



Safety Data Sheet (SDS)

International (GHS)

Revision date: 2020-01-29

SECTION 1: Identification

Product identifiers:

Product trade name: Kalama* K-FLEX* 850S
Company product number: FLEX850S
Other means of identification: Not Available

Recommended use of the chemical and restrictions on use:

Uses: Plasticizer
Restrictions on use: None identified

Details of the supplier:

Manufacturer/Supplier: Emerald Kalama Chemical B.V.
 Havennr. 4322 - Montrealweg 15
 3197 KH Rotterdam-Botlek - THE NETHERLANDS
 Telephone: +31 88 888 0512/-0509
 kflex.emea@emeraldmaterials.com
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
 Hazardous to the aquatic environment, Acute, category 2, H401

Label elements:

Hazard pictogram(s): Not Applicable

Signal word:

Warning

Hazard statements:

H303 May be harmful if swallowed.
 H401 Toxic to aquatic life.

Precautionary statements:

P273 Avoid release to the environment.
 P312 Call a POISON CENTRE/doctor if you feel unwell.
 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

Mixture:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>
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<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>
0000120-55-8	Diethylene glycol dibenzoate	65-<75
0027138-31-4	Dipropylene glycol dibenzoate	15-<20

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: Wash the affected area thoroughly with plenty of soap and water. Get medical attention if symptoms occur.

Inhalation: If affected, remove to fresh air. Get medical attention if symptoms occur.

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.

Hazardous combustion products: Irritating or toxic substances will 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.

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.

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 contact. Avoid repeated or prolonged 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. 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. Plasticizer products will soften plastic materials and as a result they should not be transported in piping systems constructed from these materials.

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>		
Diethylene glycol dibenzoate	N/E	N/E		
Dipropylene glycol dibenzoate	N/E	N/E		
<u>Chemical Name</u>	<u>Australia</u>	<u>New Zealand</u>	<u>Korea</u>	<u>Indonesia</u>
Diethylene glycol dibenzoate	N/E	N/E	N/E	N/E
Dipropylene glycol dibenzoate	N/E	N/E	N/E	N/E
<u>Chemical Name</u>	<u>Japan ISHL</u>	<u>Japan JSOH</u>	<u>Taiwan</u>	<u>Malaysia</u>
Diethylene glycol dibenzoate	N/E	N/E	N/E	N/E
Dipropylene glycol dibenzoate	N/E	N/E	N/E	N/E
<u>Chemical Name</u>	<u>Philippines</u>	<u>Singapore</u>		
Diethylene glycol dibenzoate	N/E	N/E		
Dipropylene glycol dibenzoate	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 protective gloves. Use good laboratory/workplace procedures including personal protective clothing: labcoat, safety glasses and protective gloves.

Respiratory protection: Respiratory protection is not needed with proper ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

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:	Colorless to light yellow	Relative density:	1.14
Odor:	Slight aromatic	Partition coefficient (n-octanol/water):	>3 - <4
Odor threshold:	Not Available	% Volatile by weight:	2.2%
Solubility in water:	Negligible	VOC:	2.2% ASTM D2369
Evaporation rate:	Slower than n-butyl acetate	Boiling point °C:	>330 °C @ 760 mm Hg (extrapolated)
Vapor pressure:	0.0000903 mm Hg @ 25°C (extrapolated)	Boiling point °F:	>626 °F @ 760 mm Hg (extrapolated)
Vapor density:	Heavier than air	Flash point:	193°C (379°F) ASTM D-92
Viscosity:	63 cSt @ 25°C	Auto-ignition temperature:	Not Available

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Melting point/Freezing point: 14 °C (57 °F)

Oxidizing properties: Not oxidizing

Explosive properties: Not explosive

Decomposition temperature: Not Available

Flammability (solid, gas):

Flammability or explosive limits:

Surface tension:

Not Applicable (liquid)

LFL/LEL: Not Available

UFL/UEL: Not Available

45 dynes/cm @ 25°C (ASTM D1331)

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.

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 phenols.

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: May cause skin irritation.

Inhalation: High airborne concentrations of vapors resulting from heating, misting or spraying may cause irritation of the respiratory tract and mucous membranes.

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

Acute toxicity information: May be harmful if swallowed - Category 5. ATEmix (oral): >4000 - <5000 mg/kg. ATEmix (dermal): >2000 mg/kg. ATEmix (inhal.): >200 mg/l, 4 hours.

<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>
Diethylene glycol dibenzoate	>200 mg/L (aerosol, 4 hours)	Rat/ adult	4190 mg/kg	Rat/ adult	>2000 mg/kg	Rat/ adult
Dipropylene glycol dibenzoate	>200 mg/L (aerosol, 4 hours)	Rat/ adult	3914 mg/kg	Rat/ adult	>2000 mg/kg	Rat/ adult

Skin corrosion/irritation: Not classified (based on available data, the classification criteria are not met).

