Safety Data Sheet

Prepared in accordance with Commission Regulation (EU) 2015/830

Revision Date: 13-11-2019
This document replaces SDS dated: 28-04-2019

VENPURE* SF Granules

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier: **VENPURE* SF Granules**

Other means of identification:

Synonyms: Sodium tetrahydroborate, Sodium borohydride

EC No.: 241-004-4

CAS No: 16940-66-2

REACH Registration No.: 01-2119485016-39-0001

Molecular formula: NaBH4

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

Relevant identified uses: Reagent in chemicals purification. Reagent in fine chemicals synthesis. Hydride generating agent.

Uses advised against: Uses other than recommended use.

1.3 Details of the Supplier of the Safety Data Sheet:

Ascensus Specialties LLC

4800 State Route 12

Elma, WA 98541

Supplier:
Camida Ltd
New Quay
Clonmel
Co.Tipperary
Ireland
Tel No: +353 (0)52 6125455 (Office Hrs)
Fax No: +353 (0)52 6125466
Email: info@camida.com
Emergency Tel No: +44 (0) 1865 407333 (Carechem24)
Information provided is advisory only

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

Email of person responsible for Safety Data Sheets: sds@ascensusspecialties.com

1.4 Emergency telephone 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): +865-328-388-9090

Only Representative for REACH Registration:

Ascensus Specialties BVBA
Koningsstraat 97
B-1000 Brussel
Brussels, Belgium

Poison Centre contact information:

National Poisons Information Service (NPIS)
(Birmingham Unit)
City Hospital
Dudley Rd
B187QH - Birmingham

Emergency call (healthcare professionals):

(+44) 844 892 0111 - 0344 892 0111
Email: director.birmingham.unit@npis.org
Website: http://www.npis.org/

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

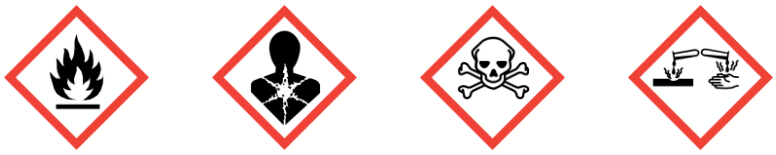
Classification according to Regulation (EC) No 1272/2008 [CLP]:

Acute Toxicity - Oral 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

2.2 Label elements:

Labelling according to Regulation (EC) No 1272/2008 [CLP]:

Hazard pictograms:



Signal Word: Danger

Hazard Statements:

H260 - In contact with water releases flammable gases which may ignite spontaneously.
H301 - Toxic if swallowed.
H314 - Causes severe skin burns and eye damage.
H360 - May damage fertility or the unborn child if swallowed.

Precautionary Statements:

P201 - Obtain special instructions before use.

P231+P232 - Handle under inert gas. Protect from moisture.

P260 - Do not breathe dust or mists.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

Supplemental Hazard information (EU): EUH014 - Reacts violently with water.

% unknown toxicity (Inhalation Gas): 0 % of the mixture consists of ingredient(s) of unknown toxicity.
% unknown toxicity (Inhalation Vapor): 0 % of the mixture consists of ingredient(s) of unknown toxicity.
% unknown toxicity (Inhalation Dust): 0 % of the mixture consists of ingredient(s) of unknown toxicity.

2.3 Other hazards: WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING PROCESSING).

SECTION 3: Composition/information on ingredients

3.1 Substances:

Chemical Name	% weight	CAS #	EC No. REACH Registration No.	Classification (EC) No 1272/2008	M Factor	SCL	Acute Toxicity Estimates
Sodium Borohydride	~ 100	16940-66-2	241-004-4 01-2119485016-39-0001	Water-react. 1; H260 Skin Corr. 1C; H314 Repr. 1B; H360 Eye Dam. 1; H318 Acute Tox. 3 (Oral); H301 EUH014	No data available.	Repr. 1B; H360FD: C ≥ 3,4 %	Not determined

3.2 Mixtures:
Not applicable.

For full text of H-statements see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures:

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.
Self protection of the first aider:	No data available.
4.2 Most important symptoms and effects, both acute and delayed:	Sodium borohydride is corrosive to eyes, skin and mucous membranes. Toxic upon ingestion. Delayed Effects: None known.
4.3 Indication of any immediate medical attention and special treatment needed:	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.

