HAEMATOLOGIC TECHNOLOGIES, INC.

Safety Data Sheet
RVV-X or V Activator

SECTION 1: Identification

1.1 Product identifier

Product name	RVV-X or V Activator
Product number	RVVX-2010, RVVV-2000

1.2 Other means of identification
Purified component of Daboia russelii russelii viper venom

1.3 Recommended use of the chemical and restrictions on use
Laboratory use only.

1.4 Supplier's details

Name	Haematologic Technologies, Inc.
Address	57 River Road Essex Junction, VT 05452 USA
Telephone	+1 (802) 878-1777
Fax	+1 (802) 878-1776
email	hti@haemtech.com

1.5 Emergency phone number(s)

+1 (802) 878-1777 Hours of operation: M-F 08:00-16:30 EST
+1 (800) 424-9300 (CHEMTREC®) during non-company hours

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture
- Eye damage/irritation (chapter 3.3), Cat. 2
- Sensitization, skin (chapter 3.4), Cat. 1
- Acute toxicity, dermal (chapter 3.1), Cat. 3
- Eye damage/irritation (chapter 3.3), Cat. 1

2.2 GHS label elements, including precautionary statements

Pictogram

Signal word **Danger**

Hazard statement(s)

H311	Toxic in contact with skin
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled

Precautionary statement(s)

P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash skin thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P284	[In case of inadequate ventilation] wear respiratory protection.
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.
P321	Specific treatment (see section 4 on this label).
P310	Immediately call a POISON CENTER/doctor
P333+P313	If skin irritation or a rash occurs: Get medical advice/attention.
P361	Take off immediately all contaminated clothing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P363	Wash contaminated clothing before reuse.
P362+P364	Take off contaminated clothing and wash it before reuse.
P405	Store locked up.
P501	Dispose of contents/container to in accordance with official regulation.

2.3 Other hazards which do not result in classification

In compliance with directives 67/548/EEC, 1999/45/EC and their amendments.
T+: Toxic; R24: Toxic in contact with skin.
Xi: Irritant; R41: Risk of serious damage to eyes.
R42/43: May cause sensitization by inhalation and skin contact.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Component	Concentration
Daboia russelii russelii, Viperidae (Viperinae) snake venom	**0.1 - 2 % (Weight)**
CLASSIFICATIONS: Acute toxicity, dermal (chapter 3.1), Cat. 3; Sensitization, skin (chapter 3.4), Cat. 1; Eye damage/irritation (chapter 3.3), Cat. 1. HAZARDS: H311 - Toxic in contact with skin; H317 - May cause an allergic skin reaction; H318 - Causes serious eye damage; H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.	
GLYCEROL (CAS no.: 56-81-5; EC no.: 200-289-5)	**50 % (Volume)**
CLASSIFICATIONS: No data available. HAZARDS: No data available.	
WATER (CAS no.: 7732-18-5)	**50 %**

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice

☐Consult a physician. Show this safety data sheet to the doctor in attendance.
☐Move out of dangerous area.
☐Symptoms may be delayed.

	☐As a general rule, in case of doubt or if symptoms persist, always call a doctor. ☐NEVER induce swallowing in an unconscious person. IN THE EVENT OF ACCIDENTAL INJECTION: ☐The bitten person should be reassured and persuaded to lie down and remain still. ☐Immediately call an emergency center or a poison center. ☐Do not use tourniquets (may induce severe necrosis). ☐If there is any impairment of vital functions, such as problems with respiration, airway, circulation, heart function, these must be supported as a priority. In particular, for bites causing flaccid paralysis, including respiratory paralysis, both airway and respiration may be impaired. Seek urgent medical attention. ☐Ice in a linen in contact with the exposed part may be useful to reduce development of local swelling and pain. ☐All rings or other jewellery on the bitten limb, especially on fingers, should be removed, as they may act as tourniquets if oedema develops. ☐Appropriate antivenom should be injected, under strict medical supervision.
If inhaled	☐If inhaled, move person into fresh air. ☐If breathing is difficult, give oxygen. ☐If not breathing give artificial respiration. ☐Consult a physician immediately.
In case of skin contact	In the event of splashes or contact with healthy skin: ☐Flush with copious amounts of water for at least 15 minutes. ☐Remove contaminated clothing and shoes. ☐If skin irritation persists, consult a physician. In the event of splashes or contact with wounded skin: ☐Flush with copious amounts of water for at least 15 minutes. ☐Immediately call an emergency center or a poison center.
In case of eye contact	☐Flush with copious amounts of water for at least 15 minutes while separating the eyelids with fingers. The eye will be very painful, so patience, tact and reassurance are needed. ☐The eye should be bandaged using a pad over the eye and dark glasses worn. ☐Don't let the victim rub the eye. ☐Seek urgent medical attention
If swallowed	☐Never give anything by mouth to an unconscious person. ☐Wash out mouth with water provided person is conscious. ☐Do not induce vomiting. ☐Consult a physician immediately and show him the packaging or the label.

