

## SECTION 1: Identification

### Product identifiers:

**Product trade name:** Kalama\* C-11 Aldehyde (Undecanal)  
**Company product number:** C11AW  
**Other means of identification:** 32208; 1-Undecanal; Aldehyde C-11 undecylic

### Recommended use of the chemical and restrictions on use:

**Uses:** Fragrance ingredient; Industrial applications.  
**Restrictions on use:** None identified

### Details of the supplier:

**Manufacturer/Supplier:** EMERALD KALAMA CHEMICAL LIMITED  
Dans Road  
Widnes  
Cheshire WA8 0RF  
United Kingdom  
Telephone: +44 (0) 151 423 8000. FAX: +44 (0) 151 423 8127.  
Email: product.compliance@emeraldmaterials.com

**For further information about this SDS:**

### 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:

Skin Irritation, category 2, H315  
Hazardous to the aquatic environment, Acute, category 2, H401

### Label elements:

#### Hazard pictogram(s):



#### Signal word:

Warning

#### Hazard statements:

H315 Causes skin irritation.  
H401 Toxic to aquatic life.

#### Precautionary statements:

P264 Wash skin thoroughly after handling.  
P273 Avoid release to the environment.  
P280 Wear protective gloves.  
P302+P352 IF ON SKIN: Wash with plenty of soap and water.  
P332+P313 If skin irritation occurs: 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.

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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>
0000112-44-7	Undecanal	98-100
0000112-42-5	Undecan-1-ol	0.1-<1.0

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:** Any material that contacts the eye should be washed out immediately with water. Get medical attention if symptoms occur.

**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. Preexisting sensitization, skin and/or respiratory disorders or diseases may be aggravated. 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:** Do not use direct water stream. May spread fire.

**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

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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. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid eye and skin contact. 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. 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. Protect from light. 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):**

<u>Chemical Name</u>	<u>ACGIH - TWA/Ceiling</u>	<u>ACGIH - STEL</u>		
Undecanal	N/E	N/E		
Undecan-1-ol	N/E	N/E		
<u>Chemical Name</u>	<u>Australia</u>	<u>New Zealand</u>	<u>Korea</u>	<u>Taiwan</u>
Undecanal	N/E	N/E	N/E	N/E
Undecan-1-ol	N/E	N/E	N/E	N/E
<u>Chemical Name</u>	<u>Japan ISHL</u>	<u>Japan JSOH</u>	<u>Indonesia</u>	<u>Malaysia</u>
Undecanal	N/E	N/E	N/E	N/E
Undecan-1-ol	N/E	N/E	N/E	N/E
<u>Chemical Name</u>	<u>Philippines</u>	<u>Singapore</u>		
Undecanal	N/E	N/E		
Undecan-1-ol	N/E	N/E		

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:** Wear eye protection.

**Skin and body protection:** Wear chemical resistant (impervious) gloves. Use good laboratory/workplace procedures

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including personal protective clothing: labcoat, safety glasses and protective gloves.

**Respiratory protection:** Respiratory protection is not needed with proper ventilation. 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.

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

## SECTION 9: Physical and chemical properties

<b>Form:</b>	Liquid	<b>pH:</b>	Not Available
<b>Appearance:</b>	Colorless to light yellow	<b>Relative density:</b>	0.823-0.833 (20°C)
<b>Odor:</b>	Aldehyde-like	<b>Partition coefficient (n-octanol/water):</b>	3.84
<b>Odor threshold:</b>	Not Available	<b>% Volatile by weight:</b>	Not Available
<b>Solubility in water:</b>	Insoluble	<b>VOC:</b>	Not Available
<b>Evaporation rate:</b>	Not Available	<b>Boiling point °C:</b>	225 °C
<b>Vapor pressure:</b>	Not Available	<b>Boiling point °F:</b>	437 °F
<b>Vapor density:</b>	Not Available	<b>Flash point:</b>	96-105 °C (205-221 °F) Closed Cup
<b>Viscosity:</b>	Not Available	<b>Auto-ignition temperature:</b>	200 °C (392 °F)
<b>Melting point/Freezing point:</b>	-10 °C (14 °F)	<b>Flammability (solid, gas):</b>	Not Applicable (liquid)
<b>Oxidizing properties:</b>	Not oxidizing	<b>Flammability or explosive limits:</b>	LFL/LEL Not Available UFL/UEL Not Available
<b>Explosive properties:</b>	Not explosive	<b>Surface tension:</b>	44.8 mN/m @ 20°C (11.5 mg/L)
<b>Decomposition temperature:</b>	Not Available		

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

## SECTION 10: Stability and reactivity

**Reactivity:** Presents no significant reactivity hazard. Neither pyrophoric nor reactive with water. Does not form explosive mixtures with other organic materials.

**Chemical stability:** This product is stable. Normally stable even at elevated temperatures and pressures. Does not undergo explosive decomposition; is shock stable; and is not an oxygen donor. Readily undergoes oxidation by air.

**Possibility of hazardous reactions:** Hazardous polymerization will not occur.

**Conditions to avoid:** Excessive heat and ignition sources.

**Incompatible materials:** Avoid strong acids, bases, and oxidizing agents. Avoid contact with reducing agents. Avoid contact with amines. May attack galvanized steel.

**Hazardous decomposition products:** Carbon dioxide, carbon monoxide and hydrocarbons.

## SECTION 11: Toxicological information

**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:** May cause eye irritation.

**Skin:** Causes skin irritation. Repeated or prolonged contact may cause skin irritation and dermatitis.

**Inhalation:** High airborne concentrations of vapors resulting from heating, misting or spraying may cause irritation of the

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respiratory tract and mucous membranes.

