

SAFETY DATA SHEET

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

Product identifier**Product name:** Santoflex(TM) 134PD**Product No.:** 34054-00, P3405400, P3405402, P3405403, P3405404**Relevant identified uses of the substance or mixture and uses advised against****Identified uses:** antioxidant (industrial)**Uses advised against:** None known.**Details of the supplier of the safety data sheet****Manufacturer / Supplier**Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000Visit our website at www.EASTMAN.com or email emnmsds@eastman.com**Emergency telephone number:**

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

SECTION 2: Hazards identification

Hazard Classification:**Health Hazards**

Skin sensitizer

Category 1

OSHA Specified Hazards: not applicable**Warning label items including precautionary statement:****Pictogram:****Signal Words:** Warning**Hazard Statement(s):** H317: May cause an allergic skin reaction.

Precautionary Statement:

Prevention:	P261: Avoid breathing dust/fume/gas/mist/vapors/spray. P272: Contaminated work clothing must not be allowed out of the workplace. P280: Wear protective gloves.
Response:	P302+P352: IF ON SKIN: Wash with plenty of soap and water. P333+P313: If skin irritation or rash occurs: Get medical advice/attention. P363: Wash contaminated clothing before reuse.
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.

Hazard(s) not otherwise classified (HNOC): None known.

SECTION 3: Composition/information on ingredients**Substances / Mixtures****General information:**

Chemical name	Concentration	Additional identification	Notes
N-(1,4-dimethylpentyl)-N-phenylbenzene-1,4-diamine	63 - 67%	CAS-No.: 3081-01-4	
N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine	31 - 33%	CAS-No.: 793-24-8	

* 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).

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.

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 remove contaminated clothing and shoes and wash skin with soap and plenty of water. If skin irritation or an allergic skin reaction develops, get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: If swallowed, rinse mouth with water (only if the person is conscious). Get medical attention if symptoms occur. Do not induce vomiting unless directed to do so by medical personnel. Never give liquid to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Provide fresh air, warmth and rest, preferably in comfortable upright sitting position. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms and effects, both acute and delayed: May cause allergic skin reaction.

Indication of any immediate medical attention and special treatment needed

Hazards: May cause sensitization by skin contact.

Treatment: Treat symptomatically.

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.

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.

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 , Oxides of nitrogen. Leaked material and fire-fighting water may pollute water system.

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

Personal precautions, protective equipment and emergency procedures: No action shall be taken involving any personal risk or without suitable training. Keep unauthorized personnel away. 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. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Caution: Contaminated surfaces may be slippery.

Environmental Precautions:	Prevent further leakage or spillage if safe to do so. Clear up spills immediately and dispose of waste safely. Do not contaminate water sources or sewer.
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.
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:

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. 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. Avoid contact with hot material. 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.
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. Do not store in open or unlabelled containers. Store away from incompatible materials. Keep away from food, drink and animal feeding stuffs. Store in accordance with local/regional/national/international regulations.
Specific end use(s):	No data available.

SECTION 8: Exposure controls/personal protection**Control Parameters****Occupational Exposure Limits**

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

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:

Nitrile rubber. Polyvinyl chloride (PVC). It is a good industrial hygiene practice to minimize skin contact. If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. 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.

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. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

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

Information on basic physical and chemical properties

Appearance

Physical state:	liquid
Form:	Oily liquid
Color:	Dark brown
Odor:	Aromatic
Odor Threshold:	Not determined.
pH:	No data available.
Melting Point	< -20 °C
Boiling Point:	> 230 °C
Flash Point:	200 °C (Cleveland Open Cup)
Evaporation Rate:	Not determined.
Flammability (solid, gas):	not applicable
Flammability Limit - Upper (%)-:	No data available.
Flammability Limit - Lower (%)-:	No data available.
Vapor pressure:	Not determined.
Vapor density (air=1):	No data available.
Specific Gravity:	1.01 (15 °C)
Solubility(ies)	
Solubility in Water:	Practically Insoluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	not applicable
Autoignition Temperature:	No data available.
Decomposition Temperature:	No data available.
Dynamic viscosity:	1,034 mPa.s (20 °C) 13 - 17 mPa.s (75 °C)
Kinematic viscosity:	No data available.
Explosive properties:	Not classified.
Oxidizing properties:	Not classified.

