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

1.1. Product identifier

HAP 310 Alkylpyridines Mixture

Synonyms:
HAP; High-boiling Alkyl Pyridines; HP Alkylpyridines

Chemical Abstracts Registry No:
68391-11-7

REACH Registration Number:
Not applicable.

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

chemical intermediate

1.3. Details of the supplier of the safety data sheet

Vertellus Integrated Pyridines LLC
201 North Illinois Street, Suite 1800,
Indianapolis, IN 46204
317-247-8141

e-mail Address:

sds@vertellus.com

1.4. Emergency telephone number

Vertellus: 1-317-247-8141
CHEMTREC (USA): 1-800-424-9300 (collect calls accepted)
CHEMTREC (International): 1-703-527-3887 (collect calls accepted)
NRCC (China): +86 532 83889090

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

(According to Regulation (EC) No 1272/2008)

Acute Toxicity Oral Category 4
Skin Irritation Category 2
Serious Eye Irritation Category 2A
Carcinogenicity Category 1B
Flammable Liquids Category 4

(According to Directive 67/548/EEC)

Symbol: Xn, Xi, Carc. Cat. 2
Risk Phrases: R22: Harmful if swallowed.
R45: May cause cancer.
R36/38: Irritating to eyes and skin.
Safety Phrases: S53: Avoid exposure - obtain special instruction before use.
S45: In case of accident or if you feel unwell, seek medical advice immediately.
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

2.2. Label elements

Hazard Symbols (Pictogram):

Signal Word:
Danger

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Hazard Precautions:
- H302 - Harmful if swallowed.
- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.
- H350 - May cause cancer.

Prevention Precautionary Statements:
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P281 - Use personal protective equipment as required.
- P201 - Obtain special instructions before use.
- P270 - Do not eat, drink or smoke when using this product.

First Aid Precautionary Statements:
- P337+P313 - If eye irritation persists: Get medical advice/attention.
- P308+P313 - IF exposed or concerned: Get medical advice/attention.
- P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
- P362 - Take off contaminated clothing and wash before reuse.
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. Other hazards
Other Hazards: Not applicable.
Mixture Statement: Up to 20% of this mixture consists of ingredient(s) of unknown acute toxicity.

SECTION 3: Composition/information on ingredients

3.1. Substances or 3.2. Mixtures

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>Concentration (weight %)</th>
<th>EC Number</th>
<th>CLP Inventory/Annex VI</th>
<th>EU DSD Classification (67/548/EEC)</th>
<th>EU CLP Classification (1272/2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyridine, alkyl derivatives</td>
<td>68391-11-7</td>
<td>80 – 100%</td>
<td>269-929-9</td>
<td>648-029-00-3</td>
<td>Not available.</td>
<td>Note J</td>
</tr>
<tr>
<td>Undefined neutral oils</td>
<td>MIXTURE</td>
<td>0 – 10%</td>
<td>Not listed.</td>
<td>Not listed.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Undefined quinolines, indoles, pyrroles and pyrimidines</td>
<td>MIXTURE</td>
<td>0 – 10%</td>
<td>Not listed.</td>
<td>Not listed.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Quinoline</td>
<td>91-22-5</td>
<td>0 – 0.5%</td>
<td>202-051-6</td>
<td>613-281-00-5</td>
<td>Carc. Cat. 2; Muta. Cat. 3, N, Xi, Xn R45-R68-R51/53-R36/38-R21/22</td>
<td>Aquatic Chronic 2; H411 Acute Tox. 4; H312 Acute Tox. 4; H302 Carc. 1B; H350 Eye Irr. 2; H319 Skin Irr. 2; H315 Muta. 2; H341</td>
</tr>
</tbody>
</table>

NOTE: See Section 8 for exposure limit data for these ingredients. See Section 15 for trade secret information (where applicable). See Section 16 for the full text of the R-phrases above.

SECTION 4: First aid measures

4.1. Description of first aid measures

Skin Contact: Wash exposed area twice with soap and water. The exposed area should be examined by medical personnel if irritation or pain persists after the area has been washed.

