

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

### 1 Identification

- · Product Identifier
- · Trade name: FLUOSOLV ELECTRIC CLEAN-AID
- · Product Number: FX-ECA
- · Relevant identified uses of the substance or mixture and uses advised against:

Specialty fluorinated solvent blend for aerosol cleaning

· Product Description

FLUOSOLV ELECTRIC CLEAN AID is a qualified aerosol product to MIL-PRF-29608B Class C (Cleaning and Cleaning/Lubricating Compounds, Electrical Contact).

- · Application of the substance / the mixture: Aerosol contact cleaner
- · Details of the Supplier of the Safety Data Sheet:
- Manufacturer/Supplier:

NuGeneration Technologies, LLC (dba NuGenTec)

1155 Park Ave, Emeryville, CA 94608

fluosolv@nugentec.com

For Product Info call 1-(800) 409-3142

www.fluosolv.com

www.nugentec.com/fluosolv

· Emergency telephone number:

PERS Emergency Response: Domestic and Canada - 1-800-633-8253, International 1-801-629-0667

## 2 Hazard(s) Identification

· Classification of the substance or mixture:



GHS02 Flame

Flam. Aerosol 2 H223-H229 Flammable aerosol. Pressurized container: May burst if heated.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

Eye Irrit. 2B H320 Causes eye irritation.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

- · Label elements:
- · GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms:





GHS02 GHS07

· Signal word: Warning

(Contd. on page 2)



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

#### Trade name: FLUOSOLV ELECTRIC CLEAN-AID

#### · Hazard statements:

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

H332 Harmful if inhaled. H320 Causes eye irritation.

H412 Harmful to aquatic life with long lasting effects.

#### · Precautionary statements:

P251 Do not pierce or burn, even after use.

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P211 Do not spray on an open flame or other ignition source.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment. P264 Wash thoroughly after handling.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses,

if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312 Call a POISON CENTER/doctor if you feel unwell. P337+P313 If eye irritation persists: Get medical advice/attention.

P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

P501 Dispose of contents/container in accordance with local/regional/national/

international regulations.

#### · Unknown acute toxicity:

27.9 % of the mixture consists of component(s) of unknown toxicity.

· Classification system: NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

· NFPA ratings (scale 0 - 4)



Health = 1 Fire = 3 Reactivity = 1

· HMIS-ratings (scale 0 - 4)



Health = 1
Fire = 3
Reactivity:

Reactivity = 1

· Hazard(s) not otherwise classified (HNOC): None known

## 3 Composition/Information on Ingredients

- · Chemical characterization: Mixtures
- · Description: Mixture of substances listed below with non-hazardous additions.

· Dangerous Components:		
	Proprietary Fluorinated Fluid Mixture	69.78%
	Aquatic Chronic 3, H412	
CAS: 811-97-2	1,1,1,2-Tetrafluoroethane (HFC-134a)	Proprietary%
	♦ Press. Gas, H281	
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OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

#### Trade name: FLUOSOLV ELECTRIC CLEAN-AID

CAS: 287-92-3	Cyclopentane	Proprietary%
RTECS: GY 2390000	♦ Flam. Liq. 2, H225; Aquatic Chronic 3, H412	
CAS: 124-38-9	Carbon Dioxide	Proprietary%
RTECS: FF 6400000	Press. Gas, H280; Simple Asphyxiant	
	Proprietary Solvent	1.41%
	♦ Flam. Liq. 2, H225; ♦ Eye Irrit. 2, H319; STOT SE 3, H336	

### 4 First-Aid Measures

- · Description of first aid measures:
- After inhalation:

Supply fresh air. If required, provide artificial respiration. Consult doctor if symptoms persist. In case of unconsciousness place patient stably in side position for transportation.

· After skin contact:

Generally the product does not irritate the skin.

Wash with soap and water.

If skin irritation occurs, consult a doctor.

· After eye contact:

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

· After swallowing:

Rinse out mouth and then drink plenty of water.

Do not induce vomiting without medical advice.

If vomiting does occur, repeat fluid administration

If swallowed and symptoms occur, consult a doctor.

- · Information for doctor: Treat symptomatically and supportively. No specific antidote.
- · Most important symptoms and effects, both acute and delayed: Breathing difficulty
- · Indication of any immediate medical attention and special treatment needed:

Do not administer preparations of the adrenalin-ephedrine-group.

## 5 Fire-Fighting Measures

- · Extinguishing media:
- · Suitable extinguishing agents:

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· Special hazards arising from the substance or mixture:

Pressurised container, protect from sunlight and do not expose to temperatures exceeding 50 °C. Closed containers may explode when exposed to extreme heat.