SECTION 10: Stability and reactivity

Reactivity:	Material is stable under normal conditions.
Chemical Stability:	Material is stable under normal conditions.
Possibility of Hazardous Reactions:	None under normal conditions.
Conditions to Avoid:	Heating in air.

Incompatible Materials: Strong acids. Strong oxidizing agents.

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: None known.

Skin Contact: May cause an allergic skin reaction.

Eye contact: None known.

Information on toxicological effects

Oral

Product: Oral LD-50: (Rat, Male and Female): 2,420 mg/kg Not classified.

Dermal

Product: Dermal LD-50: (Rabbit, Male and Female): > 3,160 mg/kg
Not classified for acute toxicity based on available data.

Inhalation

Product: Dusts, mists and fumes: LC0 (Rat, Male., 6 h): 2.64 mg/l Not classified for acute toxicity based on available data.

Repeated dose toxicity

Product: No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine
NOAEL (Rat(Male and Female), in feed): 20 mg/kg Read-across from a similar material

Specified substance(s):

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine
NOAEL (Rat(Male and Female), by gavage): 20 mg/kg (Target Organ(s): Blood, Liver)
NOAEL (Rat(Male and Female), in feed): 23 mg/kg (Target Organ(s): Blood, Liver, Kidney)

Skin Corrosion/Irritation

Product: (Rabbit, 24 h): Non-irritating to the skin.

Serious Eye Damage/Eye Irritation

Product: (Rabbit, 24 h): Slightly irritating.

Respiratory or Skin Sensitization

Product: No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine
Skin sensitizer (Guinea Pig): sensitizing Read-across from a similar material

Specified substance(s):

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine
Skin Sensitization: (Guinea Pig): sensitizing
Human experience.: sensitizing

Carcinogenicity**Product:**

This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Toxicity to reproduction**Product:**

No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

OECD Test No. 421: Reproduction/Developmental Toxicity Screening Test (Rat); NOAEL: 100 mg/kg; NOAEL: 100 mg/kg; Gavage (Oral); Remarks: Read-across from a similar material

Specified substance(s):

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

OECD Test No. 421: Reproduction/Developmental Toxicity Screening Test (Rat); NOAEL: 100 mg/kg; NOAEL: 100 mg/kg; Gavage (Oral)

Developmental toxicity**Product:**

No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

Rat; NOAEL: 100 mg/kg; Gavage (Oral); OECD Test No. 421: Reproduction/Developmental Toxicity Screening Test; Remarks: Read-across from a similar material

Specified substance(s):

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

Rat; NOAEL: 100 mg/kg; Gavage (Oral); OECD Test No. 421: Reproduction/Developmental Toxicity Screening Test

Germ Cell Mutagenicity**In vitro****Product:**

No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

Mutagenicity - Bacterial (Bacterial Reverse Mutation Assay): negative
Mutagenicity - Mammalian (In vitro Mammalian Chromosome Aberration Test): negative

Specified substance(s):

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

Mutagenicity - Bacterial (Bacterial Reverse Mutation Assay): negative
Chromosomal aberration (In vitro Mammalian Chromosome Aberration Test): negative

In vivo**Product:**

No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

Chromosomal aberration (Mammalian Bone Marrow Chromosome Aberration Test) (Rat): negative

Specified substance(s):

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

Various (Rat): negative

Specific Target Organ Toxicity - Single Exposure

Product:	No data available.
Specified substance(s): N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine	Based on available data, the classification criteria are not met.
Specified substance(s): N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine	Not classified.

Specific Target Organ Toxicity - Repeated Exposure

Product:	No data available.
Specified substance(s): N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine	Based on available data, the classification criteria are not met.
Specified substance(s): N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine	Not classified.

Aspiration Hazard

Product: not applicable

Other effects: No data available.