4.2 Most important symptoms/effects, acute and delayed

☐Respiratory sensitization (if inhaled).☐Hematologic syndrome of Viperidae (if injected): sharp pain, swelling (30 min after injection), various later hemorrhagic symptoms (bruising, petechia, purpura…), progressive necrosis, hypovolemic shock that may be fatal.

☐Particularities of Daboia russelii russelii: local pain, swelling, blistering, necrosis + coagulopathy, bleeding, renal failure, mild flaccid paralysis (ptosis & ophthalmoplegia), anterior pituitary haemorrhage with panhypopituitarism.

4.3 Indication of immediate medical attention and special treatment needed, if necessary

☐Russell's vipers venom injections cause severe, potentially lethal envenoming, requiring urgent assessment & treatment with IV fluids and IV antivenom.
☐Antivenom that may be used in the event of accidental injection:
☐Monovalent Russell's Viper Venom Antiserum - Central Research Institute, India.
☐Polyvalent Anti Snake Venom Serum - Central Research Institute, India.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media
☐Water spray
☐Carbon dioxide (CO2)
☐Dry chemical powder
☐Foam

5.2 Specific hazards arising from the chemical
Smokes or fumes from burning may be toxic or irritating :
☐Combustion products include: carbon monoxide (CO), carbon dioxide (CO2), nitrogen oxides (NOx), other pyrolysis products typical of burning organic material.
☐May emit poisonous fumes.

5.3 Special protective actions for fire-fighters
☐Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
☐Wear respiratory protection.
☐Avoid dust formation.
☐Avoid breathing dust and contact with skin and eyes.
☐Ensure adequate ventilation.
☐Evacuate personnel to safe areas.
6.1.2. For emergency responders
☐Firefighters will be equipped with suitable personal protective equipment (See section 8).

6.2 Environmental precautions
☐Prevent further leakage or spillage if safe to do so.
☐Do not let product enter drains or waterways.

6.3 Methods and materials for containment and cleaning up
☐Keep in suitable, closed containers for disposal.
☐Pick up and arrange disposal without creating dust.

Reference to other sections
☐See section 7 for information on safe handling.
☐See section 8 for information on personal protection equipement.
☐See section 13 for disposal information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
☐Avoid formation of dust and aerosols.
☐Provide appropriate exhaust ventilation at places where dust is formed, for example using an horizontal flow hood.
☐Avoid prolonged or frequent exposure.

☐Wear protective clothing when risk exposure occurs (See section 8). Do not put into the eyes, the skin, the clothes.
☐Wash thoroughly after handling.
☐No smoking, eating or drinking in areas where the mixture is used.
☐Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities

☐Store at -20°C, in a dark place.
☐Keep the container tightly closed in a dry environment.

Specific end use(s)

☐In case of injection to animal for the production of antivenom, pay attention to any accidental auto-injection.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

CAS: 56-81-5

Glycerin (mist)
Cal/OSHA: PNOR PEL inhalation; NIOSH: See Appendix D REL inhalation
Glycerin (mist), Respirable fraction
Cal/OSHA: 5 mg/m3, PNOR PEL inhalation; OSHA: 5 mg/m3 PEL inhalation
Glycerin (mist), Total dust
Cal/OSHA: 10 mg/m3 , PNOR PEL inhalation; OSHA: 15 mg/m3 PEL inhalation

8.2 Appropriate engineering controls

☐Safety shower and eye wash.
☐Only handle in a hood.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Pictograms

Eye/face protection

☐Safety glasses

Skin protection

☐Handle with gloves:
o Rubber gloves (nitrile or low-protein, powder-free latex). Employees allergic to latex gloves should use nitrile gloves in preference.
o PVC gloves.

Body protection

☐Wear suitable protective clothing, such as laboratory coat or coveralls.
☐Protective shoe covers and head covering may be worn.
☐After contact with the product, all parts of the body that have been soiled must be washed.

Respiratory protection

IF CREATING DUST OR MIST:
☐Use a filtering half-mask in case of dust formation : type P3 (EN 149).
☐If the respirator is the sole means of protection, use a full-face supplied air respirator.

Environmental exposure controls
☐See section 6 for information on environmental precautions in case of accidental release.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance/form	Liquid
Odor	none
Odor threshold	No data available.
pH	No data available.
Melting point/freezing point	No data available.
Initial boiling point and boiling range	No data available.
Flash point	No data available.
Evaporation rate	No data available.
Flammability (solid, gas)	No data available.
Upper/lower flammability limits	No data available.
Upper/lower explosive limits	No data available.
Vapor pressure	No data available.
Vapor density	No data available.
Relative density	No data available.
Solubility(ies)	No data available.
Partition coefficient: n-octanol/water	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Viscosity	No data available.
Explosive properties	No data available.
Oxidizing properties	No data available.

Other safety information
No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available.

