Safety Data Sheet

Revision Date: 06-12-2018
Replaces: 23-07-2018

VENPURE* AF Caplets

1. Identification

Product identifier used on the label: **VENPURE* AF Caplets**

Other means of identification:
Synonyms: Sodium tetrahydroborate, Sodium borohydride
CAS No.: 16940-66-2
Molecular formula: NaBH4

Recommended use of the chemical and restrictions on use:

Recommended use: Reagent in chemicals purification. Reagent in fine chemicals synthesis. Hydride generating agent.

Restrictions on use: Uses other than those described above

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party:

Ascensus Specialties LLC
4800 State Route 12
Elma, WA 98541

Telephone number: Non-Emergency Phone Elma 360-482-4350

E-mail address: sds@ascensusspecialties.com

Emergency phone number:
Ascensus Specialties: 1-360-482-4350
CHEMTREC (USA): 1-800-424-9300 (collect calls accepted)
CHEMTREK (International): 1-703-527-3887 (collect calls accepted)
NRCC (China): +86 532 83889090

2. Hazard(s) identification

Classification of the chemical in accordance with paragraph (d) of §1910.1200:

GHS Hazard Symbols:

GHS Classification:

Acute Toxicity - Oral Category 3
Acute Toxicity - Dermal Category 3
Reproductive Toxicity Category 1B
Serious Eye Damage/Eye Irritation Category 1
Skin Corrosion/Irritation Category 1C
Substance or mixture which in contact with water emits flammable gas Category 1

Signal Word:	Danger
Hazard Statements:	In contact with water releases flammable gases which may ignite spontaneously
	Toxic if swallowed or in contact with skin
	Causes severe skin burns and eye damage
	May damage fertility or the unborn child
Precautionary Statements:	
Prevention:	Obtain special instructions before use.
	Do not handle until all safety precautions have been read and understood.
	Keep away from any possible contact with water, because of violent reaction and possible flash fire.
	Handle under inert gas. Protect from moisture.
	Do not breathe dust/fume/gas/mist/vapors/spray.
	Wash thoroughly after handling.
	Do not eat, drink or smoke when using this product.
	Wear protective gloves/protective clothing/eye protection/face protection.
Response:	If swallowed: Immediately call a poison center/doctor.
	If swallowed: Rinse mouth. Do NOT induce vomiting.
	If on skin: Wash with plenty of water.
	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
	If inhaled: Remove person to fresh air and keep comfortable for breathing.
	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	Specific treatment (see Sections 4 to 8 on this SDS and any additional information on this label).
	Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
	Take off immediately all contaminated clothing and wash it before reuse.
	In case of fire: Use an appropriate extinguisher (see section 5) for extinction.
Storage:	Store in a dry place. Store in a closed container.
	Store locked up.

Disposal:	Dispose of contents/container to a suitable disposal site in accordance with local/national/international regulations.
Hazards not otherwise classified:	WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING PROCESSING).
% unknown toxicity (Inhalation Gas):	100 % of the mixture consists of ingredient(s) of unknown toxicity
% unknown toxicity (Inhalation Vapor):	100 % of the mixture consists of ingredient(s) of unknown toxicity
% unknown toxicity (Inhalation Dust):	100 % of the mixture consists of ingredient(s) of unknown toxicity

3. Composition/information on ingredients

Chemical Name	Common name and synonyms	CAS #	%
Sodium Borohydride	Sodium tetrahydroborate, Sodium borohydride	16940-66-2	~ 100

One or more hazardous ingredient(s) is claimed as a trade secret under the OSHA Hazard Communication Standard. The hazards of this (these) ingredient(s) are given on this SDS.

