

Therminol® FF

Version	Revision Date:	SDS Number:	Date of last issue: 04.02.2021
1.2	27.12.2022	150000093449	Date of first issue: 23.06.2015
PRD		SDSIN / EN / 0001	

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Therminol® FF

Product code : 34142-00, P3414203, P3414200, P3414201, P3414204, E3414201

Manufacturer or supplier's details

Company : Eastman Chemical Company

Address : 200 South Wilcox Drive
Kingsport TN 37660-5147

Telephone : (423) 229-2000

Emergency telephone number : 000 800 100 7479, NCEC +65 3158 1198, International +65 6262-6462 For emergency transportation information, telephone 1 423 229 2000 (USA) and identify the call as a transportation emergency.

Recommended use of the chemical and restrictions on use

Recommended use : Solvent
Cleaning agent

Restrictions on use : None known.

2. HAZARDS IDENTIFICATION**Manufacture, Storage and Import of Hazardous Chemicals Rules 1989****Classification****GHS Classification**

Skin corrosion/irritation : Category 2

Skin sensitization : Category 1

Aspiration hazard : Category 1

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

GHS label elements

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Hazard pictograms

:



Signal word

: Danger

Hazard statements

: H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

: **Prevention:**
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P331 Do NOT induce vomiting.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Storage:
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture

: Substance

Substance name

: Benzene, ethylenated, by-products from

CAS-No.

: 68608-82-2

Components

Chemical name	CAS-No.	Concentration (% w/w)
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Benzene, ethylenated, by-products from	68608-82-2	>= 90 - <= 100
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4. FIRST AID MEASURES

- | | |
|---|---|
| If inhaled | : Remove person to fresh air and keep comfortable for breathing.
Get medical attention if symptoms occur.
If breathing is difficult, give oxygen. |
| In case of skin contact | : Wash off with soap and plenty of water.
Get medical attention if symptoms occur.
Wash contaminated clothing before reuse. |
| In case of eye contact | : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
Get medical attention if symptoms occur. |
| If swallowed | : Immediately call a POISON CENTER/ doctor.
Do NOT induce vomiting. |
| Most important symptoms and effects, both acute and delayed | : May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction. |
| Notes to physician | : Do NOT induce vomiting.
Treat symptomatically. |

5. FIREFIGHTING MEASURES

- | | |
|---|---|
| Suitable extinguishing media | : Water spray
Carbon dioxide (CO2)
Dry chemical
Foam |
| Unsuitable extinguishing media | : Do not use a solid water stream as it may scatter and spread fire. |
| Hazardous combustion products | : Carbon oxides |
| Specific extinguishing methods | : Use a water spray to cool fully closed containers.
Do not allow run-off from fire fighting to enter drains or water courses. |
| Special protective equipment for firefighters | : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear. |

6. ACCIDENTAL RELEASE MEASURES

- | | |
|---|--|
| Personal precautions, protective equipment and emergency measures | : Remove all sources of ignition.
Ventilate the area. |
|---|--|

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- gency procedures Do not breathe vapors or spray mist.
Avoid contact with skin and eyes.
Material can create slippery conditions.
Wear appropriate personal protective equipment.
Local authorities should be advised if significant spillages cannot be contained.
- Environmental precautions : Clear up spills immediately and dispose of waste safely.
Avoid release to the environment.
Collect spillage.
- Methods and materials for : Contain spillage, soak up with non-combustible absorbent
containment and cleaning up material, (e.g. sand, earth, diatomaceous earth, vermiculite)
and transfer to a container for disposal according to local /
national regulations (see section 13).

7. HANDLING AND STORAGE

- Advice on safe handling : Do not breathe vapors or spray mist.
Handle product only in closed system or provide appropriate
exhaust ventilation at machinery.
In case of insufficient ventilation, wear suitable respiratory
equipment.
Keep away from flames and sparks.
Wear appropriate personal protective equipment.
Avoid contact with skin, eyes and clothing.
Wash thoroughly after handling.
Wash contaminated clothing before reuse.
Drain or remove substance from equipment prior to break-in
or maintenance.
Handle in accordance with good industrial hygiene and safety
practice.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated
place.
Keep in a cool place away from oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Benzene, ethylenated, by-products from	68608-82-2	TWA	2 mg/m3	Eastman Chemical Company occupational exposure limit

- Engineering measures** : Good general ventilation (typically 10 air changes per hour)
should be used. Ventilation rates should be matched to condi-

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tions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

Respiratory protection : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary.
Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable.
If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Hand protection

Remarks : Wear suitable gloves. When handling hot material, use heat resistant gloves. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations.

Eye protection : Wear safety glasses with side shields (or goggles).

Skin and body protection : Wear suitable protective clothing.