Eye Contact: Rinse eyes immediately with large amounts of water for at least 15 minutes, occasionally lifting the eyelids. GET MEDICAL ATTENTION.
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Inhalation: Remove from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. GET MEDICAL ATTENTION.

Ingestion: Do NOT induce vomiting. Give oxygen if respiration is shallow. GET MEDICAL ATTENTION. Do not give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Acute: Alkylpyridine derivatives are generally corrosive or strongly irritating to skin, eyes and mucous membranes. Vapors may be irritating to the respiratory tract. These materials may be readily absorbed through the skin and exhibit varying degrees of toxicity depending on their chemical structures. Extended exposure (e.g., from saturated clothing) may lead to severe skin irritation and/or systemic poisoning. Symptoms may include headache, dizziness, nausea, nervousness, weakness, narcosis, sleeplessness, loss of appetite and possibly loss of consciousness. Symptoms seen after ingestion or inhalation overexposures are expected to be essentially the same as those listed previously. Ingestion is not likely to be a primary route of exposure.

Delayed Effects: None known.

4.3. Indication of any immediate medical attention and special treatment needed

Note to Physician: No specific indications. Treatment should be based on the judgment of the physician in response to the reactions of the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Appropriate Extinguishing Media: Water fog, foam, carbon dioxide, or dry chemical

5.2. Special hazards arising from the substance or mixture

Hazardous Products of Combustion: Toxic fumes may be released upon thermal decomposition (cyanides, nitrogen oxides, carbon monoxide).

Potential for Dust Explosion: Not applicable.

Special Flammability Hazards: Severe explosion hazard in the form of vapor (within flammability limits) when exposed to heat, flame or static discharge. Alkylpyridines liquid conductivity testing (BS 5958, ASTM D2624) results indicate a result of 12,000,000 pS/m. A liquid whose conductivity is greater than 10,000 pS/m is generally considered to be conductive.

5.3. Advice for firefighters

Basic Fire Fighting Guidance: Wear self-contained breathing apparatus and full protective clothing (i.e., Bunker gear). Skin and eye contact should be avoided. Normal fire fighting procedures may be used.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuation Procedures: Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Special Instructions: 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.

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

6.3. Methods and material for containment and cleaning up
Remove all ignition sources. Ventilate the area of spill or leak. Wear protective equipment during clean-up. For small spills, use suitable absorbent material and collect for later disposal. For large spills, the area may require diking to contain the spill. Material can then be collected (eg., suction) for later disposal. After collection of material, flush area with water. Dispose of the material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws.

6.4. Reference to other sections
Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent and clean up material disposal instructions.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for Unique Hazards: Not applicable.
Practices to Minimize Risk: 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.
Special Handling Equipment: Not applicable.

7.2. Conditions for safe storage, including any incompatibilities
Storage Precautions & Recommendations: Maintain dry, ventilated conditions for storage. Protect containers against physical damage. Outside or detached storage is preferable. Inside storage should be in standard flammable liquids storage room or cabinet. Keep away from strong acids and oxidizing agents. Should be periodically inspected.
Dangerous Incompatibility Reactions: Avoid contact with strong acids and oxidizing agents.
Incompatibilities with Materials of Construction: May cause some forms of plastics and rubbers to deteriorate.

7.3. Specific end use(s)
If a chemical safety assessment has been completed an exposure scenario is attached as an annex to this Safety Data Sheet. Refer to this annex for the specific exposure scenario control parameters for uses identified in subsection 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Country: Latvia
Occupational Exposure Limit: 0.1 mg/m³ as 8-hour time-weighted average (Quinoline)
Air Monitoring Method: No data available.

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8.2. Exposure controls
Also see the annex to this SDS (if applicable) for specific exposure scenario controls.

Other Engineering Controls: All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided.

Personal Protective Equipment: Use NIOSH approved chemical cartridge-respirator or supplied air breathing equipment. Chemical goggles should be worn at all times; use face shields as conditions warrant. Impervious clothing and boots. Neoprene or PVC-coated gloves.


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, State & Odor (ambient temperature): Yellow to dark brown liquid with a strong, disagreeable odor.

