

SAFETY DATA SHEET

in accordance with 1907/2006/EC (REACH, as amended by 2015/830/EU) and 29 CFR 1910.1200

Revision date: 10 March 2016 **Initial date of issue:** 3 July 2007 **SDS No.** 384A-10

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

296 Electro Contact Cleaner (Aerosol)

1.2. Relevant identified uses of the substance or mixture and uses advised against

A solvent base electronic contact cleaner.

1.3. Details of the supplier of the safety data sheet

Company:

A.W. CHESTERTON COMPANY
860 Salem Street
Groveland, MA 01834-1507, USA
Tel. +1 978-469-6446 Fax: +1 978-469-6785
(Mon. - Fri. 8:30 - 5:00 PM EST)
SDS requests: www.chesterton.com
E-mail (SDS questions): ProductMSDSs@chesterton.com
E-mail: customer.service@chesterton.com
EU: Chesterton International GmbH, Am Lenzenfleck 23,
D85737 Ismaning, Germany – Tel. +49-89-996-5460

Supplier:

1.4. Emergency telephone number

24 hours per day, 7 days per week
Call Infotrac: 1-800-535-5053
Outside N. America: +1 352-323-3500 (collect)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 [CLP] / 29 CFR 1910.1200 / WHMIS 2015 / GHS

Aerosol 2, H223, H229

2.1.2. Classification according to WHMIS 1988

A: Compressed gases; D2B: Toxic materials causing other effects

2.1.3. Australian statement of hazardous nature

Hazardous according to criteria of Safe Work Australia.

2.1.4. Additional information

For full text of H-statements: see SECTIONS 2.2 and 16.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP] / 29 CFR 1910.1200 / WHMIS 2015 / GHS

Hazard pictograms:



Signal word: Warning

Hazard statements: H223 Flammable aerosol.
H229 Pressurized container: May burst if heated.

Precautionary statements: P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211 Do not spray on an open flame or other ignition source.
P251 Do not pierce or burn, even after use.
P410/412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122°F.

Supplemental information: None

2.3. Other hazards

High vapor concentrations and direct contact are irritating to the eyes. Direct skin contact may cause skin irritation, frostbite and drying of the skin. Vapor in high concentrations may irritate the respiratory tract and cause drowsiness, unconsciousness, headache, dizziness and other central nervous system effects.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**3.2. Mixtures**

| Hazardous Ingredients ¹ | % Wt. | CAS No./ EC No. | REACH Reg. No. | CLP/GHS Classification |
|---|-------|-----------------------|----------------------|---|
| 1,1,1,2-Tetrafluoroethane (HFC-134a) | 40-50 | 811-97-2 212-377-0 | 01-211945 9374-33 | Press. Gas, H280 |
| 1,1,1,3,3-Pentafluorobutane (HFC-365 mfe)* | 20-30 | 406-58-6 430-250-1 | N/A | Flam. Liq. 2, H225 |
| Isopropanol | 1-5 | 67-63-0 200-661-7 | 01-211945 7558-25 | Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336 |

Other ingredients:

| | | | | |
|---|-------|-----------------------|-----|----------------|
| 1,1,1,3,3-Pentafluoropropane (HFC-245fa) | 20-30 | 460-73-1 419-170-6 | N/A | Not classified |
|---|-------|-----------------------|-----|----------------|

*This substance is nonflammable as combined with the other ingredients in the product.

For full text of H-statements: see SECTION 16.

¹ Classified according to: * 29 CFR 1910.1200, 1915, 1916, 1917, Mass. Right-to-Know Law (ch. 40, M.G.L.O. 111F), California Proposition 65
* 1272/2008/EC, REACH
* WHMIS 2015
* Safe Work Australia [NOHSC: 1008 (2004)]

SECTION 4: FIRST AID MEASURES**4.1. Description of first aid measures**

Inhalation: Remove to fresh air. Do not administer adrenaline (epinephrine). Contact physician.

Skin contact: If there is evidence of frostbite, bathe with lukewarm water. Wash skin with soap and water. Contact physician if irritation persists.

Eye contact: Flush eyes for at least 15 minutes with large amounts of water. Contact physician if irritation persists.

Ingestion: Do not induce vomiting. Contact physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

High vapor concentrations and direct contact are irritating to the eyes. Direct skin contact may cause skin irritation, frostbite and drying of the skin. Vapor in high concentrations may irritate the respiratory tract and cause drowsiness, unconsciousness, headache, dizziness and other central nervous system effects.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptoms. Do not administer adrenaline (epinephrine).