4. First-aid measures

Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion:

Inhalation:	Remove from exposure. If not breathing, give artificial respiration and call a physician.
Eye Contact:	Immediately flush eyes with plenty of water for at least 20 minutes. Get immediate medical attention. Hold eyelids apart periodically while flushing. Continue to flush eyes while awaiting medical attention.
Skin Contact:	Immediately flush skin with plenty of water. Remove clothing. Get medical attention immediately. Wash clothing separately from other articles before reuse. Do NOT take contaminated clothing home.
Ingestion:	Do not induce vomiting unless directed to do so by medical personnel. Immediately give 1 or 2 glasses of water and get prompt medical attention. Do not give anything by mouth to an unconscious person.
Most important symptoms/effects, acute and delayed:	Sodium borohydride is corrosive to eyes, skin and mucous membranes. Toxic upon ingestion. Delayed Effects: None known.
Indication of immediate medical attention and special treatment needed, if necessary:	If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage. Treat the affected person appropriately. Measures against circulatory shock and convulsions may be necessary.

5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media:

Suitable extinguishing media:	Dry chemical Use dry sand or earth to smother fire. Dry limestone powder, dry sodium carbonate. Do not use water or carbon dioxide to extinguish fire.
Unsuitable extinguishing media:	Do not use water or carbon dioxide to extinguish fire.
Specific hazards arising from the chemical:	Sodium Borohydride has been tested for dust explosivity parameters. Minimum Ignition Energy = 410 mJ (dust cloud); Minimum Ignition Temperature = 220°C (dust layer) and 390°C (dust cloud); Kst = 106 bar.m/s; powder is conductive; Dust Class = St 1. Do not use water to extinguish fire. Contact with water can liberate flammable hydrogen gas. Sodium borohydride products are combustible and burn vigorously with intense heat. Heated material can form flammable or explosive vapors with air.
Hazardous combustion products:	Oxides of boron, Hydrogen gas.
Special protective equipment and precautions for fire-fighters:	Wear self-contained breathing apparatus and full protective clothing. Skin and eye contact must be avoided, material is corrosive and water-reactive. If exposed to material during clean-up operations, IMMEDIATELY remove all contaminated clothing and wash exposed skin areas with soap and water. DO NOT USE WATER OR CARBON DIOXIDE (CO2) TO EXTINGUISH FIRE.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:	Remain upwind and use personal protective equipment. Avoid dust formation and remove all sources of ignition. See Section 8 for personal protective equipment recommendations. Remove all contaminated clothing to prevent further absorption. Decontaminate affected personnel using the first aid procedures in Section 4. Leather shoes that have been saturated must be discarded. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.
Methods and materials for containment and cleaning up:	Shut off ignition sources; including electrical equipment and flames. Do not allow smoking in the area. Ventilate the area of spill or leak. Wear protective equipment during clean-up. Non-sparking tools should be used. Store in a container equipped with a vent. Scoop up spill and place in approved chemical waste container. Avoid generation of dust clouds during clean-up. Dispose of contents & container in accordance with

local, regional, national or international regulations.

7. Handling and storage

Precautions for safe handling: Wear appropriate protective equipment when performing maintenance on contaminated equipment. Wash hands thoroughly before eating or smoking after handling this material. Do not eat, drink or smoke in work areas. Prevent contact with incompatible materials. Avoid spills and keep away from drains. Handle in a manner to prevent generation of aerosols, vapors or dust clouds. Avoid contact with skin, eyes and clothing. Avoid contact with water. Do not breathe vapors or spray mist. Ensure adequate ventilation. Keep container tightly closed.

Conditions for safe storage, including any incompatibilities:

Safe storage conditions: Storage temperature <60°C. Moisture can cause the product to decompose and slowly liberate hydrogen, which can accumulate in the headspace of the storage container. Drums should be ventilated by loosening the top bung prior to opening. Store in a tightly closed container Store in a cool dry place Keep away from sources of ignition

Materials to Avoid/Chemical Incompatibility: Avoid water, acids, metals, aluminum, copper, zinc, oxidizing agents, alcohols and metal salts (such as Ni2+, Co2+, etc.)

8. Exposure controls/personal protection

OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available:

Chemical component	OSHA PEL	ACGIH TLV	ACGIH STEL	IDLH
Sodium Borohydride	0.1 mg/m3	0.1 mg/m3	0.1 mg/m3	Not established

Appropriate engineering controls: All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided.

