Safety Data Sheet

SDS-00041 Rev 01

SECTION 1: Identification

Contact information

General

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Product identifier	Actuation Fluid
Synonyms	100-6250
Trade name	Actuation Fluid (100-6250)
Chemical family	Mixture
Recommended uses and restrictions	For Research Use Only. Not for use in diagnostic procedures.
Note	This SDS is written to address potential worker health and safety issues associated with the handling of the formulated product/mixture. Workers manufacturing this product/mixture should consult the SDS of each hazardous ingredient for hazard information and handling recommendations. This SDS will be revisited if more data become available.

SECTION 2: Hazard(s) identification

Not classified

Label elements

GHS Hazard pictograms	Not applicable
GHS Signal word	Not applicable
GHS Hazard statements	Not applicable
GHS Precautionary statements	Not applicable
Other hazards	No data identified for the mixture. The following data describe the hazards of individual ingredients, where applicable.
Note	This mixture does not meet criteria for classification under GHS as implemented by Regulation EC No 1272/2008 (EU CLP), WHMIS 2015 (Health Canada), and Hazard Communication Standard No. 1910.1200 (US OSHA). Nevertheless, it should be handled with caution as it has not yet been fully tested.

SECTION 3: Composition/Information on ingredients

Ingredient	CAS number	EINECS/ELINCS#	Amount	GHS classification
Perfluoro compounds (Main constituent)	86508-42-1	617-869-2	≤100 %	Not classified

Note The components of this product are non-hazardous and/or present at amounts below reportable limits. Amounts are listed as ranges; the exact percentage of composition is withheld as a trade secret.

SECTION 4: First-aid measures

Description of first aid measures

Immediate medical attention and special treatment, if necessary	No. If exposed or concerned: get medical advice/attention.
Inhalation	Immediately move exposed subject to fresh air. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. Immediately notify medical personnel and supervisor.
Skin contact	Wash exposed area with soap and water and remove contaminated clothing/shoes. If irritation occurs or persists, notify medical personnel and supervisor.

Eye contact	If easy to do, remove contact lenses, if worn. Immediately flush eyes with copious quantities of water for at least 15 minutes. If irritation occurs or persists, notify medical personnel and supervisor.
Ingestion	If swallowed, call a physician immediately. Do not induce vomiting unless directed by medical personnel. Do not give anything to drink unless directed by medical personnel. Never give anything by mouth to an unconscious person. Notify medical personnel and supervisor.
Most Important Symptoms/Effects	Medical conditions aggravated by exposure: None known or reported. Treat symptomatically and supportively.
Expected Symptoms/Effects, Acute and Delayed	See Sections 2 and 11

SECTION 5: Fire-fighting measures

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	Use water spray (fog), foam, dry powder, or carbon dioxide, as appropriate for surrounding fire and materials.
Specific hazards arising from the chemical	No information identified. May emit carbon monoxide, carbon dioxide, oxides of nitrogen and other fluorine-containing compounds.
Fire hazard	No information identified.
Explosion hazard	No information identified.

Special protective equipment and precautions for fire-fighters

Firefighting instructions	In case of fire in the surroundings: use the appropriate extinguishing agent. Wear full protective clothing and an approved, positive pressure, self-contained breathing apparatus. Decontaminate all equipment after use.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

General measures	Do not breathe vapors/mist/spray.
Protective equipment	If product is released or spilled, take proper precautions to minimize exposure by using appropriate personal protective equipment (see Section 8). Area should be adequately ventilated.
Emergency procedures	Do not breathe vapors/mist/spray.
Environmental precautions	Do not empty into drains. Avoid release to the environment.

Methods and material for containment and cleaning up

Methods for cleaning up	DO NOT CAUSE MATERIAL TO BECOME AIRBORNE. For small spills, soak up material with absorbent, e.g., paper towels. For large spills, cordon off spill area and minimize the spreading of spilled material. Soak up material with absorbent. Collect spilled material, absorbent, and rinse water into suitable containers for proper disposal in accordance with applicable waste disposal regulations (see Section 13). Decontaminate the area twice with an appropriate solvent.
Reference to other sections	See Sections 8 and 13 for more information.

SECTION 7: Handling and storage

Precautions for safe handling	Follow recommendations for handling pharmaceutical agents (i.e, use of engineering controls and/or other personal protective equipment if needed). Avoid contact with eyes, skin and other mucous membranes. Wash thoroughly after handling. Do not breathe vapors/mist/spray.