SECTION 5: FIREFIGHTING MEASURES**5.1. Extinguishing media**

Suitable extinguishing media: Carbon Dioxide, dry chemical, foam

Unsuitable extinguishing media: None known

5.2. Special hazards arising from the substance or mixture

Pressurized containers, when heated, are a potential explosive hazard.

5.3. Advice for firefighters

Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.

Flammability Classification: Not determined

HAZCHEM Emergency Action Code: not applicable

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1. Personal precautions, protective equipment and emergency procedures**

Utilize exposure controls and personal protection as specified in Section 8.

6.2. Environmental Precautions

Keep out of sewers, streams and waterways.

6.3. Methods and material for containment and cleaning up

Evacuate area. Provide adequate ventilation. Contain spill to a small area. Keep away from sources of ignition - No smoking. If removal of ignition sources is not possible, then flush material away with water. Pick up with absorbent material (sand, sawdust, clay, etc.) and place in a suitable container for disposal.

Note: If spilled, liquid will become flammable due to evaporation of part of the blend.

6.4. Reference to other sections

Refer to section 13 for disposal advice.

SECTION 7: HANDLING AND STORAGE**7.1. Precautions for safe handling**

Do not spray on a naked flame or any incandescent material. Keep away from sources of ignition - No Smoking. Utilize exposure controls and personal protection as specified in Section 8. Vapors are heavier than air and will collect in low areas. After handling, wash before eating, drinking or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C (120°F). Do not pierce or burn, even after use.

7.3. Specific end use(s)

No special precautions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1. Control parameters****Occupational exposure limit values**

| Ingredients | OSHA PEL ¹ | | ACGIH TLV ² | | UK WEL ³ | | AUSTRALIA ES ⁴ | |
|--------------------------------|-----------------------|-------------------|------------------------|-------------------|---------------------|-------------------|---------------------------|-------------------|
| | ppm | mg/m ³ | ppm | mg/m ³ | ppm | mg/m ³ | ppm | mg/m ³ |
| 1,1,1,2-Tetrafluoroethane* | – | – | – | – | 1000 | 4240 | 1000 | 4240 |
| 1,1,1,3,3-Pentafluorobutane | – | – | – | – | – | – | – | – |
| Isopropanol | 400 | 980 | 200 | – | 400 | 999 | 400 | 983 |
| | | | STEL: | | STEL: | STEL: | STEL: | STEL: |
| | | | 400 | | 500 | 1250 | 500 | 1230 |
| 1,1,1,3,3-Pentafluoropropane** | – | – | – | – | – | – | – | – |

*American Industrial Hygiene Association (AIHA) recommended limit: 1000 ppm, 8 hr TWA

**American Industrial Hygiene Association (AIHA) recommended limit: 300 ppm, 8 hr TWA

¹ United States Occupational Health & Safety Administration permissible exposure limits.

² American Conference of Governmental Industrial Hygienists threshold limit values.

³ EH40 Workplace exposure limits, Health & Safety Executive

⁴ Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003].

8.2. Exposure controls**8.2.1. Engineering measures**

Provide sufficient ventilation to keep the vapor concentrations below the exposure limits.

8.2.2. Individual protection measures

Respiratory protection: Not normally needed. If exposure limits are exceeded, use an approved organic vapor respirator (e.g., EN filter type A/P2).

Protective gloves: Chemical resistant gloves (e.g., natural rubber, neoprene or PVC)

Eye and face protection: Safety goggles or face shield.

Other: Impervious gloves and clothing (e.g., natural rubber, neoprene or PVC) as necessary for repetitive, prolonged contact with liquid.

8.2.3. Environmental exposure controls

Refer to sections 6 and 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**

| | | | |
|---|----------------|--------------------------------------|------------------|
| Physical state | clear liquid | Odour | ethereal |
| Colour | colorless | Odour threshold | not determined |
| Initial boiling point | 29°C (85°F) | Vapour pressure @ 20°C | 522 mm Hg |
| Melting point | not determined | % Aromatics by weight | none |
| % Volatile (by volume) | 100% | pH | not applicable |
| Flash point | none | Relative density | 1.2 kg/l |
| Method | PM Closed Cup | Weight per volume | 10.0 lbs/gal. |
| Viscosity | < 1 cps @ 25°C | Coefficient (water/oil) | < 1 |
| Autoignition temperature | 580°C (1076°F) | Vapour density (air=1) | > 1 |
| Decomposition temperature | not determined | Rate of evaporation (ether=1) | < 1 |
| Upper/lower flammability or explosive limits | not determined | Solubility in water | slightly soluble |
| Flammability (solid, gas) | not determined | Oxidising properties | not determined |
| Explosive properties | not determined | | |

9.2. Other information

None

SECTION 10: STABILITY AND REACTIVITY**10.1. Reactivity**

Refer to sections 10.3 and 10.5.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

No dangerous reactions known under conditions of normal use.