Protective measures : Ensure that eye flushing systems and safety showers are located close to the working place.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : amber

Odour : aromatic, hydrocarbon-like

Odour Threshold : not determined

pH : not determined

Melting point/freezing point : < -26 °C
(1,013 hPa)

Boiling point/boiling range : 215 - 287 °C
(1,013 hPa)

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Flash point	:	> 120 °C (1,013 hPa) Method: Cleveland open cup
Evaporation rate	:	not determined
Self-ignition	:	400 - 415 °C Method: ASTM D2155
Upper explosion limit / Upper flammability limit	:	not determined
Lower explosion limit / Lower flammability limit	:	not determined
Vapour pressure	:	0.0015 kPa (25 °C)
Relative vapour density	:	not determined
Relative density	:	0.96 - 1.0 (25 °C)
Density	:	960 - 1,000 kg/m ³ (25 °C)
Solubility(ies) Water solubility	:	0.55 mg/l (20 °C)
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	not determined
Decomposition temperature	:	not determined
Viscosity Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	2 - 5 mm ² /s (40 °C)
Explosive properties	:	Not classified
Oxidizing properties	:	Not classified

10. STABILITY AND REACTIVITY

Reactivity	:	None reasonably foreseeable.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	None known.
Conditions to avoid	:	Heating in air.

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Keep away from flames and sparks.

Incompatible materials : Strong oxidizing agents

Hazardous decomposition products : Emits acrid smoke and fumes when heated to decomposition.

11. TOXICOLOGICAL INFORMATION**Acute toxicity**

Not classified based on available information.

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:**Benzene, ethylenated, by-products from:**

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 1.6 mg/l
Exposure time: 1 h
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 Dermal (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Product:

Remarks : No data available

Components:**Benzene, ethylenated, by-products from:**

Species : Rabbit
Exposure time : 24 h
Assessment : Moderate

Result : Irritating to skin.

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Remarks : No data available

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Components:**Benzene, ethylenated, by-products from:**

Species	:	Rabbit
Assessment	:	Not classified
Result	:	No eye irritation

Respiratory or skin sensitisation**Skin sensitisation**

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified based on available information.

Product:

Remarks : No data available

Components:**Benzene, ethylenated, by-products from:**

Test Type	:	Skin sensitization
Species	:	Mouse
Result	:	May cause sensitization by skin contact.

Germ cell mutagenicity

Not classified based on available information.

Components:**Benzene, ethylenated, by-products from:**

Genotoxicity in vitro	:	Test Type: Salmonella typhimurium assay (Ames test) Metabolic activation: +/- activation Method: Bacterial Reverse Mutation Assay Result: negative
		Test Type: Mutagenicity - Mammalian Metabolic activation: +/- activation Method: In vitro Mammalian Chromosome Aberration Test Result: negative
		Test Type: Mutagenicity - Mammalian Metabolic activation: +/- activation Method: In vitro Mammalian Cell Gene Mutation Test Result: negative

Carcinogenicity

Not classified based on available information.

Product:

Remarks : This product does not contain any carcinogens or potential

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carcinogens as listed by OSHA, IARC or NTP.

Reproductive toxicity

Not classified based on available information.

STOT - single exposure

Not classified based on available information.

Product:

Remarks : No data available

Components:**Benzene, ethylenated, by-products from:**

Exposure routes : inhalation (dust/mist/fume)
Assessment : Not classified

STOT - repeated exposure

Not classified based on available information.

Product:

Remarks : No data available

Components:**Benzene, ethylenated, by-products from:**

Assessment : Not classified

Repeated dose toxicity**Components:****Benzene, ethylenated, by-products from:**

Species : Rat
NOAEL : 20 mg/kg
Application Route : by gavage
Exposure time : 14 d

Species : Rat
: 20 mg/m³
Application Route : Inhalation
Exposure time : 28 d

Aspiration toxicity

May be fatal if swallowed and enters airways.

Components:**Benzene, ethylenated, by-products from:**

May be fatal if swallowed and enters airways.

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Experience with human exposure**Product:**

Inhalation	:	Remarks: None known.
Skin contact	:	Remarks: Causes skin irritation. May cause an allergic skin reaction.
Eye contact	:	Remarks: None known.
Ingestion	:	Remarks: May be fatal if swallowed and enters airways.

12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****Benzene, ethylenated, by-products from:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.97 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Ceriodaphnia dubia (water flea)): 0.029 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (algae)): 0.485 mg/l Exposure time: 72 h NOEC (Pseudokirchneriella subcapitata (algae)): 0.0959 mg/l Exposure time: 72 h

Persistence and degradability**Components:****Benzene, ethylenated, by-products from:**

Biodegradability	:	Result: Inherently biodegradable.
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Bioaccumulative potential**Components:****Benzene, ethylenated, by-products from:**

Bioaccumulation	:	Bioconcentration factor (BCF): 250 - 1,090
Partition coefficient: n-octanol/water	:	Pow: 12,000 - 1,020,000 log Pow: 4.08 - 6.01

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Mobility in soil**Components:****Benzene, ethylenated, by-products from:**

Distribution among environmental compartments : log K_{oc}: 3.7

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

UN/ID No. : UN 3082
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.
(Benzene, ethylenated, by-products from)
Class : 9
Packing group : III
Labels : Miscellaneous
Packing instruction (cargo aircraft) : 964
Packing instruction (passenger aircraft) : 964
Remarks : Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

IMDG-Code

UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Benzene, ethylenated, by-products from)
Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes
Remarks : Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

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Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. REGULATORY INFORMATION**Safety, health and environmental regulations/legislation specific for the substance or mixture****The components of this product are reported in the following inventories:**

DSL	: On the inventory, or in compliance with the inventory
AICS	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
ISHL	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory

16. OTHER INFORMATION

Revision Date : 27.12.2022

Further information

Sources of key data used to compile the Safety Data Sheet : www.therminol.com/products/

Date format : dd.mm.yyyy

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with

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x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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