Individual protection measures, such as personal protective equipment:

Respiratory Protection: Observe OSHA regulations for respirator use (29 CFR 1910.134). Air-purifying respirators must not be used in oxygen-deficient atmospheres.

Eye protection: Wear chemical splash goggles.

Skin protection: Chemical resistant gloves.

Gloves: Chemical resistant gloves (neoprene, nitrile/butadiene rubber (“nitrile”));

	a thickness greater than 0.38 mm is recommended.
Other protective equipment:	Chemical goggles. Chemical resistant gloves (neoprene, nitrile/butadiene rubber ("nitrile")); a thickness greater than 0.38 mm is recommended. Chemically resistant protective clothing such as face shield, boots, apron, or full body suit, depending on the exposure potential. Nationally approved air-purifying respirator with highly toxic particulate filters (HEPA filters).
General hygiene conditions:	Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.

9. Physical and chemical properties

Appearance (physical state, color etc.):	
Physical state:	Solid
Color:	White
Odor:	No Odor
Odor Threshold:	No data available
pH:	No data available.
Melting point/freezing point (°C):	
Melting Point (°C):	> 360 °C
Freezing point (°C):	No data available
Initial boiling point and boiling range (°C):	> 400 C @ 760 MM HG
Flash Point (°C):	No data available
Flash Point Method:	Non-flammable
Evaporation Rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	
Upper flammability or explosive limits:	No data available
Lower flammability or explosive limits:	Non-flammable
Vapor pressure:	< 0.000054 Pa (pascal) @ 25°C
Vapor density:	No data available

Relative density:	1.07 g/cm3 @ 25°C
Solubility(ies):	Reacts with water.
Partition coefficient: n-octanol/water:	log Pow = -1.09 @ 22°C
Auto-ignition temperature (°C):	> 400 °C
Decomposition temperature (°C):	No data available
Viscosity:	Not applicable.
Volatile Organic Chemicals:	0.00
Bulk Density:	8.92915

10. Stability and reactivity

Reactivity:	Reacts violently with water.
Chemical stability:	Stable under normal temperatures and pressures.
Possibility of hazardous reactions:	Polymerization is not expected to occur
Conditions to avoid (e.g., static discharge, shock, or vibration):	Contact with water (reacts with water).
Incompatible materials:	Avoid water, acids, metals, aluminum, copper, zinc, oxidizing agents, alcohols and metal salts (such as Ni2+, Co2+, etc.)
Hazardous decomposition products:	Oxides of boron, Hydrogen

11. Toxicological information

Description of the various toxicological (health) effects and the available data used to identify those effects:

Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact):	Skin contact and absorption, eye contact, and inhalation. Ingestion is not likely to be a primary route of exposure.
Symptoms related to the physical, chemical and toxicological characteristics:	Sodium borohydride is corrosive to eyes, skin and mucous membranes. Toxic upon ingestion. Delayed Effects: None known.

Delayed and immediate effects and also chronic effects from short- and long-term exposure:

Ingestion Toxicity:	None known
Skin Contact:	Corrosive to skin.
Absorption:	(Rabbit) 230 mg/ kg
Inhalation Toxicity:	No data available
Eye Contact:	Corrosive to eyes.

Sensitization:	Not a sensitizer
Mutagenicity:	For the hydrolysis product: Boric acid. In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.
Reproductive and Developmental Toxicity:	Classification has been based on toxicological information of the components in Section 3.
Carcinogenicity:	Unable to be tested due to reactivity. Hydrolysis product (Boric Acid) found negative for carcinogenic effects.
STOT-single exposure:	Based on available data, the classification criteria are not met.
STOT-repeated exposure:	Based on available data, the classification criteria are not met.
Aspiration hazard:	Based on available data, the classification criteria are not met.