- · Advice for firefighters:
- · Protective equipment:

Mouth respiratory protective device.

As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

- US



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

Trade name: FI LIOSOI V FI FCTRIC CI FAN-AID

### 6 Accidental Release Measures

· Personal precautions, protective equipment and emergency procedures:

Wear protective equipment. Keep unprotected persons away.

Avoid contact with skin, eyes and clothing.

Ensure adequate ventilation.

- · Environmental precautions: Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up:

Dispose contaminated material as waste according to section 13.

Ensure adequate ventilation.

Dispose of the collected material according to regulations.

Reference to other sections:

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

### 7 Handling and Storage

- · Handling
- · Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace.
- Information about protection against explosions and fires:

Do not spray on a naked flame or any incandescent material.

Protect from heat.

- · Conditions for safe storage, including any incompatibilities:
- · Storage
- · Requirements to be met by storerooms and receptacles:

Observe official regulations on storing packagings with pressurized containers.

- · Information about storage in one common storage facility: Not required.
- Further information about storage conditions:

Keep receptacle tightly sealed.

Protect from heat and direct sunlight.

· Specific end use(s): No further relevant information available.

### 8 Exposure Controls/Personal Protection

- · Additional information about design of technical systems: No further data; see section 7.
- · Control parameters:

All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure Limits in Air below TLV & PEL limits.

· Components with occupational exposure limits:

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.

(Contd. on page 5)



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

Trade name: FLUOSOLV ELECTRIC CLEAN-AID

811-97	-2 1,1,1,2-Tetrafluoroethane (HFC-134a)
WEEL	Long-term value: 1000 ppm
287-92	-3 Cyclopentane
REL	Long-term value: 1720 mg/m³, 600 ppm
TLV	Long-term value: 1720 mg/m³, 600 ppm
124-38	-9 Carbon Dioxide
PEL	Long-term value: 9000 mg/m³, 5000 ppm
REL	Short-term value: 54.000 mg/m³, 30.000 ppm Long-term value: 9000 mg/m³, 5000 ppm
TLV	Short-term value: 54.000 mg/m³, 30.000 ppm Long-term value: 9000 mg/m³, 5000 ppm
Propri	etary Solvent
PEL	Long-term value: 980 mg/m³, 400 ppm
REL	Short-term value: 1225 mg/m³, 500 ppm Long-term value: 980 mg/m³, 400 ppm
TLV	Short-term value: 984 mg/m³, 400 ppm Long-term value: 492 mg/m³, 200 ppm BEI

Fluosolv Electric Clean Aid (Calculated Allowable Exposure Limits)

AEL 811 ppm

## · Ingredients with biological limit values:

## Proprietary Solvent

BEI 40 mg/L

urine

end of shift at end of workweek

Acetone (background, nonspecific)

- · Additional information: The lists that were valid during the creation of this SDS were used as basis.
- · Exposure controls:
- Personal protective equipment:
- General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Avoid contact with the eyes and skin.

· Breathing equipment:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure, use respiratory protective device that is independent of circulating air.

Use suitable respiratory protective device in case of insufficient ventilation.

- · Protection of hands: Not required.
- · Material of gloves: Not required.
- · Penetration time of glove material: Not applicable.
- · Eye protection:





OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

Trade name: FLUOSOLV ELECTRIC CLEAN-AID

· Body protection: Not required.

## 9 Physical and Chemical Properties

· Information on basic physical and chemical properties

· General Information

· Appearance:

Form: Aerosol
Color: Colorless

Odor: Weak, characteristic
 Odor threshold: Not determined.

· pH-value: N/A

· Change in condition

Melting point/Melting range: --

Boiling point/Boiling range: 43 °C (109 °F) (bulk liquid)

Flash point: No Closed Cup Flash Point

· Flammability (solid, gaseous): Flammable aerosol. Product does not have a flash point, but

is ignitable when the UN drum space ignition testing is performed. Ignitable flame does not exceed  $\geq$ 15 cm in the ignition test under the UN Classification of Spray Aerosols.

Ignition temperature: 380 °C (716 °F)
 Decomposition temperature: Not determined.

· **Auto igniting:** Product is not self-igniting.

· Danger of explosion: Product does not present an explosion hazard.

· Explosion limits:

Lower:Not determined.Upper:Not determined.

Vapor pressure @ 20 °C (68 °F):
 5716 hPa (4287 mm Hg) (Aerosol)
 Density @ 20 °C (68 °F):
 1.3 g/cm³ (10.849 lbs/gal) (bulk liquid)

· Relative density: Not determined.

