SECTION 1. IDENTIFICATION

Product name : Santoflex(TM) 44PD

Product code : 34055-00, P3405501, P3405503, P3405504, P3405511, P3405502, P3405507, P3405505

Manufacturer or supplier's details

Company name of supplier : Eastman Chemical Company

Address : 200 South Wilcox Drive
           Kingsport TN 37660-5280

Telephone : (423) 229-2000

Emergency telephone : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321

Recommended use of the chemical and restrictions on use

Recommended use : antioxidant (industrial)
                  Stabilizer

Restrictions on use : None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 3

Acute toxicity (Inhalation) : Category 3

Acute toxicity (Dermal) : Category 3

Skin corrosion : Category 1C

Eye irritation : Category 2A

Skin sensitization : Sub-category 1A

Specific target organ systemic toxicity - repeated exposure : Category 2 (Liver)

GHS label elements

Hazard pictograms : 

\[\text{Diagram of hazard pictograms}\]
Signal Word : Danger

Hazard Statements :
H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H373 May cause damage to organs (Liver) through prolonged or repeated exposure.

Precautionary Statements :

Prevention:
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314 Get medical advice/ attention if you feel unwell.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.

Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

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

Other hazards
None known.
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N'-di-sec-butyl-p-phenylenediamine</td>
<td>101-96-2</td>
<td>97 - 100</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

If inhaled:
Remove person to fresh air and keep comfortable for breathing.
If breathing is difficult, give oxygen.
Get medical attention if symptoms occur.

In case of skin contact:
Wash off with soap and plenty of water.
If skin irritation occurs: Get medical advice/attention.
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:
Call a physician or poison control center immediately.
Do NOT induce vomiting.
Rinse mouth.
Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:
Toxic if swallowed.
Toxic in contact with skin.
Toxic if inhaled.
May cause an allergic skin reaction.
Causes serious eye irritation.
Causes severe skin burns and eye damage.
May cause damage to organs through prolonged or repeated exposure if swallowed.

Notes to physician:
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
Do NOT induce vomiting.
Treat symptomatically.

SECTION 5. FIRE-FIGHTING 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:
Hazardous decomposition products due to incomplete combustion
Carbon oxides

Further information: 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 fire-fighters: Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Ventilate the area. Avoid breathing dust/fume/gas/mist/vapors/spray. 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.

Methods and materials for containment and cleaning up: Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local/national regulations (see section 13).

SECTION 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.
SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

Engineering measures
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.

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.

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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
oily

Color
red brown

Odor
slight, amine-like

Odor Threshold
not determined

pH
not determined

Melting point/freezing point
64 °F / 18 °C
Boiling point/boiling range: 590 - 594 °F / 310 - 312 °C
(1,013 hPa)
340 °F / 171 °C
(1.33 hPa)

Flash point: 289 °F / 143 ºC
Method: Tag closed cup

Evaporation rate: not determined

Self-ignition: 624 °F / 329 ºC
1,013 hPa

Upper explosion limit / Upper flammability limit: not determined

Lower explosion limit / Lower flammability limit: not determined

Vapor pressure: 0.026 hPa (280 °F / 138 °C)

Relative vapor density: not determined

Relative density: 0.94 (59 °F / 15 ºC)

Density: 0.94 g/cm³ (59 °F / 15 ºC)

Solubility(ies)
Water solubility: 33 mg/l

Partition coefficient: n-octanol/water: log Pow: 3.7

Autoignition temperature: not determined

Decomposition temperature: not determined

Viscosity
Viscosity, dynamic: 31 mPa.s (68 °F / 20 ºC)
Viscosity, kinematic: 29.6 mm²/s (68 °F / 20 ºC)
11 mm²/s (104 °F / 40 ºC)

Explosive properties: Not classified

Oxidizing properties: Not classified

SECTION 10. STABILITY AND REACTIVITY

Reactivity: None reasonably foreseeable.
SAFETY DATA SHEET

Santoflex(TM) 44PD

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: None known.

Conditions to avoid: Heating in air.
Keep away from flames and sparks.

Incompatible materials: Strong oxidizing agents

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

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:
Acute oral toxicity: LD50 Oral (Rat): 271 mg/kg
Assessment: Toxic if swallowed.

Acute inhalation toxicity: LC50 (Rat): < 1.87 mg/l
Exposure time: 4 h
Assessment: Toxic if inhaled.

LC50 (Rat): > 0.6 mg/l
Exposure time: 6 h
Assessment: Toxic if inhaled.

Acute dermal toxicity: LD50 Dermal (Rat): 756 mg/kg
Assessment: Toxic in contact with skin.

Components:

N,N'-di-sec-butyl-p-phenylenediamine:
Acute oral toxicity: LD50 Oral (Rat): 271 mg/kg
Assessment: Toxic if swallowed.