10.4. Conditions to avoid

None

10.5. Incompatible materials

Strong acids and alkalis, Alkaline and reactive metals and strong oxidizers like liquid Chlorine and concentrated Oxygen.

10.6. Hazardous decomposition products

Hydrogen Fluoride, Carbonyl Halides, Halogen acids and other toxic fumes.

SECTION 11: TOXICOLOGICAL INFORMATION**11.1. Information on toxicological effects**

Primary route of exposure under normal use: Inhalation, skin and eye contact. Personnel with eye and skin disorders, heart disease and respiratory disorders are generally aggravated by exposure.

Acute toxicity -**Oral:**

| Substance | Test | Result |
|-----------------------------|-------------------|--------------|
| Isopropanol | LD50 oral, rat | 5045 mg/kg |
| Isopropanol | Human lethal dose | 3570 mg/kg |
| 1,1,1,3,3-Pentafluorobutane | LD50 oral, rat | > 2000 mg/kg |

Dermal:

| Substance | Test | Result |
|------------------------------|-----------|--------------|
| Isopropanol | LD50, rat | 12800 mg/kg |
| 1,1,1,3,3-Pentafluoropropane | LD50, rat | > 2000 mg/kg |

Inhalation:

Vapor in high concentrations may irritate the respiratory tract and cause drowsiness, unconsciousness, headache, dizziness and other central nervous system effects. Cardiac arrhythmia has been reported in animal studies.

| Substance | Test | Result |
|------------------------------|----------------------|---------------------|
| 1,1,1,2-Tetrafluoroethane | LC50 inhalation, rat | > 50000 ppm/4 hours |
| Isopropanol | LC50 inhalation, rat | 46.5 mg/l/4 hours |
| 1,1,1,3,3-Pentafluorobutane | LC50 inhalation, rat | > 10%/4 hours |
| 1,1,1,3,3-Pentafluoropropane | LC50 inhalation, rat | >200000 ppm/4 hours |

Skin corrosion/irritation: Direct skin contact may cause skin irritation, frostbite and drying of the skin.

Serious eye damage/irritation: High vapor concentrations and direct contact are irritating to the eyes.

| Substance | Test | Result |
|-------------|----------------|---------------------|
| Isopropanol | Eye irritation | Moderate irritation |

Respiratory or skin sensitisation:

| Substance | Test | Result |
|-------------|--------------------------------|-----------------|
| Isopropanol | Skin sensitization, guinea pig | Not sensitizing |

Germ cell mutagenicity: Isopropanol, 1,1,1,2-Tetrafluoroethane, 1,1,1,3,3-Pentafluoropropane: based on available data, the classification criteria are not met.

Carcinogenicity: As per 29 CFR 1910.1200 (Hazard Communication), this product contains no carcinogens as listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), the Occupational Safety and Health Administration (OSHA) or Regulation (EC) No 1272/2008.

Reproductive toxicity: Isopropanol: based on available data, the classification criteria are not met.

STOT-single exposure: Isopropanol: May cause drowsiness or dizziness.

STOT-repeated exposure: Isopropanol: based on available data, the classification criteria are not met.

Aspiration hazard: Not classified as an aspiration toxicant.

Other information: None

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. The information given below is based on a knowledge of the components and the ecotoxicology of similar substances.

12.1. Toxicity

Isopropanol, 1,1,1,3,3-Pentafluorobutane: low toxicity to fish, daphnia and algae.

12.2. Persistence and degradability

Isopropanol: inherently biodegradable. 1,1,1,3,3-Pentafluorobutane: atmospheric lifetime: 16-19 years; not readily biodegradable

12.3. Bioaccumulative potential

1,1,1,2-Tetrafluoroethane, 1,1,1,3,3-Pentafluorobutane, Isopropanol: not expected to bioaccumulate.

12.4. Mobility in soil

Liquid. Slightly soluble in water. This substance is highly volatile and will rapidly evaporate to the air if released into the environment. In determining environmental mobility, consider the product's physical and chemical properties (see Section 9). 1,1,1,3,3-Pentafluorobutane: Air, Henry's law constant (H) ca. 3.8 kPa. m³/mol.

