



Safety Data Sheet (SDS) International (GHS)

Revision date: 2019-08-21

SECTION 1: Identification

Product identifiers:

Product trade name: Kalama* Cinnamic Aldehyde, FCC
Company product number: CINNALD
Other means of identification: Cinnamal, Cinnamaldehyde, 3-Phenylpropenal

Recommended use of the chemical and restrictions on use:

Uses: Organic liquid
Restrictions on use: None identified

Details of the supplier:

Manufacturer/Supplier: Emerald Performance Materials, LLC
1499 SE Tech Center Place, Suite 300
Vancouver, WA 98683
United States
Telephone: +1-360-954-7100
FAX: +1-360-954-7201
For further information about this SDS: Email: product.compliance@emeraldmaterials.com

Emergency telephone number:

ChemTel (24 hours): 1-800-255-3924 (USA); +1-813-248-0585 (outside USA);
1-300-954-583 (Australia); 000-800-100-4086 (India).

SECTION 2: Hazard(s) identification

Classification of the substance or mixture:

Acute Toxicity, Oral, category 5, H303
Acute Toxicity, Dermal, category 4 , H312
Skin Irritation, category 2, H315
Skin Sensitizer, category 1, H317
Eye Irritation, category 2, H319
Hazardous to the aquatic environment, Acute, category 2, H401

Label elements:

Hazard pictogram(s):



Signal word:

Warning

Hazard statements:

H303 May be harmful if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H401 Toxic to aquatic life.

Precautionary statements:

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash skin thoroughly after handling.

SDS Name: Kalama* Cinnamic Aldehyde, FCC

- P272 Contaminated work clothing should not be allowed out of the workplace.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312 Call a POISON CENTRE/doctor if you feel unwell.
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P362+P364 Take off contaminated clothing and wash it before reuse.
- P501 Dispose of contents/container in accordance with local, regional and international regulations.

Supplemental information: No Additional Information

Classification and hazards statements are listed according to the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Regulations in individual countries/regions may determine which classifications and hazard statements are applicable based on adopted hazard classes and categories. Precautionary statements are listed according to the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Annex III. Regulations in individual countries/regions may determine which statements are required on the product label. See product label for specifics.

Other hazards: No Additional Information

See Section 11 for toxicological information.

SECTION 3: Composition/information on ingredients

Substance:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>
000104-55-2	Cinnamaldehyde	99-100

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

SECTION 4: First-aid measures

Description of first aid measures:

General: If irritation or other symptoms occur or persist from any route of exposure, remove the affected individual from the area: see a physician/get medical attention.

Eye contact: Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye. Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion. If eye irritation persists: Get medical advice/attention.

Skin contact: Immediately remove contaminated clothing and shoes. Wash the affected area with plenty of soap and water until no evidence of the chemical remains (at least 15-20 minutes). Launder clothing before reuse. If skin irritation occurs: Get medical advice/attention.

Inhalation: If affected, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out the mouth with water. Get medical attention immediately.

Protection of first aid responders: Wear proper personal protective clothing and equipment.

Most important symptoms and effects, both acute and delayed: Irritation. Pre-existing skin problems may be aggravated by prolonged or repeated contact. See section 11 for additional information.

Indication of any immediate medical attention and special treatment needed, if necessary: Treat symptomatically.

SECTION 5: Fire-fighting measures

Extinguishing media:

Suitable: Use water spray, ABC dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unsuitable: None known.

Special hazards arising From the chemical:

Unusual fire/explosion hazards: Product is not considered a fire hazard, but will burn if ignited. Closed container may rupture (due to build up in pressure) when exposed to extreme heat. Combustion hazard: waste soaked with this product may heat to temperatures causing self-ignition if improperly discarded. Many aldehydes readily oxidize exothermically when exposed to air. Any clean up materials, like rags, towels, etc. should be washed with water with mild soap or laundered with mild detergent before proper disposal to avoid the potential temperature rise from oxidation.

Hazardous combustion products: Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See section 10 (Hazardous decomposition products) for additional information.

Special protective equipment and precautions for fire-fighters: Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

See section 9 for additional information.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: See Section 8 for recommendations on the use of personal protective equipment. If spilled in an enclosed area, ventilate. Eliminate ignition sources. Personal Protective Equipment must be worn.

Environmental precautions: Do not flush liquid into public sewer, water systems or surface waters.

Methods and materials for containment and cleaning up: Contain by diking with sand, earth or other non-combustible material. Wear proper personal protective clothing and equipment. Absorb spill with an inert material. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and launder before reuse. Combustion hazard: waste soaked with this product may heat to temperatures causing self-ignition if improperly discarded. Immediately after use, rags, steel wool or other waste should be wetted or cleaned with water with mild soap or laundered with mild detergent or placed into a water-filled metal container before proper disposal.

