N CCS-2100), 10 oz. (284 g)

1.2 Chemical Name:
See ingredients listed in section 3

1.3 Synonyms:
1,1,1,2 - TETRAFLUOROETHANE

1.4 Trade Names:
NA

1.5 Product Use:
Dust Remover Spray

1.6 Manufacturer's Name:
CAIG Laboratories, Inc.

1.7 Manufacturer's Address:
12200 Thatcher Court, Poway, CA 92064-6876 USA

1.8 Emergency Phone:
CHEMTREC: +1 (703) 527-3887 / +1 (800) 424-3887

1.9 Business Phone:
+1 (800)-224-4123

2. HAZARD IDENTIFICATION

2.1 Hazard Identification:
This product is classified as a HAZARDOUS SUBSTANCE but not as DANGEROUS GOODS according to the classification criteria of NOHSC: 1008(2004) and ADG Code (Australia). Keep out of reach of children.
WARNING. Contains gas under pressure; may explode if heated.
Hazard Statements (H): H280 – Contains gas under pressure; may explode if heated.
Precautionary Statements (P): P280 – Wear protective gloves and eye protection. P305+P351+P338 – IF IN EYES - Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. P410 + P403 – Protect from sunlight. Store in a well-ventilated place. P501 – Dispose of contents/container through licensed treatment, storage or disposal facility.

2.2 Routes of Entry:	Inhalation:	YES	Absorption:	YES	Ingestion:	YES

2.3 Effects of Exposure:

EYES: "Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes. Mists may cause irritation.
SKIN: "Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes. Mists may cause irritation.
INGESTION: Not considered to be a potential route of exposure.
INHALATION: Gross overexposure may cause central nervous system depression, dizziness, confusion, incoordination, drowsiness, irregular heartbeat accompanied by a strange feeling in the chest, "heart thumping," apprehension, light-headedness, weakness, fainting, loss of consciousness, and death.

2.4 Symptoms of Exposure:

EYES: No exposure symptoms are reported by the manufacturer.
SKIN: No exposure symptoms are reported by the manufacturer.
INGESTION: Not considered to be a potential route of exposure.
INHALATION: Dizziness, confusion, incoordination, drowsiness, irregular heartbeat accompanied by a strange feeling in the chest, "heart thumping", apprehension, light-headedness, weakness, fainting, loss of consciousness, and death.

2.5 Acute Health Effects:

EYES: "Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes. Mists may cause irritation.
SKIN: "Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes. Mists may cause irritation.
INGESTION: Not considered to be a potential route of exposure.
INHALATION: Gross overexposure may cause central nervous system depression, dizziness, confusion, incoordination, drowsiness, irregular heartbeat accompanied by a strange feeling in the chest, "heart thumping", apprehension, light-headedness, weakness, fainting, loss of consciousness, and death.

2.6 Chronic Health Effects:
The manufacturer has not reported any chronic health effects.

2.7 Target Organs:
None reported by the manufacturer.

2.8 Toxicological Properties:
None reported by the manufacturer.

NA = Not Available; ND = Not Determined; NE = Not Established; C = Ceiling Limit; See Section 16 for Additional Definitions of Terms Used
NOTE: all WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-2010 format.

3. COMPOSITION & INGREDIENT INFORMATION

CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	EXPOSURE LIMITS IN AIR (mg/m³) ACGIH ppm TLV	ACGIH ppm STEL	NOHSC ppm ES-TWA	NOHSC ppm ES-STEL	NOHSC ppm ES-PEAK	OSHA ppm TLV	OSHA ppm STEL	OSHA ppm IDLH	OTHER
1,1,1,2-TETRAFLUOROTHANE	811-97-2	KI8842500	212-377-0	100	NA	NA	4240	NF	NF	NA	NA	NA	1000 TWA

4. FIRST AID MEASURES

4.1 First Aid:

EYES: Flush eyes thoroughly with copious amounts of water for at least 20 minutes, holding eyelids open to ensure complete flushing. Seek immediate medical attention.

SKIN: Remove contaminated clothing and wash affected areas with soap and water. If irritation persists, seek prompt medical attention. Launder clothing before reuse.

