Material Safety Data Sheet
RAS Gill 3 Hematoxylin

Section 1 - Chemical Product and Company Identification

MSDS Name:
RAS Gill 3 Hematoxylin

Catalog Numbers:
72604, 72611

Synonyms:
None Known.

Company Identification:
Richard Allan Scientific
4481 Campus Drive
Kalamazoo, MI 49008

Company Phone Number:
800-522-7270

Emergency Phone Number:
800-424-9300

CHEMTREC Phone Number, US:
(800) 424-9300

CHEMTREC Phone Number, Europe:
(202) 483-7616

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
<th>Hazard Symbols</th>
<th>Risk Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>65-70</td>
<td>231-791-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>107-21-1</td>
<td>Ethylene glycol</td>
<td>22-28</td>
<td>203-473-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10043-01-3</td>
<td>Aluminum sulfate</td>
<td>4-7</td>
<td>233-135-0</td>
<td></td>
<td></td>
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<tr>
<td>517-28-2</td>
<td>Hematoxylin dye</td>
<td>&lt;1.0</td>
<td>208-237-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7681-55-2</td>
<td>Iodic acid (hio3), sodium salt</td>
<td>&lt;1.0</td>
<td>231-672-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>78491-02-8</td>
<td>Diazolidinyl urea</td>
<td>&lt;1.0</td>
<td>278-928-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64-19-7</td>
<td>Acetic acid</td>
<td>&lt;1.0</td>
<td>200-580-7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: Purple liquid
Warning! Causes eye, skin, and respiratory tract irritation. May be harmful if swallowed or absorbed through the skin. May cause kidney damage. May cause central nervous system effects.
Target Organs: Kidneys, Central nervous system, Eyes, Skin, Mucous membranes

Potential Health Effects

Eye:
Causes eye irritation. May cause chemical conjunctivitis.

Skin:
Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May be harmful if absorbed through the skin.

Ingestion:
The lethal dose in adult humans for ethylene glycol is about 100 ml (1/3 cup). Swallowing may cause nausea, vomiting or diarrhea. Excessive exposure may cause CNS effects, cardiopulmonary effects (metabolic acidosis), and kidney failure.

Inhalation:
Causes respiratory tract irritation. May cause effects similar to those described for ingestion. If ethylene glycol is heated or misted in work areas that are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.

Chronic:
May cause kidney injury. Acetic acid can cause occupational asthma. One case of a delayed asthmatic response to glacial acetic acid has been reported in a person with bronchial asthma. Skin sensitization to acetic acid is rare, but has occurred. Repeated excessive exposure to ethylene glycol may cause irritation of the upper respiratory tract. In humans, effects have been reported on the central nervous system, including nystagmus (involuntary, rapid, rhythmic movement of the eyeball).

Section 4 - First Aid Measures

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin:
Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion:
Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation:
Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
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Notes to Physician:
Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media:
Use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature:
Not available

Explosion Limits:
Lower: Not available  Upper: Not available

Flash Point:
Not available

NFPA Rating:
(estimated) Health: 2; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information:
Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:
Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

Section 7 - Handling and Storage

Handling:
Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage:
Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls:
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
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Exposure Limits

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>None listed</td>
<td>None listed</td>
<td>None listed</td>
</tr>
<tr>
<td>Ethylene glycol</td>
<td>100 mg/m3 Ceiling</td>
<td>None listed</td>
<td>None listed</td>
</tr>
<tr>
<td></td>
<td>(aerosol only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum sulfate</td>
<td>2 mg/m3 TWA (as Al)</td>
<td>2 mg/m3 TWA (as Al)</td>
<td>None listed</td>
</tr>
<tr>
<td></td>
<td>(listed under Aluminum,</td>
<td>(listed under Aluminum,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>soluble salts)</td>
<td>soluble salts)</td>
<td></td>
</tr>
<tr>
<td>Hematoxylin dye</td>
<td>None listed</td>
<td>None listed</td>
<td>None listed</td>
</tr>
<tr>
<td>Iodic acid (hio3), sodium salt</td>
<td>None listed</td>
<td>None listed</td>
<td>None listed</td>
</tr>
<tr>
<td>Diazolidinyl urea</td>
<td>None listed</td>
<td>None listed</td>
<td>None listed</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>10 ppm TWA; 15 ppm STEL</td>
<td>10 ppm TWA; 25 mg/m3 TWA; 50 ppm IDLH</td>
<td>10 ppm TWA; 25 mg/m3 TWA;</td>
</tr>
</tbody>
</table>

OSHA Vacated PELs
Aluminum sulfate 2 mg/m3 TWA (as Al, listed under Aluminum) (listed under Aluminum, soluble salts)
Acetic acid: 10 ppm TWA; 25 mg/m3 TWA