Molecular Formula: Mixture

Molecular Weight: Mixture

Vapor Pressure: No data available.

Evaporation Rate: Not determined

Specific Gravity or Density: 0.970 g/mL

Vapor Density (air = 1): No data available.

Boiling Point: approximately 204 - 361 °C

Freezing / Melting Point: No data available.

Solubility in Water: Slightly soluble, < 15% @ 20°C

Octanol / Water Coefficient: No data available.

pH: No data available (basic)

Odor Threshold: No data available.

Viscosity: No data available.

Autoignition Temperature: No data available.

Flash Point and Method: 199°F (93°C) Tag Closed Cup

Flammable Limits: No data available.

Flammability (solid, gas): Not applicable.

Decomposition Temperature: No data available.

Explosive Properties: No data available.

Oxidizing Properties: No data available.

9.2. Other information
Not applicable.

SECTION 10: Stability and reactivity

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10.1. Reactivity
Not classified as dangerously reactive.

10.2. Chemical stability
Stable

10.3. Possibility of hazardous reactions
Will not occur.

10.4. Conditions to avoid
Avoid static discharge and uncontrolled exposure to high temperatures.

10.5. Incompatible materials
Avoid contact with strong acids and oxidizing agents.

10.6. Hazardous decomposition products
Have not been determined.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect Type</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Oral LD$_{50}$</td>
<td>LD$_{50}$ (rat) $&gt; 1000$ mg/kg</td>
<td>Pyridine, alkyl derivatives</td>
</tr>
<tr>
<td>Acute Dermal LD$_{50}$</td>
<td>LD$_{50}$ (rabbit) $&gt; 2000$ mg/kg</td>
<td>Pyridine, alkyl derivatives</td>
</tr>
<tr>
<td>Acute Inhalation LC$_{50}$</td>
<td>No data available.</td>
<td></td>
</tr>
<tr>
<td>Skin Irritation</td>
<td>Irritating to the skin.</td>
<td></td>
</tr>
<tr>
<td>Eye Irritation</td>
<td>Causes eye irritation.</td>
<td></td>
</tr>
<tr>
<td>Skin Sensitization</td>
<td>No data available.</td>
<td></td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>No data available.</td>
<td></td>
</tr>
<tr>
<td>Reproductive / Developmental Toxicity:</td>
<td>No data available.</td>
<td></td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Contains trace amounts of quinoline as an impurity, which has been classified by the European Union as a Category 1B carcinogen.</td>
<td></td>
</tr>
<tr>
<td>Target Organs</td>
<td>Prolonged or repeated overexposure may lead to liver, kidney or central nervous system effects.</td>
<td></td>
</tr>
<tr>
<td>Primary Route(s) of Exposure</td>
<td>Skin contact and absorption, eye contact, and inhalation. Ingestion is not likely to be a primary route of exposure.</td>
<td></td>
</tr>
<tr>
<td>Most important symptoms and effects, both acute and delayed</td>
<td>Alkylpyridine derivatives are generally corrosive or strongly irritating to skin, eyes and mucous membranes. Vapors may be irritating to the respiratory tract. These materials may be readily absorbed through the skin and exhibit varying degrees of toxicity depending on their chemical structures. Extended exposure (e.g., from saturated clothing) may lead to severe skin irritation and/or systemic poisoning. Symptoms may include headache, dizziness, nausea, nervousness, weakness, narcosis, sleeplessness, loss of appetite and possibly loss of consciousness. Symptoms seen after ingestion or inhalation overexposures are expected to be essentially the same as those listed previously. Ingestion is not likely to be a primary route of exposure. Delayed Effects: None known.</td>
<td></td>
</tr>
<tr>
<td>Additive or Synergistic effects</td>
<td>None known.</td>
<td></td>
</tr>
<tr>
<td>Additional Toxicity Information</td>
<td>Oral and dermal LD$_{50}$ values were determined on a related product and are expected to be representative of this product.</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 12: Ecological information

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12.1. Toxicity
No data available.