Acute inhalation toxicity: LC50 (Rat): 0.6 - 1.87 mg/l
Assessment: Toxic if inhaled.

Acute dermal toxicity: LD50 Dermal (Rat): 756 mg/kg
Assessment: Toxic in contact with skin.

Skin corrosion/irritation

Product:
Species: Rabbit
Exposure time: 24 h
Result: Corrosive
Components:

N,N'-di-sec-butyl-p-phenylenediamine:
Species: Rabbit
Exposure time: 24 h
Result: Corrosive

Serious eye damage/eye irritation

Product:
Species: Rabbit
Result: slight to moderate
Assessment: Causes serious eye irritation.

Components:

N,N'-di-sec-butyl-p-phenylenediamine:
Species: Rabbit
Result: slight to moderate
Assessment: Causes serious eye irritation.

Respiratory or skin sensitization

Product:
Test Type: Skin sensitization
Species: Guinea pig
Result: sensitizing

Components:

N,N'-di-sec-butyl-p-phenylenediamine:
Test Type: Skin sensitization
Species: Guinea pig
Result: sensitizing

Germ cell mutagenicity

Product:
Genotoxicity in vitro: Test Type: Mutagenicity - Bacterial
Metabolic activation: +/- activation
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: +/- activation
Result: negative

Test Type: Mutagenicity - Mammalian
Metabolic activation: +/- activation
Result: negative
Components:

N,N' -di -sec -butyl -p -phenylenediamine :
Genotoxicity in vitro 
   Test Type: Mutagenicity - Bacterial 
   Metabolic activation: +/- activation 
   Result: negative 

   Test Type: Chromosome aberration test in vitro 
   Metabolic activation: +/- activation 
   Result: negative 

   Test Type: Mutagenicity - Mammalian 
   Metabolic activation: +/- activation 
   Result: negative 

Carcinogenicity

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

Components:

N,N' -di -sec -butyl -p -phenylenediamine :
Remarks: This product does not contain any carcinogens or potential 
carcinogens as listed by OSHA, IARC or NTP.

IARC
No ingredient of this product present at levels greater than or equal to 0.1% 
is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA
No component of this product present at levels greater than or equal to 0.1% 
is on OSHA’s list of regulated carcinogens.

NTP
No ingredient of this product present at levels greater than or equal to 0.1% 
is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:
Effects on fertility: Remarks: No data available

STOT -single exposure

Product:
Routes of exposure: Inhalation 
Assessment: Not classified 

Components:

N,N' -di -sec -butyl -p -phenylenediamine :
Routes of exposure: Inhalation
Assessment : Not classified

STOT-repeated exposure

Product:
Routes of exposure : Oral
Target Organs : Liver
Assessment : May cause damage to organs through prolonged or repeated exposure.

Components:
N,N'-di-sec-butyl-p-phenylenediamine:
Routes of exposure : Oral
Target Organs : Liver
Assessment : May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Product:
Species : Rat, Male and Female
NOAEL : 3 mg/kg
Application Route : by gavage
Exposure time : 28 days
Target Organs : Liver
Remarks : Liver disorders

Components:
N,N'-di-sec-butyl-p-phenylenediamine:
Species : Rat, Male and Female
NOAEL : 3 mg/kg
Application Route : by gavage
Exposure time : 28 days
Target Organs : Liver
Remarks : Liver disorders

Aspiration toxicity

Product:
Not classified

Components:
N,N'-di-sec-butyl-p-phenylenediamine:
Not classified
Information on likely routes of exposure

**Product:**
- **Inhalation**: Remarks: Toxic by inhalation.
- **Skin contact**: Remarks: Toxic in contact with skin. Causes skin burns. May cause an allergic skin reaction.
- **Eye contact**: Remarks: Causes serious eye irritation.
- **Ingestion**: Remarks: Toxic if swallowed. May cause damage to organs through prolonged or repeated exposure. Liver

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

**Product:**
- **Toxicity to fish**: LC50 (Pimephales promelas (fathead minnow)): 0.13 mg/l Exposure time: 96 h
- **Toxicity to daphnia and other aquatic invertebrates**: EC50 (Daphnia magna (Water flea)): 0.54 mg/l Exposure time: 48 h Test Type: Daphnia sp. Acute Immobilisation Test
- **Toxicity to algae/aquatic plants**: EC50 (Pseudokirchneriella subcapitata (algae)): 0.939 mg/l Exposure time: 72 h
- **Toxicity to fish (Chronic toxicity)**: NOEC (Oryzias latipes (Orange-red killifish)): 0.0037 mg/l Exposure time: 30 d Remarks: Read-across from a similar material
- **Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**: NOEC (Daphnia magna (Water flea)): 0.0057 mg/l Exposure time: 21 d Remarks: Read-across from a similar material
- **Toxicity to microorganisms**: EC50 (Bacteria): 90.78 mg/l Exposure time: 3 h