Personal Protective Equipment

Eyes:
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:
Wear appropriate gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Color: Purple
Odor: Faint sweet odor
pH: No information found
Vapor Pressure: 32 mm Hg
Vapor Density: 1.1 (Air=1)
Evaporation Rate: 0.3 (Butyl acetate=1)
Viscosity: No information found
Boiling Point: 48.9°C
Freezing/Melting Point: No information found
Decomposition Temperature: No information found
Solubility in water: Soluble.
Specific Gravity/Density: 1.052 @ 21°C
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Molecular Formula: Solution
Molecular Weight: No information found

Section 10 - Stability and Reactivity

Chemical Stability:
Stable under normal temperatures and pressures.

Conditions to Avoid:
Incompatible materials

Incompatibilities with Other Materials
Strong oxidizing agents, strong acids, isocyanates, aliphatic amines, caustics

Hazardous Decomposition Products
Carbon monoxide, oxides of sulfur, carbon dioxide, aluminum oxide

Hazardous Polymerization
Has not been reported

Section 11 - Toxicological Information

RTECS:
CAS# 7732-18-5: ZC0110000
CAS# 107-21-1: KW2975000
CAS# 10043-01-3: BD1700000
CAS# 517-28-2: MH7875000
CAS# 7681-55-2: NN1400000
CAS# 78491-02-8: YS2717000
CAS# 64-19-7: AF1225000
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LD50/LC50:
- CAS# 7732-18-5:
  - Oral, rat: LD50 = >90 mL/kg.
- CAS# 107-21-1:
  - Draize test, rabbit, eye: 500 mg/24H Mild
  - Draize test, rabbit, eye: 100 mg/1H Mild
  - Draize test, rabbit, eye: 0.012 ppm/3D
  - Draize test, rabbit, eye: 1440 mg/6H Moderate
  - Oral, mouse: LD50 = 5500 mg/kg
  - Oral, rat: LD50 = 4700 mg/kg
  - Skin, rabbit: LD50 = 9530 uL/kg.
- CAS# 10043-01-3:
  - Draize test, rabbit, eye: 10 mg/24H Severe
  - Oral, mouse: LD50 = 6207 mg/kg.
- CAS# 517-28-2:
  - No information found
- CAS# 7681-55-2:
  - Oral, mouse: LD50 = 505 mg/kg.
- CAS# 76491-02-8:
  - Oral, mouse: LD50 = 3573 mg/kg
  - Oral, rat: LD50 = 2600 mg/kg
  - Skin, rabbit: LD50 = 2 gm/kg.
- CAS# 64-19-7:
  - Draize test, rabbit, skin: 50 mg/24H Mild
  - Inhalation, mouse: LC50 = 5620 ppm/1H
  - Oral, rat: LD50 = 3310 mg/kg
  - Skin, rabbit: LD50 = 1060 uL/kg.

Carcinogenicity:
- CAS# 7732-18-5: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
- CAS# 107-21-1: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
- CAS# 10043-01-3: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
- CAS# 517-28-2: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
- CAS# 7681-55-2: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
- CAS# 76491-02-8: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
- CAS# 64-19-7: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology:
- No information available.

Teratogenicity:
- An expert panel convened by the NTP’s Center for the Evaluation of Risks to Human Reproduction concluded 2/13/03 that developmental and reproductive risks stemming from exposure to the chemicals propylene glycol and ethylene glycol are negligible. No teratogenic effects were observed among the offspring of mice, rats, or rabbits that had been given very large doses of apple cider vinegar (containing acetic acid) during pregnancy. Acetic acid treatment of sucking rats (via maternal administration) was associated with abnormalities of behavioral testing.

Reproductive:
- Acetic acid effects on Fertility: male index, ill-rat TDL0=400 mg/kg.

Mutagenicity:
- Sister Chromatid Exchange: Human, Lymphocyte = 5 mmol/L.; Unscheduled DNA Synthesis: Administration onto the skin, mouse = 79279 ug/kg.; Cytogenetic Analysis: Hamster, Ovary = 10 mmol/L.
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Neurotoxicity:
No information available.

Other:
See actual entry in RTECS for complete information.

Section 12 - Ecological Information

No information found

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Part 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P Series Wastes
None of the components are on this list.

RCRA U Series Wastes
None of the components are on this list.

