

SAFETY DATA SHEET

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

1.1 Product identifier

Product name: Therminol® FF

Product No.: 34142-00, P3414203, P3414200, P3414202, P3414201

Additional identification

Chemical name: Benzene, ethylenated, by-products from
REACH Registration No.: 01-2119472547-29-0001
CAS-No.: 68608-82-2

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

Identified uses: Solvent, Cleaning agent

Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

National Supplier

Solutia Europe SPRL/BVBA
A subsidiary of Eastman Chemical Company
Corporate Village Aramis Building Leonard Da Vincilaan 1
B-1935 Zaventem
Belgium
Telephone: (+32)2 746 5000
Fax: +32(0)2 746 57 00

1.4 Emergency telephone number:

For emergency health, safety, and environmental information: telephone 800-EASTMAN or 423 229-4511 in the United States; or +44 (0)1235 239 670 in Europe.

For emergency transportation information, call +44(0)1235 239 670; or 800 964214 in England; 01800559700 in Eire; or 423-229-4511 in the United States. Identify the call as a transportation emergency.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

Regulation No. 1272/2008.

Health Hazards

Skin Corrosion/Irritation	Category 2	H315: Causes skin irritation.
Skin sensitizer	Category 1	H317: May cause an allergic skin reaction.
Aspiration Hazard	Category 1	H304: May be fatal if swallowed and enters airways.

Environmental Hazards

Acute hazards to the aquatic environment	Category 1	H400: Very toxic to aquatic life.
Chronic hazards to the aquatic environment	Category 1	H410: Very toxic to aquatic life with long lasting effects. (M-factor = 1)

Hazard summary

Physical Hazards:	None known.
Health Hazards	
Inhalation:	None known.
Eye contact:	None known.
Skin Contact:	Causes skin irritation. May cause an allergic skin reaction.
Ingestion:	May be fatal if swallowed and enters airways.
Other Health Effects:	None known.
Environmental hazards:	Very toxic to aquatic life with long lasting effects.

Classification according to Directive 67/548/EEC or 1999/45/EC as amended.

Xi: Irritant
R38: Irritating to skin.
Xn: Harmful
R65: Harmful: may cause lung damage if swallowed.
N: Dangerous for the environment
R50: Very toxic to aquatic organisms.
R53: May cause long-term adverse effects in the aquatic environment.
R43: May cause sensitisation by skin contact.

2.2 Label Elements



Signal Words: Danger

Hazard Statement(s): 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 Statement

Prevention: P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P331: Do NOT induce vomiting. P302+P352: IF ON SKIN: Wash with plenty of soap and water.

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards: Thermal burn hazard - contact with hot material may cause thermal burns.

SECTION 3: Composition/information on ingredients

3.1 Substance

General information:

Chemical name	Concentration	Additional identification	Notes
Benzene, ethylenated, by-products from	100%	CAS-No.: 68608-82-2 EC No.: 271-802-8 REACH Registration No.: 01-2119472547-29-0001	#

Explanation for Notes (if applicable):

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

This substance has workplace exposure limit(s).

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Classification		Notes
Benzene, ethylenated, by-products from	DSD:	Xi, Xn, N, R38, R43, R65, R50/53	
	CLP:	Skin Corr. 2, H315; Skin Sens.1, H317; Asp. Tox.1, H304; Aquatic Acute1, H400; Aquatic Chronic1, H410	

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008.:

The full text for all R-phrases and H-statements is displayed in section 16.

SECTION 4: First aid measures

General: Get medical attention if symptoms occur. Show this safety data sheet to the doctor in attendance. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Place unconscious person on the side in the recovery position and ensure breathing can take place. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

4.1 Description of first aid measures

Inhalation: Move into fresh air and keep at rest. For breathing difficulties, oxygen may be necessary. Consult a physician for specific advice. Persons who have inhaled vapours or smoke fumes have to be put under medical observation for at least 48 hours, due to the delayed appearance of poisoning.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if symptoms occur.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops and persists. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Call a physician or poison control center immediately. Do NOT induce vomiting. Never give liquid to an unconscious person. Provide fresh air, warmth and rest, preferably in comfortable upright sitting position. Loosen tight clothing such as a collar, tie, belt or waistband. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

4.2 Most important symptoms and effects, both acute and delayed: Risk of chemical pneumonia after aspiration. The liquid may irritate the skin. May cause allergic skin reaction. Contact with hot material can cause thermal burns which may result in permanent damage.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. May cause sensitization by skin contact.

Treatment: If swallowed: Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Persons who have inhaled vapours or smoke fumes have to be put under medical observation for at least 48 hours, due to the delayed appearance of poisoning.