Conditions for safe storage, including any incompatibilities

Storage conditions	Store frozen at –15 to –25 °C.
Specific end use(s)	No information identified.

SECTION 8: Exposure controls/personal protection

Note	Dispose of broken vials in a sharps container.

Control parameters/Occupational Exposure Limits

Name	Issuer	Value
Perfluoro compounds	No data available	No data available

Appropriate engineering controls	Selection and use of containment devices and personal protective equipment should be based on a risk assessment of exposure potential. Use local exhaust and/or enclosure at aerosol-generating points. Use specifically designed and engineered local exhaust ventilation (LEV) and/or enclosure at aerosol-generating points and for high aerosol-generating operations. Limited open handling allowable for low aerosol-generating operations. Emphasis is placed on closed material transfer through direct connections, dust control and containment using LEV, certified downflow booths, glove bags, process containment via intermediate bulk containers (IBCs) with split butterfly valves (SBVs) and/or isolator technology.
Respiratory protection	Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls. For routine handling tasks, an approved and properly fitted air-purifying respirator with appropriate HEPA filters should provide ancillary protection based on the known or foreseeable limitations of existing engineering controls. Use a powered air-purifying respirator equipped with appropriate HEPA filters or combination filters or a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, when exposure levels are not known, or in any other circumstances where a lower level of respiratory protection may not provide adequate protection.
Hand protection	Wear nitrile or other impervious gloves if skin contact is possible. When the material is diluted in an organic solvent, wear gloves that provide protection against the solvent.
Eye protection	Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available.
Skin and body protection	Wear disposable coveralls appropriate to the task, booties, and safety glasses with side shields. Ensure gloves are protective against solvents in use. Protective garments (coveralls, disposable coveralls, lab coats) are not to be worn in common areas (e.g., cafeterias) or out-of-doors. Employees must be trained in proper gowning and degowning practices
Other protective measures	Wash hands in the event of contact with material, especially before eating, drinking or smoking. Protective equipment is not to be worn outside the work area (e.g., in common areas or out-of-doors).
Environmental exposure controls	Avoid release to the environment and operate within closed systems wherever practicable. Air and liquid emissions should be directed to appropriate pollution control devices. In case of spill, do not release to drains. Implement appropriate and effective emergency response procedures to prevent release or spread of contamination and to prevent inadvertent contact by personnel.

SECTION 9: Physical and chemical properties

Physical state	Liquid
Appearance	Clear, colorless.
Formula	Mixture (not applicable)
Molecular mass	Mixture (not applicable)
Color	No data available
Odor	No data available
Odor threshold	No data available
pH	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	No data available
Flash point	No data available
Relative evaporation rate (butyl acetate=1)	No data available
Flammability (solid, gas)	No data available
Vapor pressure	No data available
Relative vapor density at 20 °C	No data available
Relative density	No data available
Solubility	No data available
Log Pow	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available
Explosion limits	No data available
Explosive properties	No data available
Oxidizing properties	No data available

SECTION 10: Stability and reactivity

Reactivity	No data available.
Chemical stability	No data available.
Possibility of hazardous reactions	No data available.
Conditions to avoid	Keep away from incompatible materials.
Incompatible materials	No data available.
Hazardous decomposition products	No data available.

SECTION 11: Toxicological information

Note	No data on product formulation.
Likely routes of exposure	May be absorbed by inhalation, skin contact and ingestion.

Toxicological information

Acute toxicity

Component	Type	Dose
Perfluoro compounds	No data available	No data available

Additional information	No data available
Serious eye damage/irritation	Perfluoro compounds were not irritating to rabbit eyes (primary irritation score of 0.0)
Skin corrosion/irritation	Perfluoro compounds were not irritating to rabbit skin (primary irritation score of 0.0)
Sensitization	No data available
STOT-single exposure	A single dose of 5 mg/kg perfluoro compounds was administered to rats. No deaths occurred. All animals appeared normal and gained weight. There were no visible lesions found at gross necropsy. Estimated oral LD50 of >5.0 g/kg
STOT-repeated exposure	In rats administered oral (gavage) doses of perfluoro compounds of up to 2000 mg/kg/day for 4 weeks, no significant treatment-related effects were observed. The NOAEL was >2,000 mg/kg/day.
Reproductive toxicity	No data available
Developmental toxicity	In rats given oral doses of perfluoro compounds of up to 12 mg/kg/day once daily on days 6-15 of gestation, maternal toxicity was observed in 6- and 12-mg/kg/day dose groups, including deaths, as well as other changes such as lower mean body weights, body weight gains, and food consumption. Treatment at 12 mg/kg/day was associated with embryolethality (lower uterine weights, fewer live fetuses per litter, reduced fetal bodyweights and lower percent of live fetuses than the control groups). The NOELs for maternal toxicity and developmental toxicity (teratogenicity) in rats were 3 and 6 mg/kg/day, respectively.
Genotoxicity	No data available
Carcinogenicity	No data available. None of the components of this product are listed by NTP, IARC, ACGIH, or OSHA as a carcinogen.
Aspiration hazard	No data available
Experience with humans	See "Section 2 - Other Hazards".