INGESTION: Do not induce vomiting. Call a physician or poison control center for assistance and instructions. Seek immediate medical attention. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration.

INHALATION: Remove victim to fresh air at once. If breathing is difficult, provide supplemental oxygen. If breathing has stopped, provide artificial respiration. Seek immediate medical attention. Provide supportive treatment, keeping victim warm and quiet.

4.2 Medical Conditions Aggravated by Exposure:

Pre-existing cardiovascular or central nervous system diseases.

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARDS	1
PROTECTIVE EQUIPMENT	B

EYES	SKIN		

5. FIREFIGHTING MEASURES

5.1 Flashpoint & Method:
NE

5.2 Autoignition Temperature:
ND

5.3 Flammability Limits: Lower Explosive Limit (LEL): **NA** Upper Explosive Limit (UEL): **NA**

5.4 Fire & Explosion Hazards:

Cylinders may rupture under fire conditions. This material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Decomposition may occur. Contact of welding or soldering torch flames with high concentrations of refrigerant can result in visible changes in the size and color of the torch flame. The flame effect will only occur in concentrations of product well above the recommended exposure limit, therefore stop all work and ventilate the area before proceeding. Use forced ventilation to disperse refrigerant vapors from the work area before using any open flames.

5.5 Extinguishing Methods:
Use media appropriate for surrounding materials.

5.6 Firefighting Procedures:

Keep containers cool until well after the fire is out. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway. Firefighters should wear full-face, self-contained breathing apparatus (MSHA/NIOSH approved or the equivalent) and impervious clothing.

6. ACCIDENTAL RELEASE MEASURES

6.1 Spills:

Secure spill area, remove or minimize all sources of ignition, and maximize ventilation. Stop spill or leak at source if safely possible. Deny entry to all unprotected individuals. Individuals involved in the cleanup must wear appropriate personal protective equipment. Recover free liquid or cover with inert absorbent material and place into appropriate container(s) for disposal. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers or any natural waterway or drinking supply. Contact appropriate local and/or provincial authorities for assistance and/or reporting requirements.

7. HANDLING & STORAGE INFORMATION

7.1	Work & Hygiene Practices: **Use normal hygiene practices. Avoid direct skin contact. Wash hands thoroughly after using this product and before eating, drinking, or smoking.**
7.2	Storage & Handling: **Use and store in a cool, dry, well-ventilated area. Keep away from excessive heat, open flames, sparks, and other possible sources of ignition. Do not store near or with any incompatible materials listed in section 10. Do not store in unmarked or open containers. Protect cylinders from physical damage. Do not store in subsurface areas.**
7.3	Special Precautions: **Readily available emergency fire, first aid, and spill response equipment and/or measures are highly recommended.**

8. EXPOSURE CONTROL & PERSONAL PROTECTION

8.1	Ventilation & Engineering Controls: **Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places. Refrigerant concentration monitors may be necessary to determine vapor concentrations in work areas prior to use of torches or other open flames, or if employees are entering enclosed areas.**
8.2	Respiratory Protection: **A respiratory protection program that meets ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirators use.**
8.3	Eye Protection: **Safety glasses with side shields should be used with this product. If splashing is anticipated, splash goggles and a faceshield are recommended.**
8.4	Hand Protection: **Where contact is likely, impervious gloves are recommended. Do not wear rings, watches, or jewelry that could entrap the material against the skin.**
8.5	Body Protection: **None required under normal conditions.**

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Density:	**3.3 @ 20°C**
9.2	Boiling Point:	**-15.1°F**
9.3	Melting Point:	**NA**
9.4	Evaporation Rate:	**NA**
9.5	Vapor Pressure @ 20°C:	**4268 @ 20°C**
9.6	Molecular Weight:	**NA**
9.7	Appearance & Color:	**Pressurized clear liquid, slight ethereal odor**
9.8	Odor Threshold:	**NA**
9.9	Solubility:	**Insoluble**
9.10	pH:	**NA**
9.11	Viscosity:	**NA**
9.12	Coefficient Oil/Water Distribution:	**NA**
9.13	Additional Information:	**NA**