SECTION 5: Firefighting measures

General Fire Hazards: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Keep upwind. In case of fire and/or explosion do not breathe fumes.

5.1 Extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water in straight hose stream; will scatter and spread fire.

5.2 Special hazards arising from the substance or mixture:

May ignite at high temperature. During fire, gases hazardous to health may be formed. Risk of chemical pneumonia after aspiration. Hazardous combustion products : carbon dioxide, carbon monoxide , soot .

5.3 Advice for firefighters

Special fire fighting procedures: In case of fire: Evacuate area. Move container from fire area if it can be done without risk. Use water spray to keep fire-exposed containers cool. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

No action shall be taken involving any personal risk or without suitable training. Keep unauthorized personnel away. Do not smoke, use open fire or other sources of ignition. Ventilate closed spaces before entering them. Avoid inhalation of vapors and spray mists. Wear appropriate personal protective equipment. See Section 8 of the SDS for Personal Protective Equipment. Caution: Contaminated surfaces may be slippery. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

6.2 Environmental Precautions:

Prevent further leakage or spillage if safe to do so. Clear up spills immediately and dispose of waste safely. Prevent spillage entering a watercourse or sewer, contaminating soil or vegetation. If this is not possible notify police and appropriate authorities immediately.

6.3 Methods and material for containment and cleaning up:

Small Liquid Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
 Large Spillages: Dike for later disposal. Collect spillage in containers, seal securely and deliver for disposal according to local regulations. Otherwise, absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Prevent runoff from entering drains, sewers, or streams. For waste disposal, see section 13 of the SDS.

Notification Procedures:

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling:

Do not handle until all safety precautions have been read and understood. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Do not smoke, use open fire or other sources of ignition. An eye wash bottle must be available at the work site. Wear appropriate personal protective equipment. See Section 8 of the SDS for Personal Protective Equipment. Do not taste or swallow. Do not breathe mist or vapor from heated material. In case of inadequate ventilation, use respiratory protection. Do not get in eyes and avoid contact with skin and clothing. Wash promptly with soap and water if skin becomes contaminated. Remove contaminated clothing and wash it before reuse. Destroy or thoroughly clean contaminated shoes. Drain or remove substance from equipment prior to break-in or maintenance. Handle in accordance with good industrial hygiene and safety practice. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities:

Store in a cool, dry place out of direct sunlight. Keep container tightly closed and in a well-ventilated place. Keep upright. Keep in original container. Store locked up. Store away from incompatible materials. Keep away from food, drink and animal feeding stuffs. Store in accordance with local/regional/national/international regulations.

7.3 Specific end use(s):

www.therminol.com/products/

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters

Occupational Exposure Limits

Country specific exposure limits have not been established or are not applicable unless listed below.

Chemical name	type	Exposure Limit Values	Source
Benzene, ethylenated, by-products from	TWA	2 mg/m3	Eastman Chemical Company occupational exposure limit:

DNEL-Values

Critical component	type	Route of Exposure		Remarks
Benzene, ethylenated, by-products from	Workers	DNEL Human, inhalation, short-term (acute);, systemic	33 mg/m ³	
Benzene, ethylenated, by-products from		DNEL Human, inhalation, long-term (repeated);, systemic	4 mg/m ³	
Benzene, ethylenated, by-products from		DNEL Human, dermal, long-term (repeated);, systemic	8,9 mg/kg bw/day	

PNEC-Values

Critical component	Environmental compartment		Remarks
Benzene, ethylenated, by-products from	Fresh water	0,00003 mg/l	
Benzene, ethylenated, by-products from	marine water	0,000003 mg/l	
Benzene, ethylenated, by-products from	Aqua Intermittent	0,0003 mg/l	
Benzene, ethylenated, by-products from	freshwater sediment	0,015 mg/kg	dry
Benzene, ethylenated, by-products from	Marine sediments	0,0015 mg/kg	dry
Benzene, ethylenated, by-products from	soil	0,003 mg/kg	dry
Benzene, ethylenated, by-products from	Sewage treatment plant	1 mg/l	
Benzene, ethylenated, by-products from	Secondary Poisoning	1,3 mg/kg	food

8.2 Exposure controls

Appropriate engineering controls:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. 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.

Individual protection measures, such as personal protective equipment

General information:

An eye wash bottle must be available at the work site. Provide access to washing facilities including soap, skin cleanser and fatty cream.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommendations: Wear safety glasses with side shields (or goggles). Use safety goggles and face shield in case of splash risk.