SECTION 7: Handling and storage

Precautions for safe handling: As with any chemical product, use good laboratory/workplace procedures. Do not cut, puncture, or weld on or near the container. Do not get in eyes, on skin or clothing. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid inhalation of aerosol, mist, spray, fume or vapor. Avoid drinking, tasting, swallowing or ingesting this product. Wash contaminated clothing before reuse. Provide eyewash fountains and safety showers in the work area.

Conditions for safe storage, including any incompatibilities: Store cool and dry, under well-ventilated conditions. Keep away from heat, sparks and open flames. Store this material away from incompatible substances (see section 10). Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Do not reuse empty container without commercial cleaning or reconditioning. Empty container contains residual product which may exhibit hazards of product. Product can easily oxidize. It is recommended that opened containers be padded with nitrogen.

SECTION 8: Exposure controls / personal protection

Control parameters:

Occupational exposure limits (OEL):

Chemical Name	ACGIH - TWA/Ceiling	ACGIH - STEL		
Cinnamaldehyde	N/E	N/E		
Chemical Name	Australia	New Zealand	Korea	Taiwan
Cinnamaldehyde	N/E	N/E	N/E	N/E
Chemical Name	Japan ISHL	Japan JSOH	Indonesia	Malaysia
Cinnamaldehyde	N/E	N/E	N/E	N/E
Chemical Name	Philippines	Singapore		
Cinnamaldehyde	N/E	N/E		

SDS Name: Kalama* Cinnamic Aldehyde, FCC

Chemical Name

Philippines

Singapore

N/E=Not established (no exposure limits established for the listed substances for listed country/region/organization).

Exposure controls:

Appropriate engineering controls: Always provide effective general and, when necessary, local exhaust ventilation to draw spray, aerosol, fume, mist and vapor away from workers to prevent routine inhalation. Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the SDS.

Individual protection measures, such as personal protective equipment:

Eye/face protection: Safety glasses or goggles required.

Skin and body protection: Wear chemical resistant (impervious) gloves. Wear chemical resistant protective clothing. Use good laboratory/workplace procedures including personal protective clothing: labcoat, safety glasses and protective gloves.

Respiratory protection: Wear an approved respirator (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor exceed the applicable exposure limit(s) of any chemical substance listed in this SDS. Organic vapor filter (Type A).

Further information: Eyewash fountains and safety showers are recommended in the work area.

SECTION 9: Physical and chemical properties

Form:	Liquid	pH:	Not Available
Appearance:	Clear, Pale yellow	Relative density:	1.046-1.050 (25°C)
Odor:	Cinnamon-like	Partition coefficient (n-octanol/water):	1.9
Odor threshold:	Not Available	% Volatile by weight:	100%
Solubility in water:	1084 mg/L @ 20°C	VOC:	100%
Evaporation rate:	<1	Boiling point °C:	252 °C
Vapor pressure:	0.03 mm Hg @ 20°C	Boiling point °F:	486 °F
Vapor density:	4.6 (Air=1)	Flash point:	110 °C (230 °F) Tag Closed Cup
Viscosity:	Not Available	Auto-ignition temperature:	Not Available
Melting point/Freezing point:	-7.5°C (18.5°F)	Flammability (solid, gas):	Not Applicable (liquid)
Oxidizing properties:	Not oxidizing	Flammability or explosive limits:	LFL/LEL: Not Available
Explosive properties:	Not explosive		UFL/UEL: Not Available
Decomposition temperature:	Not Available	Surface tension:	38.962 mN/m @ 25°C (estimated)

Other information: Amounts specified are typical and do not represent a specification.

SECTION 10: Stability and reactivity

Reactivity: None known.

Chemical stability: This product is stable. Readily undergoes oxidation by air.

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Avoid exposure to air, moisture, ignition sources and elevated temperatures.

Incompatible materials: Avoid strong bases and oxidizing agents. Avoid contact with amines. May ignite after a delay period in contact with sodium hydroxide.

Hazardous decomposition products: Carbon dioxide and carbon monoxide.

SECTION 11: Toxicological information

SDS Name: Kalama* Cinnamic Aldehyde, FCC

Information on likely routes of exposure:

General: Caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure.

Eyes: Causes serious eye irritation.

Skin: Harmful in contact with skin. May cause allergic skin reaction. Causes skin irritation.

Inhalation: Inhalation may cause irritation of the respiratory tract and mucous membranes.