10. STABILITY & REACTIVITY

10.1	Stability: **Stable under normal conditions.**
10.2	Decomposition Products: **Warning! Hazardous decomposition products are hazardous. Thermal decomposition can yield hydrofluoric acid and possibly carbonyl fluoride. These materials are toxic and irritating. Contact should be avoided.**
10.3	Polymerization: **Will not occur.**
10.4	Conditions to Avoid: **Open flames, sparks, high heat, and close proximity to incompatible substances.**
10.5	Incompatible Substances: **Alkalis, and alkaline earth materials.**

11. TOXICOLOGICAL INFORMATION

11.1	Toxicity Data:	**Animal studies have shown that this material is a slight irritant, but not a sensitizer.**
11.2	Acute Toxicity:	**See Section 2.5**
11.3	Chronic Toxicity:	**See Section 2.6**
11.4	Suspected Carcinogen:	**No.**
11.5	Reproductive Toxicity:	
	Mutagenicity:	**Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures, or in animals.**
	Embryotoxicity:	**Animal data shows slight fetotoxicity but only at exposure levels producing other toxic effects in the adult animal.**
	Teratogenicity:	**This material is not expected to cause teratogenic effects in humans.**
	Reproductive Toxicity:	**In a 2-year inhalation study, HFC-134A, at a concentration of 50,000ppm, produced an increase in late-occurring benign testicular tumors, testicular hyperplasia and testicular weight in mice. The no-effect-level for this study was 10,000ppm. However, no change in reproductive performance was reported.**
11.6	Irritancy of Product:	**Slight**
11.7	Biological Exposure Indices:	**NA**
11.8	Medical Recommendations:	**Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should only be used with special caution in situations of emergency life support.**

12. ECOLOGICAL INFORMATION

12.1	Environmental Stability:	**The manufacturer has not reported detailed studies on the environmental fate of the material. However, prudent practice would dictate the material not be allowed to enter the environment.**
12.2	Effect on Plants & Animals:	**48hr EC50- Daphnia magna: 980mg/L** **96hr LC50- Rainbow trout: 450mg/L**
12.3	Effect on Aquatic Life:	**The manufacturer has not reported any aquatic life effects.**

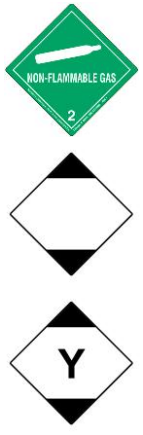
13. DISPOSAL CONSIDERATIONS

13.1	Waste Disposal:	**Dispose of in accordance with local & provincial hazardous waste laws.**
13.2	Special Considerations:	**If the material is unsuitable for recycling or reclamation, enclosed-controlled incineration is recommended unless otherwise prohibited by local ordinance.**

14. TRANSPORTATION INFORMATION

The basic description (ID Number, proper shipping name, hazard class & division, packing group) is shown for each mode of transportation. Additional descriptive information may be required by 49 CFR, IATA/ICAO, IMDG and the CTDGR.

14.1	49 CFR (GND):	**CONSUMER COMMODITY, ORM-D, DOT-SP 10232 (IP VOL ≤ 1.0 L) - * authorized until 01/01/2014** **UN3159, 1,1,1,2-TETRAFLUOROETHANE, 2.2, LTD QTY (IP VOL ≤ 1.0 L)**
14.2	IATA (AIR):	**UN3159, 1,1,1,2-TETRAFLUOROETHANE, 2.2, LTD QTY (IP VOL ≤ 820 ml)**
14.3	IMDG (OCN):	**UN3159, 1,1,1,2-TETRAFLUOROETHANE, 2.2, LTD QTY (IP VOL ≤ 1.0 L)**
14.4	TDGR (Canadian GND):	**MARK PACKAGE "LIMITED QUANTITY" or "QUANTITÉ LIMITÉE" or "LTD QTY" or "QUANT LTÉE" (IP VOL ≤ 1.0 L)**
14.5	ADR/RID (EU):	**UN3159, 1,1,1,2-TETRAFLUOROETHANE, 2.2, LTD QTY (IP VOL ≤ 1.0 L)**
14.6	SCT (MEXICO):	**UN3159, 1,1,1,2-TETRAFLOROETANO, 2.2, CANTIDAD LIMITADA (IP VOL ≤ 1.0 L)**
14.7	ADGR (Australia):	**UN3159, 1,1,1,2-TETRAFLUOROETHANE, 2.2, LTD QTY (IP VOL ≤ 1.0 L)**



