

Safety Data Sheet

SECTION 1: Identification

Contact information

General



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Emergency telephone number

Chemtrec (24-hour availability):
+1 (800) 424-9300 (USA and Canada);
+1 (703) 527-3887 (International; collect calls accepted)

Product identifier	Pre-Anchoring Activator
Product number	20300113
Trade name	Not applicable
Chemical family	Mixture
Recommended uses and restrictions	Reagent for research and development purposes only.
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

Classification of the substance or mixture

Flammable liquids Category 4

Combustible liquid

Skin corrosion/irritation Category 2

Causes skin irritation

Reproductive toxicity Category 2

Suspected of damaging fertility or the unborn child

Label elements

GHS Hazard pictograms



GHS Signal word

Warning

GHS Hazard statements

H227 - Combustible liquid

H315 - Causes skin irritation

H361fd - Suspected of damaging fertility or the unborn child

GHS Precautionary statements

P201 - Obtain special instructions before use. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P264 - Wash hands, forearms and face thoroughly after handling. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P302+P352 - If on skin: Wash with plenty of water. P332+P313 - If skin irritation occurs: Get medical advice/attention. P362+P364 - Take off contaminated clothing and wash it before reuse. P370+P378 - In case of fire: Use media other than water to extinguish. P403+P235 - Store in a well-ventilated place. Keep cool. P405 - Store locked up. P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Other hazards

No data were available for the mixture. The following data describe the hazards associated with the active ingredient and/or the individual ingredients where applicable.

Dimethyl sulfoxide (DMSO) is a skin-irritating, organic solvent that displays analgesic and anti-inflammatory properties, as well as the ability to permeate biological membranes. Long-term human exposures may cause gastrointestinal (GI) upset, chills, cramps, and lethargy, along with liver/kidney/blood effects.

Note

This mixture is classified as hazardous 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).

SECTION 3: Composition/Information on ingredients

Ingredient	CAS number	EINECS/ELINCS#	Amount	GHS classification
Dimethyl sulfoxide (DMSO)	67-68-5	200-664-3	≥ 99.5 %	Flam. Liq. 4, H227 Skin Irrit. 2, H315
Novel Alkylator	N/A	N/A	≤ 0.5 %	Muta. 2, H341 Repr. 2, H361fd

Note The ingredient(s) listed above are considered hazardous. Amounts are listed as ranges; the exact percentage of composition is withheld as a trade secret. The remaining components of this product are non-hazardous and/or present in formulation at amounts below reportable limits. See Section 16 for full text of GHS classifications.

SECTION 4: First-aid measures**Description of first aid measures****Immediate medical attention and special treatment, if necessary**

Yes.

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.

Unsuitable extinguishing media

None known.

Specific hazards arising from the chemical

No information identified. May emit carbon monoxide, carbon dioxide, oxides of nitrogen and other sulfur-containing compounds.

Fire hazard

Combustible liquid. Keep away from heat, sparks, flame, and hot surfaces. Remove ignition sources. Vapors are heavier than air and may travel to an ignition source and flash back to source.

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****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 (see Section 9).

Other information Dispose of materials or solid residues at an authorized site.

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 bulk formulated biochemical reagents (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 vapor/mist/spray.

Conditions for safe storage, including any incompatibilities

Storage conditions Store at NMT -20 °C, away from incompatible materials.

Storage temperature ≤ -20 °C

Specific end use(s) Research and development.

SECTION 8: Exposure controls/personal protection

Note Wash hands, face and other potentially exposed areas immediately in the event of physical contact.

Control parameters/Occupational Exposure Limits

Name	Issuer	Value
Novel Alkylator	No data available	No data available
Dimethyl sulfoxide (DMSO)	WEEL TWA [ppm]	250 ppm

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/mist-generating points. Use engineered local exhaust ventilation (LEV) and/or enclosure for procedures where aerosolization may occur such as opened transfers, pumping, and spraying. Solutions can be handled outside a containment system or without LEV during procedures with no potential for aerosolization. All containers for solutions and slurries must be covered while being transferred

Respiratory protection Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls. At a minimum, a tight-fitting full-face respirator with HEPA filters is required when performing aerosol generating operations. A powered air-purifying respirator (PAPR) with HEPA filters and head cover is required for spill cleanup

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 (frozen)
Appearance	Clear
Formula	Not applicable (Mixture)
Molecular mass	Not applicable (Mixture)
Color	Colorless
Odor	No data available

Odor threshold	No data available
pH	No data available
Melting point	Not applicable
Freezing point	No data available
Boiling point	No data available
Flash point	Estimated F.P. - ~89 °C (closed cup)
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	Stable under recommended handling and storage conditions (see section 7).
Possibility of hazardous reactions	No dangerous reactions known under normal conditions of use.
Conditions to avoid	None under recommended storage and handling conditions (see section 7).
Incompatible materials	No data available.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

Likely routes of exposure May be absorbed by inhalation, skin contact and ingestion.

Toxicological information

Toxicological information

Acute toxicity

Component	Type	Dose
Novel Alkylator	No data available	No data available
Dimethyl sulfoxide (DMSO)	LD50 Oral rat	14500 mg/kg
	LD50 Dermal rat	40000 mg/kg
	LC50 Inhalation rat	> 5.33 mg/l/4h

Additional information

No data available

Serious eye damage/irritation

No data available

Skin corrosion/irritation

Dimethyl sulfoxide is a skin irritant in humans and animals.