10.2 Chemical stability
☐Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available.

10.4 Conditions to avoid
No data available.

10.5 Incompatible materials
No data available.

10.6 Hazardous decomposition products
No data available.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
GLYCEROL
LC50 Oral - Rat - 12,600 mg/kg
LC50 Skin - Rabbit - >10,000 mg/kg

Daboia russelii russelii, Viperidae (Viperinae) snake venom
LD 50 Intravenous - mouse: 0.08 mg/kg
LD50 Intraperitoneal - Mouse - 0.40 mg/kg
LD50 Subcutaneous - Mouse - 4.75 mg/kg

Skin corrosion/irritation
No data available.

Serious eye damage/irritation
Venom coming into contact with eyes can cause sharp pain and eye corrosion

Respiratory or skin sensitization
Prolonged or repeated exposure may cause allergic reactions in sensitive individuals.

Germ cell mutagenicity
No data available.

Carcinogenicity
No data available.

Reproductive toxicity
No data available.

Summary of evaluation of the CMR properties
No data available.

STOT-single exposure
No data available.

STOT-repeated exposure
No data available.

Aspiration hazard
No data available.

Additional information
Information on likely routes of exposure
☐Inhalation: Prolonged or repeated exposure may cause allergic reactions in sensitive individuals.
☐Ingestion: May be harmful if swallowed.
☐Eyes: May cause sharp pain and eye corrosion. Venom coming into contact with eyes can cause intense conjunctivitis with a risk of corneal erosions, complicated by secondary infection, anterior uveitis and even permanent blindness.
☐Healthy skin: Prolonged or repeated exposure may cause allergic reactions in sensitive individuals.
☐Wounded skin: May be toxic if absorbed through the skin.
☐Accidental injection: May be fatal.

Symptoms related to the physical, chemical and toxicological characteristics (if accidentally injected)
Dangerousness: Severe envenoming likely, high lethality potential.
Untreated lethality rate: 10-20%
Local Effects: Marked local effects; pain, severe swelling, bruising, blistering, necrosis.

Local Necrosis: Uncommon but can be moderate to severe.
General Systemic Effects: Variable non-specific effects which may include headache, nausea, vomiting, abdominal pain, diarrhoea, dizziness, collapse or convulsions.
Neurotoxic Paralysis: Mild flaccid paralysis (ptosis & ophthalmoplegia) possible.
Myotoxicity: No case reports for this species, but related subspecies can cause systemic myolysis.
Coagulopathy & Haemorrhages: Very common, coagulopathy + haemorrhagins causing bleeding is major clinical effect.
Renal Damage: Common, renal failure is major clinical effect.
Cardiotoxicity: Rare, usually secondary.
Other: Shock secondary to fluid shifts due to local tissue injury is possible in severe cases. Anterior pituitary haemorrhage with panhypopituitarism can occur.

Delayed and immediate effects (if accidentally injected) (See section 4.2)
☐Immediate sharp pain when venom is injected.
☐Swelling appears about 30 minutes after injection, increasing in volume and stabilizing after 2 to 6 hours.
☐Progressive necrosis which may be visible one hour after the injection, and which lasts as long as venom is in the body.
☐Hemorrhagic syndrome of various intensity and cutaneous troubles (bruising after 24 to 48 hours, petechia…).
☐In the most severe cases of envenoming by Viperidae, installation of severe anemia in a fiew days, with hypovolemic choc resulting in patient's death.
Additional Information
☐To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Other dangerous properties can't be excluded.
☐Handle it with usual precautions for chemicals.

SECTION 12: Ecological information

Toxicity
No data available.

Persistence and degradability
No data available.

Bioaccumulative potential
No data available.

Mobility in soil
No data available.

Results of PBT and vPvB assessment
No data available.

Other adverse effects
WGK 2 (German Regulation): Hazard to waters.

SECTION 13: Disposal considerations

Disposal of the product
☐Waste must be disposed of in accordance with official regulations.
☐Contact a licensed professional waste disposal service to dispose of this material.
☐Do not contaminate the ground or water with waste, do not dispose of waste into the environment.
☐Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Disposal of contaminated packaging

☐Dispose of according to official regulations.

SECTION 14: Transport information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

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

New Jersey Right To Know Components
Common name: GLYCERIN
CAS number: 56-81-5

Pennsylvania Right To Know Components
Chemical name: GLYCERIN
CAS number: 56-81-5

SARA 302 Components
None present or none present in regulated quantities.

SARA 311/312 Hazards
Glycerin; threshold planning quantity: 500 lbs

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop. 65 Components
No ingredient regulated by CA Prop 65 present.

Massachusetts Right To Know Components
Chemical name: GLYCERIN
CAS number: 56-81-5

SECTION 16: Other information

16.1 Further information/disclaimer

DISCLAIMER: The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of information for their particular purposes. In no event shall Haematologic Technologies, Inc. be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, whatsoever arising, even if Haematologic Technologies, Inc. has been advised of the possibility of such damages.