15. REGULATORY INFORMATION

15.1	SARA Reporting Requirements: **This product does not contain any substances that are subject to SARA Section 313 reporting requirements.**
15.2	SARA Threshold Planning Quantity: **NA**
15.3	TSCA Inventory Status: **All chemical substances of this product are listed on the TSCA inventory or are otherwise exempt from inventory status.**
15.4	CERCLA Reportable Quantity (RQ): **NA**
15.5	Other Federal Requirements: **NA**
15.6	Other Canadian Regulations: **This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. The components of this product are listed on the DSL/NDSL. None of the components of this product are listed on the priorities substances list.**
15.7	State Regulatory Information: **1,1,1,2-Tetrafluoroethane is listed on the following state lists: California Right-to-Know List; Minnesota Right-to Know list; Massachusetts Right to Know List of Chemicals; New Jersey Right to Know List 8:59 Appendix A.**
15.8	67/548/EEC (European Union) Requirements: **The primary component of this product is not listed in Annex I of EU Directive 67/548/EEC.** **Keep out of reach of children.** **WARNING. Contains gas under pressure; may explode if heated.** **Hazard Statements (H): H280 – Contains gas under pressure; may explode if heated.** **Precautionary Statements (P): P280 – Wear protective gloves and eye protection. P305+P351+P338 – IF IN EYES - Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. P410 + P403 – Protect from sunlight. Store in a well-ventilated place. P501 – Dispose of contents/container through licensed treatment, storage or disposal facility.**

16. OTHER INFORMATION

16.1	Other Information: **NA**
16.2	Terms & Definitions: **Please see last page of this Material Safety Data Sheet.**
16.3	Disclaimer: **This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of ShipMate's & CAIG Laboratories, Inc.'s knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either expressed or implied, are provided. The information contained herein relates only to the specific product(s). If this product(s) is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.**
16.4	Prepared for: **CAIG Laboratories, Inc.** **12200 Thatcher Court** **Poway, CA 92064-6876** **Tel: +1 (800) CAIG-123 (244-4123)** **Fax: +1 (858) 486-8398 fax** **http://www.caig.com/**
16.5	Prepared by: **ShipMate, Inc.** **P.O. Box 787** **780 Buckaroo Trail Suite D** **Sisters, OR 97759** **Tel: +1 (310) 370-3600** **Fax: +1 (310) 370-5700** **http://www.shipmate.com**

DEFINITION OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these that are commonly used include the following:

GENERAL INFORMATION:

CAS No.	Chemical Abstract Service Number

EXPOSURE LIMITS IN AIR:

ACGIH	American Conference on Governmental Industrial Hygienists
TLV	Threshold Limit Value
OSHA	U.S. Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
IDLH	Immediately Dangerous to Life and Health

FIRST AID MEASURES:

CPR	Cardiopulmonary resuscitation - method in which a person whose heart has stopped receives manual chest compressions and breathing to circulate blood and provide oxygen to the body.

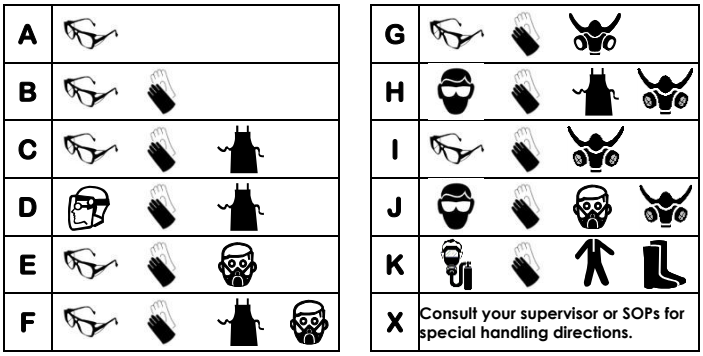
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