SECTION 5: Firefighting measures

5.1 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.
5.2 Special hazards arising from the substance or mixture:	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.
5.3 Advice for firefighters:	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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Non-emergency personnel:	Non-emergency personnel should be kept clear of the area.

Emergency responders: 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.

6.2 Environmental precautions: Prevent releases to soils, drains, sewers and waterways.

6.3 Methods and material for containment and cleaning up:

Small spills: Refer to information provided for large spills.

Large spills: 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.

6.4 Reference to other sections: Refer to Section 13 for disposal information.

SECTION 7: Handling and storage

7.1 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.

7.2 Conditions for safe storage, including any incompatibilities:

Conditions for safe storage: 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.)

7.3 Specific end use(s): Reagent in chemicals purification. Reagent in fine chemicals synthesis. Hydride generating agent.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters:

Occupational Exposure limit values:

Chemical Name	United Kingdom - Workplace Exposure Limits (WELs) - TWAs	United Kingdom - Workplace Exposure Limits (WELs) - STELs	United Kingdom - Biological Monitoring Guidance Values
Sodium Borohydride	0.1 mg/m3	0.1 mg/m3	No data available.

Derived No Effect Levels (DNELs) - Workers:

Route	DNEL
Long-term -systemic effects (dermal)	5.1 mg/m3
Long-term-systemic effects (inhalation)	240 mg/kg bw/day

Predicted No Effect Concentrations (PNECs):

Route	PNEC
PNEC aqua (freshwater)	1.75 mg/L
PNEC aqua (STP)	4.8 mg/kg soil dw
PNEC sediment (marine water)	54.77 mg/L
PNEC sediment (freshwater)	0.255 mg/kg sediment dw
PNEC soil	4.8 mg/kg soil dw

8.2 Exposure controls:

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:

Eye and face protection: Wear chemical splash goggles.

Skin Protection:

Hand protection: Chemical resistant gloves (neoprene, nitrile/butadiene rubber (“nitrile”)); a

	thickness greater than 0.38 mm is recommended.
Other skin protection:	Chemical resistant gloves.
Respiratory Protection:	Air-purifying respirators must not be used in oxygen-deficient atmospheres.
Thermal Hazards:	Not applicable.
Environmental exposure controls:	The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Appearance:	Solid.
Colour:	White.
Odour:	No odour.
Odour 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 (water = 1):	No data available.
Flammability (solid, gas):	No data available.
Upper/lower flammability or explosive limits:	
Upper flammable or explosive limit, % in air:	No data available.
Lower flammable or explosive limit, % in air:	Non-flammable.
Vapour pressure:	< 0.000054 Pa (pascal) @ 25°C
Vapour Density (Air=1):	No data available.

Relative density (water = 1):	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.
Explosive properties:	Not explosive.
Oxidizing properties:	The substance or mixture is not classified as oxidizing.

9.2 Other information:

Volatile Organic Chemicals:	0
Bulk density:	8.92915

SECTION 10: Stability and reactivity

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

Acute toxicity:

Chemical Name	ORAL LD50	DERMAL LD50	INHALATION LC50
Sodium Borohydride	(rat) 57 mg/kg *	(rabbit) 4000 - 8000 mg/kg	(rat) 1.5 mg/L, 4 hrs

* The weight of evidence is that the substance is corrosive. It is assumed that the mode of action for acute oral toxicity is corrosivity based on the gross pathology effects noted that indicate the intestines were extremely red.

Classification has been based on toxicological information of the components in Section 3.

Skin corrosion/irritation:

pH	No data available.

Corrosive to skin.

Serious eye damage/irritation:

pH	No data available.

Corrosive to eyes.

Respiratory or skin sensitisation:
Based on available data, the classification criteria are not met.