<u>Chemical Name</u>	<u>Skin irritation</u>	<u>Species</u>
Diethylene glycol dibenzoate	Slight irritant	Rabbit/ adult
Dipropylene glycol dibenzoate	Slight irritant	Rabbit/ adult

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>
Diethylene glycol dibenzoate	Slight irritant	Rabbit/ adult
Dipropylene glycol dibenzoate	Slight 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>
Diethylene glycol dibenzoate	Non-sensitizer	Guinea Pig/ adult
Dipropylene glycol dibenzoate	Non-sensitizer	Guinea Pig/ adult

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

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

Reproductive toxicity: Not classified (based on available data, the classification criteria are not met). DIETHYLENE GLYCOL DIBENZOATE: Animal studies indicated a NOAEL (no-observed-adverse-effect-level) for maternal toxicity of 1000 mg/kg/day and for fetal toxicity of 500 mg/kg/day (rats). DIPROPYLENE GLYCOL DIBENZOATE: Reproductive toxicity, 2-generation oral study in rats: NOAEL (no-observed adverse-effect-level) 500 mg/kg bw/day. Developmental toxicity, oral, rats: NOAEL of 500 mg/kg bw/day; Prenatal Developmental toxicity, oral, rabbit (OECD 414): NOAEL of 250 mg/kg bw/day (maternal toxicity, embryo/fetal developmental toxicity).

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). DIETHYLENE GLYCOL DIBENZOATE: A 13-week dietary study in rats at a dose of 2500 mg/kg/day observed decreased body weights, blood, spleen and caecum effects which showed completed recovery within 4 weeks after exposure. NOAEL (No-Observed-Adverse-Effect-Level), oral, rat - 1000 mg/kg bw/day. DIPROPYLENE GLYCOL DIBENZOATE: A 13-week dietary study in rats observed decreased body weights, and liver, spleen and caecum effects at a dose of 2500 mg/kg/day which showed completed recovery within 4 weeks after exposure. NOAEL (No-Observed-Adverse-Effect-Level), oral, rat - 1000 mg/kg bw/day.

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>Species</u>	<u>Acute</u>	<u>Acute</u>	<u>Chronic</u>
Diethylene glycol dibenzoate	Fish	LL50 2.9 mg/L (96 hours)	LL50 3.9 mg/L(96 hours)	N/E
Diethylene glycol dibenzoate	Invertebrates	EL50 6.7 mg/L (48 hours)	N/E	N/E
Diethylene glycol dibenzoate	Algae	EL50 10.94 mg/L (72 hours)	EL50 14.55 mg/L(96 hours)	NOELR 2.2 mg/L(72 hours)
Diethylene glycol dibenzoate	Micro-organisms	NOEC >=10 mg/L (3 hours)		
Dipropylene glycol dibenzoate	Fish	LC50 3.7 mg/L (96 hours)	LC50 >3 mg/L(96 hours)	N/E
Dipropylene glycol dibenzoate	Invertebrates	EL50 19.3 mg/L (48 hours)	N/E	N/E
Dipropylene glycol dibenzoate	Algae	EL50 4.9 mg/L (72 hours)	EL50 3.6 mg/L(96 hours)	NOELR 1 mg/L/0.46 mg/L(72 hours/96 hours)

Persistence and degradability: Expected to readily biodegrade, based on similar material(s).

<u>Chemical Name</u>	<u>Biodegradation</u>
Diethylene glycol dibenzoate	Readily biodegradable (OECD 301B)
Dipropylene glycol dibenzoate	Readily biodegradable (OECD 301B)

Bioaccumulative potential: Not expected to bioaccumulate.

<u>Chemical Name</u>	<u>Bioconcentration Factor (BCF)</u>	<u>Log Kow</u>
Diethylene glycol dibenzoate	60 L/kg	3.2 (25°C)
Dipropylene glycol dibenzoate	<200 L/kg	3.9 (20°C)

Mobility in soil: No specific information available.

<u>Chemical Name</u>	<u>Mobility in soil (Koc/Kow)</u>
Diethylene glycol dibenzoate	1500 (20°C)
Dipropylene glycol dibenzoate	3981 @ 20°C

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:

Chemical name

No subject chemicals

Category

Japan Fire Service Law:

Chemical name

Dipropylene glycol dibenzoate

Category

Group 4 - Flammable liquids

Japan Poisonous and Deleterious Substances:

Chemical name

No subject chemicals

Category

Threshold

Japan Prevention of Marine Pollution and Disaster:

Chemical name

Dipropylene glycol dibenzoate

Category

Noxious Category Y

Japan Chemical Substances Control Law:

Chemical name

No subject chemicals

Category

Notes

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:

<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):	N
Japan Industrial Safety and Health Law (ISHL):	Y
Korean Existing and Evaluated Chemical Substances (KECL):	Y
New Zealand Inventory of Chemicals (NZIoC):	Y
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.

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.

Safety Data Sheet Preparer:

Product Compliance Department

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United States