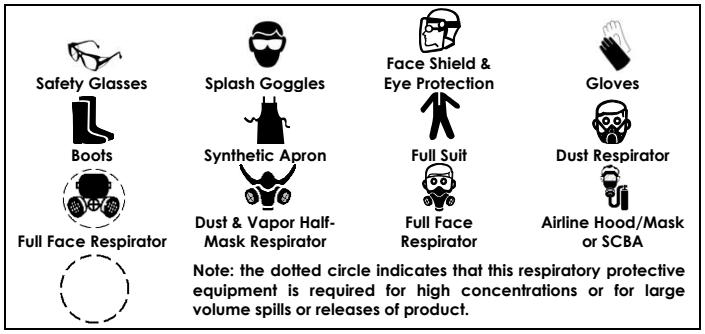
HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard

HEALTH
FLAMMABILITY
PHYSICAL HAZARDS
PERSONAL PROTECTION

PERSONAL PROTECTION RATINGS:





OTHER STANDARD ABBREVIATIONS:

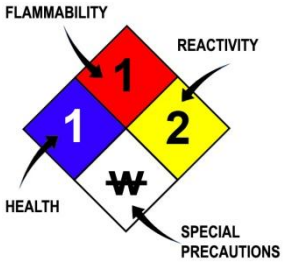
NA	Not Available
NR	No Results
NE	Not Established
ND	Not Determined
ML	Maximum Limit
SCBA	Self-Contained Breathing Apparatus

NATIONAL FIRE PROTECTION ASSOCIATION: NFPA

FLAMMABILITY LIMITS IN AIR:	
Autoignition Temperature	Minimum temperature required to initiate combustion in air with no other source of ignition
LEL	Lower Explosive Limit - lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source
UEL	Upper Explosive Limit - highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source

HAZARD RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard
ACD	Acidic
ALK	Alkaline
COR	Corrosive
W	Use No Water
OX	Oxidizer
TREFOIL	Radioactive



TOXICOLOGICAL INFORMATION:

LD_{50}	Lethal Dose (solids & liquids) which kills 50% of the exposed animals s
LC_{50}	Lethal concentration (gases) which kills 50% of the exposed animal
ppm	Concentration expressed in parts of material per million parts
TD_{lo}	Lowest dose to cause a symptom
TCLo	Lowest concentration to cause a symptom
TD_{lo}, LD_{lo}, & LD_o or TC, TC_o, LC_{lo}, & LC_o	Lowest dose (or concentration) to cause lethal or toxic effects
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
RTECS	Registry of Toxic Effects of Chemical Substances
BCF	Bioconcentration Factor
TL_m	Median threshold limit
log K_{OW} or log K_{OC}	Coefficient of Oil/Water Distribution

REGULATORY INFORMATION:

WHMIS	Canadian Workplace Hazardous Material Information System
DOT	U.S. Department of Transportation
TC	Transport Canada
EPA	U.S. Environmental Protection Agency
DSL	Canadian Domestic Substance List
NDSL	Canadian Non-Domestic Substance List
PSL	Canadian Priority Substances List
TSCA	U.S. Toxic Substance Control Act
EU	European Union (European Union Directive 67/548/EEC)
WGK	Wassergefährdungsklassen (German Water Hazard Class)

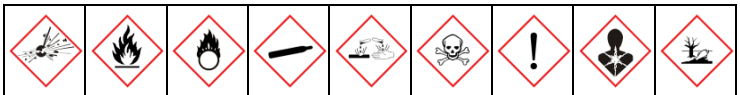
WORKPLACE HAZARDOUS MATERIALS IDENTIFICATION (WHMIS) SYSTEM:

A	B	C	D1	D2	D3	E	F
Compressed	Flammable	Oxidizing	Toxic	Irritation	Infectious	Corrosive	Reactive

EC (67/548/EEC) INFORMATION:

C	E	F	N	O	T+	Xi	Xn
Corrosive	Explosive	Flammable	Harmful	Oxidizing	Toxic	Irritant	Harmful

CLP/GHS (1272/2008/EC) PICTOGRAMS:



GHS01	GHS02	GHS03	GHS04	GHS05	GHS06	GHS07	GHS08	GHS09
Explosive	Flammable	Oxidizer	Pressurized	Corrosive	Toxic	Harmful Irritating	Health Hazard	Environment