Ingestion: May be harmful if swallowed. Ingestion may cause irritation.

Acute toxicity information: Harmful in contact with skin - Category 4. May be harmful if swallowed - Category 5.

Chemical Name	Inhalation LC50	Species	Oral LD50	Species	Dermal LD50	Species
Cinnamaldehyde	757 mg/L (4 hours, vapor, estimated)	Rat/ adult	2220 mg/kg	Rat/ adult	1160 mg/kg	Guinea Pig/ adult

Skin corrosion/irritation: Causes skin irritation - Category 2.

Chemical Name	Skin irritation	Species
Cinnamaldehyde	Moderate irritant	Rabbit/ adult

Serious eye damage/irritation: Causes serious eye irritation - Category 2 (2A).

Chemical Name	Eye irritation	Species
Cinnamaldehyde	Moderate irritant	Rabbit/ adult

Respiratory or skin sensitization: Skin sensitization - Category 1.

Chemical Name	Skin sensitisation	Species
Cinnamaldehyde	Sensitizer	Guinea Pig/ adult

Carcinogenicity: Not classified (based on available data, the classification criteria are not met).

Germ cell mutagenicity: Not classified (based on available data, the classification criteria are not met). CINNAMALDEHYDE: Mostly negative results were obtained in bacterial test systems for mutagenic or genotoxic activity with some weakly positive results. Evidence of genotoxic activity was observed in isolated mammalian cells with the cinnamaldehyde producing chromosome aberrations and/or mutations in the respective test systems regardless of the presence or absence of metabolic activation. However, the in vitro activity did not translate into mutagenic, clastogenic, or genotoxic activity in vivo.

Reproductive toxicity: Not classified (based on available data, the classification criteria are not met). CINNAMALDEHYDE: Repeated exposure via the oral route indicate an effect on body weight and toxicity to multiple organs (forestomach in rats and mice and liver, kidney, testicular atrophy in rats). Developmental toxicity data suggest that rats are more sensitive than mice. Developmental effects in rats included decreased ossification of the cranium and tympanic bulla, increased evidence of dilated pelvis/reduced papilla in kidney, dilated ureter and incidences of hypoplastic/dysplastic kidneys.

Specific target organ toxicity (STOT) - single exposure: Not classified (based on available data, the classification criteria are not met).

Specific target organ toxicity (STOT) - repeated exposure: Not classified (based on available data, the classification criteria are not met). CINNAMALDEHYDE: Repeated dose toxicity study: LOAEL (Lowest-Observed-Adverse-Effect-Level), oral, rat - 470 mg/kg bw/day; LOAEL, dermal, mouse - 750 mg/kg bw/day. Repeated exposure via the oral route indicate an effect on body weight and toxicity to multiple organs (forestomach in rats and mice and liver, kidney, testicular atrophy in rats).

Aspiration hazard: Not classified (based on available data, the classification criteria are not met).

Other toxicity information: No additional information available.

SECTION 12: Ecological information

Ecotoxicity:

Chemical Name	Species	Acute	Acute	Chronic
Cinnamaldehyde	Fish	LC50 >3.5 mg/L (96 hours)	N/E	N/E
Cinnamaldehyde	Invertebrates	EC50 1.20-7.05 mg/L (48 hours)	EC50 3.1 mg/L(24 hours)	N/E
Cinnamaldehyde	Algae	EC50 6.87 mg/L (72 hours)	EC50 7.55 mg/L(96 hours)	N/E
Cinnamaldehyde	Micro-organisms	EC50 71 mg/L (3 hours)		

Persistence and degradability:

SDS Name: Kalama* Cinnamic Aldehyde, FCC

Chemical Name
Cinnamaldehyde

Biodegradation
Readily biodegradable (weight of evidence)

Bioaccumulative potential:

Chemical Name
Cinnamaldehyde

Bioconcentration Factor (BCF)
8.3 (estimated)

Log Kow
1.83 @ 27°C

Mobility in soil:

Chemical Name
Cinnamaldehyde

Mobility in soil (Koc/Kow)
29.456 L/kg @ 20°C (estimated)

Other adverse effects: No additional information available.

SECTION 13: Disposal considerations

Dispose of unused contents (incineration) in accordance with national and local regulations. Dispose of container in accordance with national and local regulations. Ensure the use of properly authorized waste management companies, where appropriate.

See Section 8 for recommendations on the use of personal protective equipment.

SECTION 14: Transport information

The information below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions.