Skin protection**Hand Protection:**

If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations. When material is heated, wear gloves to protect against thermal burns. 1) Risk of splashes: The breakthrough time of the glove material, with regard to the amount and duration of dermal exposure: 1 to 4 hours.
1) Neoprene. Nitrile rubber. Polyvinyl chloride (PVC).

Other:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommendations: Apron or other light protective clothing and boots. If prolonged or repeated contact is likely, chemical resistant clothing is recommended. Promptly remove non-impervious clothing that becomes wet or contaminated.

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. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using the product. Wash at the end of each work shift and before eating, smoking and using the toilet. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Keep away from food, drink and animal feeding stuffs.

Environmental Controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Do not contaminate water sources or sewer.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties****Appearance**

Physical state:	liquid
Form:	liquid
Color:	dark amber
Odor:	Aromatic, hydrocarbon

Odor Threshold:	No data available.
pH:	No data available.
Freezing Point:	< -26 °C
Boiling Point:	215 - 287 °C (1.013 hPa)
Flash Point:	> 120 °C (Cleveland open cup)
Evaporation Rate:	No data available.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)-:	No data available.
Flammability Limit - Lower (%)-:	No data available.
Vapor pressure:	0,0015 kPa (25 °C)
Vapor density (air=1):	No data available.
Specific Gravity:	0,96 - 1,0 (25 °C)
Solubility(ies)	
Solubility in Water:	0,55 mg/l (20 °C)
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	Pow: 12.000 - 1.020.000 log Pow: 4,08 - 6,01
Autoignition Temperature:	400 - 415 °C (ASTM D2155)
Decomposition Temperature:	No data available.
Dynamic viscosity:	No data available.
Kinematic viscosity:	2 - 5 mm ² /s (40 °C)
Explosive properties:	Not classified.
Oxidizing properties:	Not classified.

SECTION 10: Stability and reactivity

10.1 Reactivity:	Material is stable under normal conditions.
10.2 Chemical Stability:	Material is stable under normal conditions.
10.3 Possibility of Hazardous Reactions:	None under normal conditions.
10.4 Conditions to Avoid:	Heating in air.
10.5 Incompatible Materials:	Strong oxidizing agents.
10.6 Hazardous Decomposition Products:	Emits acrid smoke and fumes when heated to decomposition.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation:	None known.
Ingestion:	May be fatal if swallowed and enters airways.

Skin Contact: Causes skin irritation. May cause an allergic skin reaction.

Eye contact: None known.

11.1 Information on toxicological effects

Acute toxicity

Oral

Product: Oral LD-50: (Rat, Male and Female): > 5.000 mg/kg Not classified.

Dermal

Product: Dermal LD-50: (Rabbit): > 5.000 mg/kg
Not classified.

Inhalation

Product: LC50 (Rat, Male., 1 h): > 1,6 mg/l Not classified.

Repeated dose toxicity

Product: NOAEL (Rat, by gavage, 14 d): 20 mg/kg
LOAEC (Rat, Inhalation, 28 d): 20 mg/m³

Skin Corrosion/Irritation:

Product: Moderate
(Rabbit, 24 h): Irritating to skin.

Serious Eye Damage/Eye Irritation:

Product: Not classified.
(Rabbit): Not irritating

Respiratory or Skin Sensitization:

Product: Skin sensitizer, (Mouse) - sensitizing

Mutagenicity

In vitro

Product: Salmonella typhimurium assay (Ames test), Bacterial Reverse Mutation Assay :
negative +/- activation
Mutagenicity - Mammalian, In vitro Mammalian Chromosome Aberration Test :
negative +/- activation
Mutagenicity - Mammalian, In vitro Mammalian Cell Gene Mutation Test : negative
+/- activation

In vivo

Product: No data available.

Specified substance(s)

Benzene, ethylenated, by-products from No data available.

Carcinogenicity

Product: No data available.

Reproductive toxicity**Toxicity to reproduction**

Product: (Rat, Male and Female); NOAEL: 320 mg/kg; Gavage (Oral); OECD Test No. 422: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test; Remarks: Conclusive but not sufficient for classification

Developmental toxicity

Product: Rat; NOAEL: 100 mg/m3; Inhalation; OECD Test No. 414: Prenatal Developmental Toxicity Study; Remarks: Conclusive but not sufficient for classification

Specific Target Organ Toxicity - Single Exposure

Product: Not classified.

Specific Target Organ Toxicity - Repeated Exposure

Product: Not classified.

Aspiration Hazard

Product: Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Other Adverse Effects: No data available.

SECTION 12: Ecological information**12.1 Toxicity****Acute toxicity****Fish**

Product: LC-50 (Rainbow Trout, 96 h): > 0,97 mg/l

Aquatic Invertebrates

Product: LC-50 (Ceriodaphnia, 48 h): 0,029 mg/l

Chronic Toxicity**Fish**

Product: No data available.