Section 14 - Transport Information

<table>
<thead>
<tr>
<th>US DOT</th>
<th>Canadian TDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name:</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Hazard Class:</td>
<td></td>
</tr>
<tr>
<td>UN Number:</td>
<td></td>
</tr>
<tr>
<td>Packing Group:</td>
<td></td>
</tr>
</tbody>
</table>

USA RQ: CAS# 107-21-1: 5000 lb final RQ; 2270 kg final RQ

USA RQ: CAS# 10043-01-3: 5000 lb final RQ; 2270 kg final RQ

USA RQ: CAS# 64-19-7: 5000 lb final RQ; 2270 kg final RQ
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Section 15 - Regulatory Information

US Federal

TSCA
CAS# 7732-18-5 is listed on the TSCA Inventory.
CAS# 107-21-1 is listed on the TSCA Inventory.
CAS# 10043-01-3 is listed on the TSCA Inventory.
CAS# 517-28-2 is listed on the TSCA Inventory.
CAS# 7681-55-2 is listed on the TSCA Inventory.
CAS# 78491-02-8 is listed on the TSCA Inventory.
CAS# 64-19-7 is listed on the TSCA Inventory.

Health and Safety Reporting List
None of the components are on this list.

Chemical Test Rules
None of the components are on this list.

TSCA Section 12b
None of the components are on this list.

TSCA Significant New Use Rule (SNUR)
None of the components are on this list.

CERCLA Hazardous Substances and corresponding RQs
CAS# 107-21-1: 5000 lb final RQ; 2270 kg final RQ
CAS# 10043-01-3: 5000 lb final RQ; 2270 kg final RQ
CAS# 64-19-7: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances
None of the components are on this list.

SARA Hazard Categories
CAS# 107-21-1: immediate, delayed.
CAS# 10043-01-3: immediate, delayed.
CAS# 7681-55-2: immediate, fire.
CAS# 64-19-7: immediate, delayed, fire.

SARA Section 313
This material contains Ethylene glycol (CAS# 107-21-1, 22-28%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Clean Air Act - Hazardous Air Pollutants (HAPs)
CAS# 107-21-1 is listed as a hazardous air pollutant (HAP).

Clean Air Act - Class 1 Ozone Depleters
None of the components are on this list.

Clean Air Act - Class 2 Ozone Depleters
None of the components are on this list.

Clean Water Act - Hazardous Substances
CAS# 10043-01-3 is listed as a Hazardous Substance under the CWA.
CAS# 64-19-7 is listed as a Hazardous Substance under the CWA.

Clean Water Act - Priority Pollutants
None of the components are on this list.
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Clean Water Act - Toxic Pollutants
None of the components are on this list.

OSHA - Highly Hazardous
None of the components are on this list.

OSHA - Specifically Regulated Chemicals
None of the components are on this list.

US State

State Right to Know
Ethylene glycol can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
Aluminum sulfate can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, (listed as Aluminum, soluble salts), Massachusetts.
Acetic acid can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65
None of the components are on this list.

California No Significant Risk Level
None of the components are on this list.

European/International Regulations

European Labelling in Accordance with EC Directives:
- Hazard Symbols: XN
- Risk Phrases: R22 Harmful if swallowed,
  R36/37/38 Irritating to eyes, respiratory system and skin
- Safety Phrases: S23 Do not inhale gas/fumes/vapour/spray,
  S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice,
  S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
No information found

United Kingdom Occupational Exposure Limits
No information found

United Kingdom Maximum Exposure Limits
No information found

Canadian DSL/NDSL
CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 107-21-1 is listed on Canada's DSL List.
CAS# 10043-01-3 is listed on Canada's DSL List.
CAS# 517-28-2 is listed on Canada's DSL List.
CAS# 7681-55-2 is listed on Canada's DSL List.
CAS# 78491-02-8 is listed on Canada's DSL List.

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CAS# 64-19-7 is listed on Canada's DSL List.

Canadian WHMIS Classifications
This product has a WHMIS classification of D1B, D2B. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List
CAS# 107-21-1 is listed on the Canadian Ingredient Disclosure List.
CAS# 10043-01-3 (listed as Aluminum, soluble salts) is listed on the Canadian Ingredient Disclosure List.
CAS# 64-19-7 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Other Information

Color information has been
MSDS Creation Date: May 6, 2008
Revision Date: May 6, 2008

Revisions were made in Sections:
9, 14

This MSDS is intended for review and guidance in the receipt, storage, handling, use and disposal of product purchased from us, and for no other purpose. Use this product only as directed and in accordance with applicable instructions and warnings provided with the product. Please consult your institution's policies regarding use of this product. If you have obtained this MSDS other than in connection with the supply of this product from us, this MSDS should be consulted for general information only, and should not be relied upon for any purpose. As with the use of all hazardous materials, you should in all instances follow the guidance of the MSDS provided or available with the specific product purchased.