12.2. Persistence and degradability
No data available

12.3. Bioaccumulative potential
No data available

12.4. Mobility in soil
No data available

12.5. Results of PBT and vPvB assessment
No data available.

12.6. Other adverse effects
No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
US EPA Waste Number: Non-Hazardous
Waste Classification: (per US regulations) The waste may be classified as "special" or hazardous per State regulations.
Waste Disposal:
NOTE: Generator is responsible for proper waste characterization. State hazardous waste regulations may differ substantially from federal regulations. 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.

SECTION 14: Transport information

The following information applies to all shipping modes (DOT/IATA/ICAO/IMDG/ADR/RID/ADN), unless otherwise indicated:

14.1. UN number Not applicable 14.2. UN proper shipping name Chemicals, n.o.s. (Pyridine, alkyl derivatives)
14.3. Transport hazard class(es) Not applicable 14.4. Packing group Not applicable
14.5. Environmental hazards Not applicable
14.6. Special precautions for user No data available.
NA Emergency Guidebook Numbers: Not applicable
IMDG EMS: Not applicable
14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Category Y

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Chemical Inventory Lists:
TSCA: Listed
Canada(DSL/NDSL): DSL
Korea: KE-29931
EINECS: 269-929-9
Japan: (9)-2583
Australia: Listed

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China: Listed
Taiwan: Listed
Philippines: Listed
New Zealand: Listed

WHMIS Classification:
- Class B, Division 3: Combustible Liquid.
- Class D, Division 2, Subdivision B: Irritant.
- Class D, Division 2, Subdivision A: Very Toxic Material.
- Class D, Division 2, Subdivision B: Toxic Material.

SARA 313:
All known components less than de minimis levels.

Reportable Quantities:
May contain quinoline (RQ = 5000 lbs.) at levels up to 0.5%.

State Regulations:
- This product contains chemicals known to the State of California to cause cancer (Quinoline).
- This product contains chemicals listed on the Massachusetts Substance List for Right-to-Know Law (Quinoline).
- This product contains chemicals listed on the Minnesota Hazardous Substances List (Quinoline).
- This product contains chemicals listed on the New Jersey Department of Health Hazard Right-to-Know Program Hazardous Substance List (Quinoline).
- This product contains chemicals listed on the Pennsylvania Department of Labor and Industry Hazardous Substance List (Quinoline).
- This product contains chemicals listed on the New York State List of Hazardous Substances (Quinoline).

Other Regulatory Listings:
- Note J applies to pyridine, alkyl derivatives (or mixtures containing this substance) under directive (EC) 1272/2008, "The classification as a carcinogen or mutagen need not apply if it can be shown that the substance contains less than 0.1 % w/w benzene (EINECS No 200-753-7). This note applies only to certain complex coal- and oil derived substances in Part 3."

HMIS:
- HEALTH: *3
- FLAMMABILITY: 2
- REACTIVITY: 0

NFPA:
- 2
- 2
- 0

15.2. Chemical safety assessment
Not applicable.

SECTION 16: Other information

Full text of R phrases in Section 3:
- R45: May cause cancer.
- R68: Possible risk of irreversible effects.
- R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R36/38: Irritating to eyes and skin.
- R21/22: Harmful in contact with skin and if swallowed.

Classification Method:
Bridging principle - Substantially similar mixtures

Training Advice:
Not applicable.

Legend of Abbreviations:
- ACGIH = American Conference on Governmental Industrial Hygienists.
- CAS = Chemical Abstracts Service.
- DSL/NDSL = Domestic Substances List/Non-Domestic Substances List.
- EC = European Community.
- EINECS = European Inventory of Existing Commercial Chemical Substances.
- LD = Lethal Dose.
- NIOSH = National Institute of Occupational Safety and Health.
- NTP = National Toxicology Program.
- OSHA = Occupational Safety and Health Administration.
- PEL = Permissible Exposure Limit.

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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.

Revision Date: 07 Apr 2014  
Original Date of Issue: 22 April 1985

Issued by: Regulatory Management Department  
Email: SDS@Vertellus.com

Revision Details: Revised format for GHS/REACH. Revised data in sections 1, 2, 3, 4, 8, 11, 12 and 15.