• Vapor density @ 20 °C (68 °F): 3.6 (air=1) (heavier than air) • Evaporation rate: 66 (ref std. BUOAC =1)

· Solubility in / Miscibility with:

Water @ 20 °C (68 °F): Not miscible

Partition coefficient (n-octanol/water): Not determined.

· Viscosity:

**Dynamic:** Not determined. **Kinematic:** Not determined.

· Solvent content:

**VOC content:** 165 g/l (per SCAQMD methodology)

(Contd. on page 7)



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

Trade name: FLUOSOLV ELECTRIC CLEAN-AID

• Other information: No further relevant information available.

## 10 Stability and Reactivity

- · Reactivity: Stable under normal conditions.
- · Chemical stability: Stable under normal conditions.
- Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications.

- Possibility of hazardous reactions: No dangerous reactions known.
- · Conditions to avoid: No further relevant information available.
- · Incompatible materials: No further relevant information available.
- · Hazardous decomposition products: No dangerous decomposition products known.

## 11 Toxicological Information

- · Information on toxicological effects:
- · Acute toxicity:

· LD/LC50	values that are	relevant for classification:
Proprieta	ry Fluorinated l	Fluid Mixture
Oral	LD50	>5000 mg/kg (rat)
Dermal	LD50	>5000 mg/kg (rabbit)
Inhalative	LC50/4 h	114 mg/l (rat)
Proprieta	ry Solvent	
Oral	LD50	5045 mg/kg (rat)
Dermal	LD50	12800 mg/kg (rabbit)
Inhalative	LC50/4 h	30 mg/l (rat)
	LC50/96 hours	9640 mg/l (Pimephales)

- · Primary irritant effect:
- On the skin: No irritating effect.
- · On the eye: No irritating effect.
- · Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations:

The product is not subject to classification according to internally approved calculation methods for preparations.

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us. Harmful

- · Carcinogenic categories:
- · IARC (International Agency for Research on Cancer):

(Contd. on page 8)



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

#### Trade name: FLUOSOLV ELECTRIC CLEAN-AID

Group 1 - Carcinogenic to humans

Group 2A - Probably carcinogenic to humans

Group 2B - Possibly carcinogenic to humans

Group 3 - Not classifiable as to its carcinogenicity to humans

Group 4 - Probably not carcinogenic to humans

Proprietary Solvent

|3

### NTP (National Toxicology Program):

None of the ingredients are listed.

· OSHA-Ca (Occupational Safety & Health Administration):

None of the ingredients are listed.

## 12 Ecological Information

· Toxicity:

## · Aquatic toxicity:

### Proprietary Fluorinated Fluid Mixture

EC50 >120 mg/l (Green algae)

11.7 mg/l (Water flea)

#### 287-92-3 Cyclopentane

EC50 10.52 mg/l (Water flea)

#### **Proprietary Solvent**

EC50 6851 mg/l (Green algae)

5102 mg/l (Water flea)

- · Persistence and degradability: No further relevant information available.
- · Behavior in environmental systems:
- · Bioaccumulative potential: No further relevant information available.
- · Mobility in soil: No further relevant information available.
- · Additional ecological information:
- · General notes:

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

- · Results of PBT and vPvB assessment:
- · PBT: Not applicable.
- · vPvB: Not applicable.
- · Other adverse effects: No further relevant information available.

### 13 Disposal Considerations

- · Waste treatment methods:
- · Recommendation:

Contact manufacturer for recycling information.

Observe all federal, state and local environmental regulations when disposing of this material.

(Contd. on page 9)



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Reviewed on 08/12/2016 Issue date 08/12/2016

Trade name: FLUOSOLV ELECTRIC CLEAN-AID

· Uncleaned packagings

· Recommendation: Disposal must be made according to official regulations.

## 14 Transport Information

· UN-Number:

· DOT, ADR, IMDG, IATA UN1950

UN proper shipping name:

Aerosols, flammable · DOT

· ADR UN1950 Aerosols, flammable · IMDG, IATA AEROSOLS, FLAMMABLE

· Transport hazard class(es):

· DOT



· Class: 2 Gases 2.1 · Label:

· ADR



· Class: 2 5F Gases

· Label: 2.1

· IMDG, IATA



· Class: 2 Gases · Label: 2.1 · Packing group: N/A

· Environmental hazards: Not applicable. · Special precautions for user: Warning: Gases

· EMS Number: F-D,S-U

· Stowage Code SW1 Protected from sources of heat.