12.5. Results of PBT and vPvB assessment

Not available

12.6. Other adverse effects

Contains greenhouse gases which may contribute to global warming.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Reclaim or recycle if possible. Incinerate absorbed material in an approved area. Do not incinerate sealed containers. Check local, state and national/federal regulations and comply with the most stringent requirement.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

ADR/RID/ADN/IMDG/ICAO: UN1950
TDG: UN1950
US DOT: UN1950

14.2. UN proper shipping name

ICAO: Aerosols, Non-Flammable
IMDG: Aerosols
ADR/RID/ADN: Aerosols, *asphyxiant*
TDG: Aerosols, *non-flammable*
US DOT: Aerosols, *non-flammable*

14.3. Transport hazard class(es)

ADR/RID/ADN/IMDG/ICAO: 2.2
 TDG: 2.2
 US DOT: 2.2

14.4. Packing group

ADR/RID/ADN/IMDG/ICAO: NOT APPLICABLE
 TDG: NOT APPLICABLE
 US DOT: NOT APPLICABLE

14.5. Environmental hazards

NO ENVIRONMENTAL HAZARDS

14.6. Special precautions for user

NO SPECIAL PRECAUTIONS FOR USER

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

NOT APPLICABLE

14.8. Other information

US DOT: Shipped as Consumer Commodity ORM-D in packaging having a rated capacity gross weight of 66 lb. or less (49 CFR 173.306(i)). ERG NO. 126
IMDG: EmS. F-D, S-U, Shipped as Limited Quantity
ADR: Classification code 5A, Tunnel restriction code (E), Shipped as Limited Quantity

SECTION 15: REGULATORY INFORMATION**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****15.1.1. EU regulations**

Authorisations under Title VII: Not applicable

Restrictions under Title VIII: None

Other EU regulations: Directive 75/324/EEC on the approximation of the laws of the Member States relating to aerosol dispensers; Regulation (EU) No 517/2014 on fluorinated greenhouse gases.

15.1.2. National regulations**US EPA SARA TITLE III****312 Hazards:**

Immediate
 Pressure Release
 Fire

313 Chemicals:

None

Other national regulations: National implementation of the EC Directive referred to in section 15.1.1.

15.2. Chemical safety assessment

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms: ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
 ATE: Acute Toxicity Estimate
 BCF: Bioconcentration Factor
 CLP: Classification Labelling Packaging Regulation (1272/2008/EC)
 ES: Exposure Standard
 GHS: Globally Harmonized System
 ICAO: International Civil Aviation Organization
 IMDG: International Maritime Dangerous Goods
 LC50: Lethal Concentration to 50 % of a test population
 LD50: Lethal Dose to 50% of a test population
 LOEL: Lowest Observed Effect Level
 N/A: Not Applicable
 NA: Not Available
 NOEC: No Observed Effect Concentration
 NOEL: No Observed Effect Level
 OECD: Organization for Economic Co-operation and Development
 PBT: Persistent, Bioaccumulative and Toxic substance
 (Q)SAR: Quantitative Structure-Activity Relationship
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (1907/2006/EC)
 RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
 SDS: Safety Data Sheet
 STEL: Short Term Exposure Limit
 STOT RE: Specific Target Organ Toxicity, Repeated Exposure
 STOT SE: Specific Target Organ Toxicity, Single Exposure
 TDG: Transportation of Dangerous Goods (Canada)
 US DOT: United States Department of Transportation
 vPvB: very Persistent and very Bioaccumulative substance
 WEL: Workplace Exposure Limit
 WHMIS: Workplace Hazardous Materials Information System
 Other abbreviations and acronyms can be looked up at www.wikipedia.org.

Key literature references and sources for data: Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
 Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
 Chemical Classification and Information Database (CCID)
 European Chemicals Agency (ECHA) - Information on Chemicals
 Hazardous Substances Information System (HSIS)
 National Institute of Technology and Evaluation (NITE)
 Swedish Chemicals Agency (KEMI)
 U.S. National Library of Medicine Toxicology Data Network (TOXNET)

Procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008 [CLP] / GHS:

| Classification | Classification procedure |
|-----------------|--|
| Aerosol 2, H223 | On basis of test data (enclosed space ignition test) |

Relevant H-statements: H225: Highly flammable liquid and vapour.
 H280: Contains gas under pressure; may explode if heated.
 H319: Causes serious eye irritation.
 H336: May cause drowsiness or dizziness.

Hazard pictogram names: Flame

Changes to the SDS in this revision: Sections 1.2, 3, 12.1, 12.6, 15.1.

Revision date: 10 March 2016

Further information: None

This information is based solely on data provided by suppliers of the materials used, not on the mixture itself. No warranty is expressed or implied regarding the suitability of the product for the user's particular purpose. The user must make their own determination as to suitability.