Sensitization

No data available

STOT-single exposure

Non-lethal single doses of dimethyl sulfoxide were associated with decreased motor activity and myasthenia in male rats. No toxicity was reported in male rats exposed to an aerosol of 1600 mg/m³ DMSO over four hours.

STOT-repeated exposure

No target organ toxicity was noted in monkeys treated with oral dimethyl sulfoxide at doses up to 8.9 g/kg/day for up to 87 weeks.

Reproductive toxicity

No reproductive toxicity studies identified for novel alkylator. Based on the mechanism of action (DNA alkylation) the potential to cause reproductive toxicity cannot be excluded in the absence of data to determine this endpoint.

Developmental toxicity

No developmental toxicity studies identified for novel alkylator. Based on the mechanism of action (DNA alkylation) and effects on rapidly dividing cells of the developing fetus, the potential to cause developmental toxicity cannot be excluded in the absence of data to determine this endpoint.

In a peri- and postnatal study, doses of 0.125 mg/kg prolonged gestation and labor and

increased the incidence of still births. DMSO has been associated with teratogenic and/or embryotoxic effects in the hamster, rat, mouse, and chick at high doses. In the hamster, the injection of 500-800 mg/kg on the eighth day of gestation was associated with a wide variety of congenital defects, including exencephaly, microphthalmia, bone and limb abnormalities, and cleft lip.

However, no embryocidal or teratogenic effects were noted following parenteral injection of pregnant hamsters with single doses up to 2500 mg/kg DMSO. No malformations were observed in the offspring of rats treated with dimethyl sulfoxide at doses of 0.2-5 g/kg/day during pregnancy. DMSO has been extensively used as a cryoprotectant in the freezing of early experimental animal and human embryos. The viability and apparent normalcy of frozen embryos after thawing suggests that DMSO exposure is not toxic to the early embryo.

Genotoxicity

Product contains a novel alkylating agent. Patients treated therapeutically with this class of compounds have increased frequencies of chromosomal aberrations and sister chromatid exchanges in peripheral lymphocytes.

Alkylating agents induce chromosomal aberrations in bone-marrow cells of rats treated *in vivo*. This class of compound also induces chromosomal aberrations, sister chromatid exchanges and DNA damage in human cells *in vitro*. This class of compound induces aneuploidy and sex-linked recessive lethal mutations in *Drosophila* and induces mutations in bacteria.

Carcinogenicity

Dimethyl sulfoxide was negative for genotoxicity in an Ames bacterial cell mutagenicity assay and a sister chromatid exchange assay in Chinese hamster ovary cells.

No information identified. None of the components of the mixture present at levels greater than or equal to 0.1% 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

Component	Type	Concentration
Novel Alkylator	No data available	No data available
Dimethyl sulfoxide (DMSO)	EC50 crustacea	24600 mg/l 48 h <i>Daphnia magna</i>
	EC50 other aquatic organisms	> 25000 mg/l 96 h <i>Danio rerio</i>
	ErC50 algae	17000 mg/l 72 h <i>Pseudokirchneriella subcapitata</i>
Persistence and degradability	No data available.	
Bioaccumulative potential	No data available.	
Mobility in soil	No data available	
Results of PBT assessment	No data available	
Other adverse effects	Avoid release to the environment.	
Note	The environmental characteristics of this product/mixture have not been fully investigated. The above data are for the active ingredient and/or any other ingredient(s) where applicable.	

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.
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SECTION 14: Transport information

Transport	Based on the available data, this product/mixture is regulated as a hazardous material/dangerous good under US DOT. However, it is not regulated as a dangerous good under EU ADR/RID, Canada TDG, IATA, or IMDG.
UN number	NA1993
UN proper shipping name	Combustible liquid n.o.s. (contains dimethyl sulfoxide)
Transport hazard class(es) (DOT)	None assigned.
Packing group	III

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 as active, 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	<p>Flam. Liq. 4 - Flammable liquids Category 4.</p> <p>Muta. 2 - Germ cell mutagenicity Category 2.</p> <p>Repr. 2 - Reproductive toxicity Category 2.</p> <p>Skin Irrit. 2 - Skin corrosion/irritation Category 2.</p> <p>H227 - Combustible liquid.</p> <p>H315 - Causes skin irritation.</p> <p>H341 - Suspected of causing genetic defects.</p> <p>H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child..</p>
Data sources	Information from published literature and internal company data.
Abbreviations and acronyms	<p>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</p>
Issue date	November 2022
Current revision	A
Indication of changes	This is the first version of this SDS.

Disclaimer

The above information is based on data available to us and is believed to be correct. Since the information may be applied under conditions beyond our control and with which we may be unfamiliar, we do not assume any responsibility for the results of its use and all persons receiving it must make their own determination of the effects, properties and protections which pertain to their particular conditions. No representation, warranty, or guarantee, express or implied (including a warranty of fitness or merchantability for a particular purpose), is made with respect to the materials, the accuracy of this information, the results to be obtained from the use thereof, or the hazards connected with the use of the material. Caution should be used in the handling and use of the material because it is a biochemical reagent. The above information is offered in good faith and with the belief that it is accurate. As of the date of issuance, we are providing all information relevant to the foreseeable handling of the material. However, in the event of an adverse incident associated with this product, this Safety Data Sheet is not, and is not intended to be, a substitute for consultation with appropriately trained personnel.