Specified substance(s)

Benzene, ethylenated, by-products from No data available.

Aquatic Invertebrates

Product: No data available.

Specified substance(s)

Benzene, ethylenated, by-products from No data available.

Toxicity to Aquatic Plants

Product: EC-50 (Algae (Pseudokirchneriella subcapitata), 72 h): 0,485 mg/l
 NOEC (Algae (Pseudokirchneriella subcapitata), 72 h): 0,0959 mg/l

12.2 Persistence and Degradability

Biodegradation

Product: Inherently biodegradable

Biological Oxygen Demand:

Product No data available.

Chemical Oxygen Demand:

Product No data available.

BOD/COD Ratio

Product No data available.

Specified substance(s)

Benzene, ethylenated, by-products from No data available.

12.3 Bioaccumulative Potential

Product: Bioconcentration Factor (BCF): 250 - 1.090

12.4 Mobility in Soil:

No data available.

Known or predicted distribution to environmental compartments

Benzene, ethylenated, by-products from 3,7

12.5 Results of PBT and vPvB assessment:

Not fulfilling vPvB (very persistent, very bioaccumulative) criteria. Not fulfilling PBT (persistent/bioaccumulative/toxic) criteria

12.6 Other Adverse Effects:

No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information: The generation of waste should be avoided or minimized wherever possible. Comply with requirements of waste disposal legislation and any local authority requirements. The generation of waste should be avoided or minimized wherever possible. Dispose of waste and residues in accordance with local authority requirements.

Disposal methods: Recover and reclaim or recycle, if practical. Dispose of this material and its container to hazardous or special waste collection point. Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Do not discharge into drains, water courses or onto the ground.

Since emptied containers retain product residue, follow label warnings even after container is emptied. Recycle empty drums at an appropriate facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal. Ensure drums are tightly sealed.

European Waste Codes

Waste codes should be assigned by the user based on the application for which the product was used. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

The following Waste Codes are only suggestions. Any waste marked with an asterisk (*) is considered as a hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

Unused product: 13 03 08*: synthetic insulating and heat transmission oils

Used product: 13 03 08*: synthetic insulating and heat transmission oils

Contaminated Packaging: 15 01 10*: packaging containing residues of or contaminated by dangerous substances

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

ADR/RID

Possible Shipping Description(s):

UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Benzene, ethylenated, by-products from)

9 III

IMDG - International Maritime Dangerous Goods Code

Marine pollutant.: (Benzene, ethylenated, by-products from)

Possible Shipping Description(s):

UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Benzene, ethylenated, by-products from) 9 III

IATA

Possible Shipping Description(s):

UN 3082 Environmentally hazardous substance, liquid, n.o.s. (Benzene, ethylenated, by-products from) 9 III

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.:
EU. Directive 94/33/EC on young people at work, OJ (L 216) 12, 20 Aug 1994

Chemical name	CAS-No.	Concentration
Benzene, ethylenated, by-products from	CAS-No.: 68608-82-2	100%

Directive 96/82/EC (Seveso II): on the control of major accident hazards involving dangerous substances.:

Chemical name	CAS-No.	Concentration
Benzene, ethylenated, by-products from	CAS-No.: 68608-82-2	100%

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work.:

Chemical name	CAS-No.	Concentration
Benzene, ethylenated, by-products from	CAS-No.: 68608-82-2	100%

15.2 Chemical safety assessment: Yes.

SECTION 16: Other information

Revision Information: Not relevant.

Key literature references and sources for data: www.therminol.com/products/

Wording of the R-phrases and H-statements in section 2 and 3:

Xi = Irritant
 Xn = Harmful
 N = Dangerous for the environment
 R38 = Irritating to skin.
 R43 = May cause sensitisation by skin contact.
 R65 = Harmful: may cause lung damage if sw allowed.
 R50/53 = Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Skin Corr. = Skin Corrosion/Irritation
 Skin Sens. = Skin sensitizer
 Asp. Tox. = Aspiration Hazard
 Aquatic Acute = Acute hazards to the aquatic environment
 Aquatic Chronic = Chronic hazards to the aquatic environment
 2 = Category 2
 1 = Category 1
 1 = Category 1
 1 = Category 1
 1 = Category 1
 H315= Causes skin irritation.
 H317= May cause an allergic skin reaction.
 H304= May be fatal if sw allowed and enters airways.
 H400= Very toxic to aquatic life.
 H410= Very toxic to aquatic life with long lasting effects.

Training information: No data available.

Issue Date: 23.04.2015

SDS No.:

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.