UN number: N/A

UN proper shipping name:

Not regulated - See Bill of Lading for Details

Transport hazard class(es):

U.S. DOT hazard class: N/A

Canada TDG hazard class: N/A

Europe ADR/RID hazard class: N/A

IMDG Code (ocean) hazard class: N/A

ICAO/IATA (air) hazard class: N/A

A "N/A" listing for the hazard class indicates the product is not regulated for transport by that regulation.

Packing group: N/A

Environmental hazards:

Marine pollutant: Not Applicable

Hazardous substance (USA): Not Applicable

Special precautions for user: Not Applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:

Not Applicable

SECTION 15: Regulatory information

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

Japan regulations:**Japan Industrial Safety and Health Law:**

<u>Chemical name</u> No subject chemicals	<u>Category</u>
--	-----------------

Japan Fire Service Law:

<u>Chemical name</u> Cinnamaldehyde	<u>Category</u> Group 4 - Flammable liquids
--	--

Japan Poisonous and Deleterious Substances:

<u>Chemical name</u> No subject chemicals	<u>Category</u>	<u>Threshold</u>
--	-----------------	------------------

Japan Prevention of Marine Pollution and Disaster:

<u>Chemical name</u> Cinnamaldehyde	<u>Category</u> Noxious Category Y
--	---------------------------------------

Japan Chemical Substances Control Law:

<u>Chemical name</u> No subject chemicals	<u>Category</u>	<u>Notes</u>
--	-----------------	--------------

Korean regulations:**Korea Industrial Safety and Health Act:**

<u>Chemical name</u> No subject chemicals	<u>Category</u>	<u>Threshold</u>
--	-----------------	------------------

Korea Act on Registration and Evaluation of Chemical Substances (K-REACH) - Substances subject to registration:

No subject chemicals

Korea Chemical Control Act (CCA):

<u>Chemical name</u> No subject chemicals	<u>Category</u>	<u>Code</u>	<u>Threshold</u>
--	-----------------	-------------	------------------

Korea Safety Control of Dangerous Substances Act (MPSS):

<u>Chemical name</u> No subject chemicals	<u>Class</u>	<u>Threshold</u>
--	--------------	------------------

Korea Waste Control Act: Waste disposal methods must comply with local and national laws.

<u>Chemical name</u> No subject chemicals	<u>Notes</u>
--	--------------

Other regulations: No Additional Information

Chemical inventories:

<u>Regulation</u>	<u>Status</u>
Australian Inventory of Chemical Substances (AICS):	Y
Canadian Domestic Substances List (DSL):	Y
Canadian Non-Domestic Substances List (NDSL):	N
China Inventory of Existing Chemical Substances (IECSC):	Y
European EC Inventory (EINECS, ELINCS, NLP):	Y
Japan Existing and New Chemical Substances (ENCS):	Y
Japan Industrial Safety and Health Law (ISHL):	Y
Korean Existing and Evaluated Chemical Substances (KECL):	Y
New Zealand Inventory of Chemicals (NZIoC):	N
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Y
Taiwan Inventory of Existing Chemicals:	Y
U.S. Toxic Substances Control Act (TSCA) (Active):	Y

A "Y" listing indicates all intentionally added components are either listed or are otherwise compliant with the regulation. A "N" listing indicates that for one or more components: 1) there is no listing on the public inventory (or is not on the ACTIVE inventory for U.S. TSCA); 2) no information is available; or 3) the component has not been reviewed. A "Y" for New Zealand may mean that a qualified group standard may exist for the components in this product.

Europe REACH (EC) 1907/2006: Applicable components are registered, exempt or otherwise compliant. REACH is only relevant to substances either manufactured or imported into the EU. Emerald Performance Materials has met its obligations under the REACH regulation. REACH information regarding this product is provided for informational purposes only. Each Legal Entity may have differing REACH obligations, depending on their place in the supply chain. For material manufactured outside of the EU, the importer of record must understand and meet their specific obligations under the regulation.

SECTION 16: Other information

Legend:

* : Trademark owned by Emerald Performance Materials, LLC.

ACGIH: American Conference of Governmental Industrial Hygienists

N/A: Not Applicable

N/E: None Established

STEL: Short Term Exposure Limit

TWA: Time Weighted Average (exposure for 8-hour workday)

Users Responsibility/Disclaimer of Liability:

The information set forth herein is based on our current knowledge, and is intended to describe the product solely with respect to health, safety and the environment. As such, it must not be interpreted as a guarantee of any specific property of the product. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial.

Safety Data Sheet Preparer:

Product Compliance Department

Emerald Performance Materials, LLC

1499 SE Tech Center Place, Suite 300

Vancouver, WA 98683

United States