SECTION 12: Ecological information

Toxicity

Component	Type	Concentration
Perfluoro compounds	No data available	No data available

Persistence and degradability	Perflouro compounds are characterized by a high-energy carbon-fluorine bond which makes them resistant to photolysis, hydrolysis, microbial degradation, and metabolism by vertebrates; thus they are very persistent in the environment.
Bioaccumulative potential	Bioconcentration factors (BCFs) for perfluoro compounds vary widely, with a range of 2 to 26,000 being reported. BCF values of 0 to 30 are considered low and >1,000 are considered very high.
Mobility in soil	Perfluoro compounds are expected to be immobile in soil.
Results of PBT assessment	No data available
Other adverse effects	No data available
Note	The environmental characteristics of this product have not been fully investigated. Releases to the environment should be avoided.

SECTION 13: Disposal considerations

Waste treatment methods	Used product should be disposed of according to local, state, and federal regulations. All wastes containing the material should be properly labeled. Dispose of wastes in accordance to prescribed federal, state, and local guidelines, e.g, appropriately permitted chemical waste incinerator. Rinse waters resulting from spill cleanups should be discharged in an environmentally safe manner, e.g, appropriately permitted municipal or on-site wastewater treatment facility.

SECTION 14: Transport information

Transport	Based on the available data, this product/mixture is not regulated as a hazardous material/dangerous good under EU ADR/RID, US DOT, Canada TDG, IATA, or IMDG.
UN number	None assigned.
UN proper shipping name	None assigned.
Transport hazard class(es) (DOT)	None assigned.
Packing group	None assigned.
Marine pollutant	Based on the available data, this product/mixture is not regulated as an environmental hazard or a marine pollutant.
Special transport precautions	Avoid release to the environment.
Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture	This SDS generally complies with the requirements listed under current guidelines in the US, EU and Canada. Consult your local or regional authorities for more information.
Chemical safety assessment	No chemical safety assessment has been carried out.
TSCA	All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.
SARA Section 313 - Emission Reporting	This substance or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
California Proposition 65	California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.
Additional information	This SDS generally complies with the requirements listed under current guidelines in the US, EU and Canada. Consult your local or regional authorities for more information.

SECTION 16: Other information

Full text of H phrases and GHS classification	Not applicable
Data sources	Information from published literature and internal company data.
Abbreviations and acronyms	ACGIH - American Conference of Governmental Industrial Hygienists; ADR/RID - European Agreement Concerning the International Carriage of Dangerous Goods by Road/Rail; AIHA - American Industrial Hygiene Association; CAS# - Chemical Abstract Services Number; CLP - Classification, Labelling, and Packaging of Substances and Mixtures; DNEL - Derived No Effect Level; DOT - Department of Transportation; EINECS - European Inventory of New and Existing Chemical Substances; ELINCS - European List of Notified Chemical Substances; EU - European Union; GHS - Globally Harmonized System of Classification and Labeling of Chemicals; IARC - International Agency for Research on Cancer; IDLH - Immediately Dangerous to Life or Health; IATA - International Air Transport Association; IMDG - International Maritime Dangerous Goods; LOEL - Lowest Observed Effect Level; LOAEL - Lowest Observed Adverse Effect Level; NIOSH - The National Institute for Occupational Safety and Health; NOEL - No Observed Effect Level; NOAEL - No Observed Adverse Effect Level; NTP - National Toxicology Program; OEL - Occupational Exposure Limit; OSHA - Occupational Safety and Health Administration; PBT - Persistent, Bioaccumulative, and Toxic; PNEC - Predicted No Effect Concentration; SARA - Superfund Amendments and Reauthorization Act; STOT - Specific Target Organ Toxicity; STEL - Short Term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System
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