Germ cell mutagenicity:
For the hydrolysis product: Boric acid. In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Carcinogenicity:
Unable to be tested due to reactivity. Hydrolysis product (Boric Acid) found negative for carcinogenic effects.

Reproductive toxicity:
Classification has been based on toxicological information of the components in Section 3.

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.

SECTION 12: Ecological information

12.1 Toxicity: 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 (96h) Lepomis macrochirus (Bluegill) 15400 mg/L
Sodium Borohydride	16940-66-2	No data available.	No data available.	Aquatic LC50 (96h) MOSQUITO FISH 5600 mg/L

12.2 Persistence and degradability: Rapidly hydrolyzes in water to form sodium borate/boric acid and hydrogen gas.

12.3 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.

12.4 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.

12.5 Results of PBT and vPvB assessment: This substance/mixture does not meet the PBT or vPvB criteria of REACH, annex XIII.

12.6 Other adverse effects: May increase pH of aquatic systems to >pH 10 which may be toxic to aquatic organisms.

12.7 Additional information: No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods:

Disposal methods: 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.

SECTION 14: Transport information

International carriage of dangerous goods by road (ADR), rail or inland waterways:

14.1 UN number:	UN 1426
14.2 UN proper shipping name:	SODIUM BOROHYDRIDE
14.3 Transport hazard class(es):	4.3
14.4 Packing group:	I

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

14.1 UN number:	UN 1426
14.2 UN proper shipping name:	SODIUM BOROHYDRIDE
14.3 Transport hazard class(es):	4.3
14.4 Packing group:	I
EMS#:	S-O

International carriage of dangerous goods by air (IATA):

14.1 UN number:	UN 1426
14.2 UN proper shipping name:	Sodium borohydride
14.3 Transport hazard class(es):	4.3
14.4 Packing group:	I

14.5 Environmental hazards:	No
14.6 Special precautions for user:	Consult IMO regulations before transporting in bulk by ocean.
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code:	No data available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

Chemical Name	EINECS	SVHC
Sodium Borohydride	Listed	No

15.2 Chemical Safety Assessment: A Chemical Safety Assessment has been carried out by the supplier.

SECTION 16: Other information

Revision Date: 13-11-2019

Indication of changes:

This container may be hazardous when empty.
Water, acid or high temperatures can liberate flammable hydrogen gas.

Abbreviations and acronyms:

CAS = Chemical Abstract Service
DNEL= Derivative No Effect Level
EC= European Community
EINECS = European Inventory of Existing Chemical Substances
MSHA = Mine Safety Health Administration
NIOSH = National Institute of Occupational Safety & Health
OEL = Occupational Exposure Limit
PBT= Persistent, Bioaccumulative, Toxic
PNEC= Predicted No Effect Concentration
SCOEL= Scientific Committee on Occupational Exposure Limits
TLV = Threshold Limit Value
TWA= Time Weighted Average
vPvB= Very Persistent, Very Bioaccumulative
Wt.% = Weight Percent

Hazard phrase(s) referenced in section 3:

H260 - In contact with water releases flammable gases which may ignite spontaneously.

H301 - Toxic if swallowed.

H314 - Causes severe skin burns and eye damage.

H318 - Causes serious eye damage.

H360 - May damage fertility or the unborn child if swallowed.

Precautionary Statements:

Prevention:

P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

P223 - Do not allow contact with water.

P231+P232 - Handle under inert gas. Protect from moisture.

P260 - Do not breathe dust or mists.

P264 - Wash thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

Response:	P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.
	P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P308+P313 - IF exposed or concerned: Get medical advice/ attention.
	P321 - Specific treatment (see Sections 4 to 8 on this SDS and any additional information on this label).
	P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
	P363 - Wash contaminated clothing before reuse.
	P370+P378 - In case of fire: Use an approprate extinguisher (see section 5) to extinguish.
Storage:	P402+P404 - Store in a dry place. Store in a closed container.
	P405 - Store locked up.
Disposal:	P501 - Dispose of contents/container to a suitable disposal site in accordance with local/national/international regulations.

Disclaimer of Liability:

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.