Numerical measures of toxicity (such as acute toxicity estimates):

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium Borohydride	(rat) 162 mg/kg	(Rabbit) 230 mg/ kg	(rat) 1.5 mg/L, 4 hrs

Is the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA:

Chemical Name	OSHA Carcinogen	LD50 Oral	NTP Carcinogen
There are no components that are known or reported to cause cancer			

12. Ecological information

Ecotoxicity (aquatic and terrestrial, where available): NOEC calculated based on fish toxicity of boric acid (most sensitive trophic level), equivalent to 5.6 mg boron/L.

Ecological Toxicity Data:

Chemical Name	CAS #	Aquatic EC50 Crustacea	Aquatic ERC50 Algae	Aquatic LC50 Fish
Sodium Borohydride	16940-66-2	No data available	No data available	Aquatic LC50 (96h) MOSQUITO FISH 5600 mg/L

Persistence and degradability:	Rapidly hydrolyzes in water to form sodium borate/boric acid and hydrogen gas.
Bioaccumulative potential:	The rapid hydrolysis of sodium borohydride, along with the high water solubility and low log Kow of boric acid indicates that this product is not

	capable of bioaccumulation.
Mobility in soil:	Soil mobility studies are not technically feasible given the rapid hydrolysis of this product, whose half-life ranges from seconds to minutes at environmentally relevant pH's.
Other adverse effects (such as hazardous to the ozone layer):	May increase pH of aquatic systems to >pH 10 which may be toxic to aquatic organisms.

13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:	Dispose of this material responsibly, and in accordance with standard practice for disposal of potentially hazardous materials as required by applicable international, national, regional, state or local laws, and environmental protection duty of care principles. Do NOT dump into any sewers, on the ground, or into any body of water. For disposal within the EC, the appropriate classification code according to the European Community List of Wastes should be used. Note that disposal regulations may also apply to empty containers and equipment rinsates. NOTE: Generator is responsible for proper waste characterization. State hazardous waste regulations may differ substantially from federal regulations. Reactive.
Waste codes / waste designations:	D003

14. Transport information

Carriage of dangerous goods by road (DOT), rail or inland waterways:

UN number:	UN 1426
UN Proper shipping name:	SODIUM BOROHYDRIDE
Transport hazard class(es):	4.3
Packing group, if applicable:	I
DOT Basic description:	No data available

International carriage of dangerous goods by sea (IMDG/IMO):

UN number:	UN 1426
UN Proper shipping name:	SODIUM BOROHYDRIDE
Transport hazard class(es):	4.3
Packing group, if applicable:	I

EMS#:	S-O
International carriage of dangerous goods by air (IATA):	
UN number:	UN 1426
UN Proper shipping name:	Sodium borohydride
Transport hazard class(es):	4.3
Packing group, if applicable:	I
Environmental hazards (e.g., Marine pollutant (Yes/No)):	No
Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code):	No data available
Special precautions which a user needs to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises:	Consult IMO regulations before transporting in bulk by ocean.

15. Regulatory information

Safety, health and environmental regulations specific for the product in question:

TSCA Status: Listed

Regulated Components:

Chemical Name	CAS #	CERCLA	Sara EHS	Sara 313	U.S. HAP
Sodium Borohydride	16940-66-2	N	Y	N	N

Chemical Name	CAS #	California Prop 65 - Cancer	California Prop 65 - Dev. Toxicity	California Prop 65 - Reprod fem	California Prop 65 - Reprod male
Sodium Borohydride	16940-66-2	N	N	N	N

Chemical Name	CAS #	Massachusetts RTK List	New Jersey RTK List	Pennsylvania RTK List	Rhode Island RTK List	Minnesota Hazardous Substance List
Sodium Borohydride	16940-66-2	N	Y	Y	N	N

16. Other information, including date of preparation or last revision.

VENPURE* AF Caplets

SDS Prepared by:	SHARON
Revision Date:	12-06-2018
Revision Number:	12
Reason for revision:	Activated by Document Formulation Generation
Other Info:	This container may be hazardous when empty. Water, acid or high temperatures can liberate flammable hydrogen gas.
Disclaimer:	Important Note: Please note that the information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. The information contained herein may change without prior notice. THIS SAFETY DATA SHEET SUPERSEDES ALL PREVIOUS EDITIONS.