SECTION 12: Ecological information**Ecotoxicity:****Acute hazards to the aquatic environment:****Fish**

Product:	No data available.
Specified substance(s): N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine	LC-50 (Oryzias latipes, 96 h): 0.028 mg/l Read-across from a similar material
Specified substance(s): N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine	LC-50 (Oryzias latipes, 96 h): 0.028 mg/l Read-across from a similar material

Aquatic Invertebrates

Product:	No data available.
Specified substance(s): N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine	EC-50 (Daphnia magna, 48 h): 0.13 mg/l Read-across from a similar material
Specified substance(s): N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine	EC-50 (Daphnia magna, 48 h): 0.13 mg/l Read-across from a similar material

Chronic hazards to the aquatic environment:**Fish**

Product:	No data available.
Specified substance(s): N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine	NOEC (Oryzias latipes, 30 d): 0.0037 mg/l Read-across from a similar material

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

NOEC (Oryzias latipes, 30 d): 0.0037 mg/l Read-across from a similar material

Aquatic Invertebrates

Product:

No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

NOEC (Daphnia magna, 21 d): 0.007 mg/l Read-across from a similar material

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

NOEC (Daphnia magna, 21 d): 0.007 mg/l Read-across from a similar material

Toxicity to Aquatic Plants

Product:

No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

EC-50 (Algae (Pseudokirchneriella subcapitata), 72 h): 0.335 mg/l
NOEC (Alga, 72 h): 0.0958 mg/l Read-across from a similar material

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

EC-50 (Algae (Pseudokirchneriella subcapitata), 72 h): 0.335 mg/l
NOEC (Scenedesmus subspicatus, 72 h): 0.23 mg/l

Persistence and Degradability

Biodegradation

Product:

No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

0 % (35 d) The product is not readily biodegradable.

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

The product is not readily biodegradable.

BOD/COD Ratio

Product:

No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

Product:

No data available.

Specified substance(s):

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

Common Carp, Bioconcentration Factor (BCF): 49 Read-across from a similar material

N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine

Bioconcentration Factor (BCF): 586.7 (calculated) Potential to bioaccumulate is low.

Partition Coefficient n-octanol / water (log Kow)

Product:

Log Kow: not applicable

Mobility in Soil:

No data available.

Known or predicted distribution to environmental compartments

N-(1,4-Dimethylpentyl)-N'-phenylbenzene-1,4-diamine

Log Koc - Log Koc: 4.06 (QSAR model)

N-1,3-Dimethylbutyl-N'-phenyl-
p-phenylenediamine Log Koc - Log Koc: 3.45 (QSAR model)

Other Adverse Effects: No data available.

SECTION 13: Disposal considerations

Waste treatment methods

General information: The generation of waste should be avoided or minimized wherever possible.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements.

Since emptied containers retain product residue, follow label warnings even after container is emptied.

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.

DOT

Class not regulated

Possible Shipping Description(s):

not regulated

IMDG - International Maritime Dangerous Goods Code

Marine pollutant.: (N-(1,4-dimethylpentyl)-N-phenylbenzene-1,4-diamine, N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine)

Possible Shipping Description(s):

UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (N-(1,4-dimethylpentyl)-N-phenylbenzene-1,4-diamine,N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine) 9 III

IATA

Class 9, Packing Group III when shipped by air from or to the Netherlands or between European Union and Australia; otherwise, not regulated.

Possible Shipping Description(s):

UN 3082 Environmentally hazardous substance, liquid, n.o.s. (N-(1,4-dimethylpentyl)-N-phenylbenzene-1,4-diamine,N-1,3-Dimethylbutyl-N'-phenyl-p-phenylenediamine) 9 III

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture.:

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

WHMIS (Canada) Status: controlled

WHMIS (Canada) Hazard Classification: D/2/B

SARA 311-312 Hazard Classification(s):

immediate (acute) health hazard

US EPCRA (SARA Title III) Section 313 - Toxic Chemical List

NONE

OSHA: hazardous

TSCA (US Toxic Substances Control Act): All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): All components of this product are listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): All components of this product are listed on AICS or otherwise comply with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): All components of this product are listed in the Handbook or have been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): All components of this product are listed on the Korean inventory or otherwise comply with the Korean Toxic Substances Control Act.

Philippines Inventory (PICCS): All components of this product are listed on the Philippine inventory or otherwise comply with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 2, Flammability - 1, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Revision Information: Not relevant.

Key literature references and sources for data: No data available.

Training information: No data available.

Issue Date: 04/28/2015

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.