> SW22 For AEROSOLS with a maximum capacity of 1 litre: Category A. For AEROSOLS with a capacity above 1 litre: Category B. For WASTE AEROSOLS: Category C,

Clear of living quarters.

· Segregation Code SG69 For AEROSOLS with a maximum capacity of 1

litre: Segregation as for class 9. Stow "separated from" class 1 except for division 1.4. For AEROSOLS with a capacity above 1 litre: Segregation as for the appropriate

(Contd. on page 10)



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

Trade name: FLUOSOLV ELECTRIC CLEAN-AID

subdivision of class 2. For WASTE AEROSOLS:

Segregation as for the appropriate subdivision of class 2.

· Transport in bulk according to Annex II of

MARPOL73/78 and the IBC Code: Not applicable.

· Transport/Additional information:

· DOT

· **Quantity limitations:** On passenger aircraft/rail: 75 kg

On cargo aircraft only: 150 kg

· ADR

· Excepted quantities (EQ): Code: E0

Not permitted as Excepted Quantity

· IMDG

· Limited quantities (LQ):

· Excepted quantities (EQ): Code: E0

Not permitted as Excepted Quantity

· UN "Model Regulation": UN 1950 AEROSOLS, FLAMMABLE, 2.1

## 15 Regulatory Information

- · Safety, health and environmental regulations/legislation specific for the substance or mixture:
- · SARA (Superfund Amendments and Reauthorization):
- · Section 355 (extremely hazardous substances):

None of the ingredients are listed.

· Section 313 (Specific toxic chemical listings):

Proprietary Solvent

· TSCA (Toxic Substances Control Act):

811-97-2 1,1,1,2-Tetrafluoroethane (HFC-134a)

287-92-3 Cyclopentane

124-38-9 Carbon Dioxide

Proprietary Solvent

67-64-1 Acetone

- · California Proposition 65:
- · Chemicals known to cause cancer:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

· Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

(Contd. on page 11)



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

Trade name: FLUOSOLV ELECTRIC CLEAN-AID

287-92-3	-3 Cyclopentane	
124-38-9	Carbon Dioxide	
	Proprietary Solvent	
67-64-1	Acetone	
New Jers	sey Special Hazardous Substance List:	
287-92-3	Cyclopentane	F
	Proprietary Solvent	F
67-64-1	Acetone	F
Pennsylv	vania Right-to-Know List:	<u>'</u>
287-92-3	Cyclopentane	
124-38-9	Carbon Dioxide	
	Proprietary Solvent	
67-64-1	Acetone	
Pennsylv	vania Special Hazardous Substance List:	
	Proprietary Solvent	
67-64-1	Acetone	
Carcino	enic categories:	1
_	vironmental Protection Agency):	
•	Acetone	
07-04-1	eshold Limit Value established by ACGIH):	
TLV (Thr	Proprietary Solvent	A

### · GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms:





GHS02 GHS07

· Signal word: Warning · Hazard statements:

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

H332 Harmful if inhaled. H320 Causes eye irritation.

H412 Harmful to aquatic life with long lasting effects.

· Precautionary statements:

P251 Do not pierce or burn, even after use.

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

(Contd. on page 12)



OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

#### Trade name: FLUOSOLV ELECTRIC CLEAN-AID

P211 Do not spray on an open flame or other ignition source.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment. P264 Wash thoroughly after handling.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses,

if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312 Call a POISON CENTER/doctor if you feel unwell.
P337+P313 If eye irritation persists: Get medical advice/attention.

P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

P501 Dispose of contents/container in accordance with local/regional/national/

international regulations.

### · National regulations:

The product is subject to be classified according with the latest version of the regulations on hazardous substances.

### · Other regulations, limitations and prohibitive regulations:

CERCLA Reportable Quantity: 1470 lbs, based on the percentage composition of this chemical in the product.:

trans-Dichloroethylene

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

## 16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

· Date of preparation / last revision: 08/12/2016 / -

#### · Abbreviations and acronyms:

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA) HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

(Contd. on page 13)





OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 08/12/2016 Reviewed on 08/12/2016

#### Trade name: FLUOSOLV ELECTRIC CLEAN-AID

BEI: Biological Exposure Limit

Flam. Aerosol 2: Aerosols - Category 2

Press. Gas: Gases under pressure – Compressed gas Press. Gas: Gases under pressure – Refrigerated liquefied gas

Flam. Liq. 2: Flammable liquids — Category 2
Acute Tox. 4: Acute toxicity — Category 4
Eye Irrit. 2: Serious eye damage/eye irritation — Category 2
Eye Irrit. 2B: Serious eye damage/eye irritation — Category 2B

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

\* Data compared to the previous version altered.

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