**Ingestion:** Ingestion may cause irritation.

**Acute toxicity information:** Not classified (based on available data, the classification criteria are not met).

<u>Chemical Name</u>	<u>Inhalation LC50</u>	<u>Species</u>	<u>Oral LD50</u>	<u>Species</u>	<u>Dermal LD50</u>	<u>Species</u>
Undecanal	N/E	N/E	>5000 mg/kg (similar materials)	Rat/ adult	>5000 mg/kg	Rabbit/ adult
Undecan-1-ol	>0.7 mg/L (6 hours, vapor, no mortalities)	Rat/ adult	>5000 mg/kg	Rat/ adult	>5000 mg/kg	Rabbit/ adult

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

<u>Chemical Name</u>	<u>Skin irritation</u>	<u>Species</u>
Undecanal	Irritant (OECD 404)	Similar materials
Undecan-1-ol	Non-irritant	Human

**Serious eye damage/irritation:** Not classified (based on available data, the classification criteria are not met).

<u>Chemical Name</u>	<u>Eye irritation</u>	<u>Species</u>
Undecanal	Slight irritant	Rabbit/ adult
Undecan-1-ol	Irritant	Rabbit/ adult

**Respiratory or skin sensitization:** Not classified (based on available data, the classification criteria are not met).

<u>Chemical Name</u>	<u>Skin sensitisation</u>	<u>Species</u>
Undecanal	Non-sensitizer	Human
Undecan-1-ol	Non-sensitizer	Guinea Pig/ adult

**Carcinogenicity:** Not classified (no relevant information found).

**Germ cell mutagenicity:** Not classified (based on available data, the classification criteria are not met). UNDECANAL: In vitro testing showed no mutagenic activity.

**Reproductive toxicity:** Not classified (based on available data, the classification criteria are not met). UNDECANAL: Reproductive toxicity, oral study in rats: NOAEL (no-observed adverse-effect-level) >1000 mg/kg bw/day (OECD 422).

**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). UNDECANAL: Repeated dose study, oral, rat: NOAEL (no-observed-adverse-effect-level) =1000 mg/kg bw/day (systemic effects); <100 mg/kg bw/day (local effects).

**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:**

<u>Chemical Name</u>	<u>Fish 96 hour LC50</u>	<u>Fish 96 hour LC50</u>	<u>Fish Chronic NOEC</u>
Undecanal	6 mg/L (similar materials)	N/E	N/E
Undecan-1-ol	1.04 mg/L	N/E	N/E
<u>Chemical Name</u>	<u>Invertebrates 48 hour EC50</u>	<u>Invertebrates 24 hour EC50</u>	<u>Invertebrates Chronic NOEC</u>
Undecanal	2.5 mg/L (similar materials)	N/E	N/E
Undecan-1-ol	>0.8-1.1 mg/L (96 hours)	N/E	0.044-0.17 mg/L (21 days, calculated)
<u>Chemical Name</u>	<u>Algae 96 hour EC50</u>	<u>Algae 72 hour EC50</u>	<u>Algae Chronic NOEC</u>
Undecanal	N/E	4.37 mg/L (similar materials)	EC10=1.46 mg/L (72 hours, similar materials)
Undecan-1-ol	N/E	>0.1-1 mg/L	N/E

**Persistence and degradability:**

<u>Chemical Name</u>	<u>Biodegradation</u>
Undecanal	Readily biodegradable (failed 10-day window)
Undecan-1-ol	Readily biodegradable (OECD 301D)

**Bioaccumulative potential:**

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<u>Chemical Name</u>	<u>Bioconcentration Factor (BCF)</u>	<u>Log Kow</u>
Undecanal	158.7 (calculated)	3.84
Undecan-1-ol	N/E	4.9

**Mobility in soil:**

<u>Chemical Name</u>	<u>Mobility in soil (Koc/Kow)</u>
Undecanal	119.7 @ 25°C
Undecan-1-ol	8400 (calculated)

**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:**

<u>Chemical Name</u>	<u>Category</u>
Undecan-1-ol	Category X

## 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>	<u>Category</u>
No subject chemicals	

**Japan Fire Service Law:**

<u>Chemical name</u>	<u>Category</u>
Undecanal	Group 4 - Flammable liquids
Undecan-1-ol	Group 4 - Flammable liquids

**Japan Poisonous and Deleterious Substances:**

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

**Japan Prevention of Marine Pollution and Disaster:**

<u>Chemical name</u>	<u>Category</u>
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Undecan-1-ol

Noxious Category X

**Japan Chemical Substances Control Law:**

Chemical name

Undecan-1-ol

Category

Priority assessment chemical

Notes

Substance control number 171

**Korean regulations:**

**Korea Industrial Safety and Health Act:**

Chemical name

No subject chemicals

Category

Threshold

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

No subject chemicals

**Korea Chemical Control Act (CCA):**

Chemical name

No subject chemicals

Category

Code

Threshold

**Korea Safety Control of Dangerous Substances Act (MPSS):**

Chemical name

No subject chemicals

Class

Threshold

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

Chemical name

No subject chemicals

Notes

**Other regulations:** No Additional Information

**Chemical inventories:**

Regulation

Status

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):

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; 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.

**Chemical inventory notes:** New Zealand: One or more components may be covered by a group standard.

**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.

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