Components:

**N,N’-di-sec-butyl-p-phenylenediamine:**
- **Toxicity to fish**: LC50 (Pimephales promelas (fathead minnow)): 0.13 mg/l Exposure time: 96 h
- **Toxicity to daphnia and other aquatic invertebrates**: EC50 (Daphnia magna (Water flea)): 0.54 mg/l Exposure time: 48 h
- **Toxicity to algae/aquatic**: EC50 (Pseudokirchneriella subcapitata (algae)): 0.939 mg/l
plants

Exposure time: 72 h

M-Factor (Acute aquatic toxicity):

1, Hazardous to the aquatic environment - acute hazard

10, Hazardous to the aquatic environment - chronic hazard

Toxicity to fish (Chronic toxicity):

NOEC (Oryzias latipes (Orange-red killifish)): 0.0037 mg/l
Exposure time: 30 d
Remarks: Read-across from a similar material

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

NOEC (Daphnia magna (Water flea)): 0.0057 mg/l
Exposure time: 21 d
Remarks: Read-across from a similar material

M-Factor (Chronic aquatic toxicity):

10

Toxicity to microorganisms:

EC50 (Bacteria): 90.78 mg/l
Exposure time: 3 h

Persistence and degradability

Product:

Biodegradability:

Test Type: Ozone depletion
Biodegradation: 12 %
Exposure time: 28 d
Method: Ready Biodegradability: CO2 Evolution Test
Remarks: Not readily biodegradable.
Read-across from a similar material

Biodegradation: 50 %
Method: Ready Biodegradability: Modified MITI Test (I)
Remarks: Inherently biodegradable
Read-across from a similar material

Biochemical Oxygen Demand (BOD):

Remarks: No data available

Chemical Oxygen Demand (COD):

Remarks: No data available

Components:

N,N'-di-sec-butyl-p-phenylenediamine:

Biodegradability: Ozone depletion
Biodegradation: 12 %
Exposure time: 28 d
Method: Ready Biodegradability: CO2 Evolution Test
Remarks: Read-across from a similar material
Not readily biodegradable.

Biodegradation: 50 %
Method: Ready Biodegradability: Modified MITI Test (I)
Remarks: Read-across from a similar material
Inherently biodegradable

Bioaccumulative potential

Product:
Bioaccumulation : Bioconcentration factor (BCF): 125.9
Method: calculated

Components:
N,N'-di-sec-butyl-p-phenylenediamine:
Bioaccumulation : Bioconcentration factor (BCF): 125.9
Method: calculated

Mobility in soil

Product:
Distribution among environmental compartments : log Koc: 2.77
Method: QSAR model

Components:
N,N'-di-sec-butyl-p-phenylenediamine:
Distribution among environmental compartments : log Koc: 2.77
Method: QSAR model

Other adverse effects

Product:
Results of PBT and vPvB assessment : Not fulfilling vPvB (very persistent, very bioaccumulative) criteria.

Components:
N,N'-di-sec-butyl-p-phenylenediamine:
Results of PBT and vPvB assessment : Not fulfilling vPvB (very persistent, very bioaccumulative) criteria.
SECTION 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. This material when discarded may be a hazardous waste as that term is defined by the Resource Conservation and Recovery Act (RCRA), 40 CFR 261.24, due to its toxicity characteristic. This material should be analyzed in accordance with Method 1311 for the compound D018 BENZENE. Consult 40 CFR 268.40 or appropriate local regulations for concentration based standards. This product meets the criteria for a synthetic used oil under the U.S. EPA Standards for the Management of Used Oil (40 CFR 279). Those standards govern recycling and disposal in lieu of 40 CFR 260 -272 of the Federal hazardous waste program in states that have adopted these used oil regulations. Consult your attorney or appropriate regulatory official to be sure these standards have been adopted in your state. Recycle or burn in accordance with the applicable standards. Eastman Chemical Company operates a used fluid return program for certain fluids under these used oil standards. Contact your Sales Representative for details.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
UN/ID No.: UN 2922
Proper shipping name: Corrosive liquid, toxic, n.o.s. (N,N’-Di-sec-butyl-p-fenyleendiamine)
Class: 8
Subsidiary risk: 6.1
Packing group: III
Labels: Corrosive, Toxic
Packing instruction (cargo aircraft): 856
Packing instruction (passenger aircraft): 852

IMDG-Code
UN number: UN 2922
Proper shipping name: CORROSIVE LIQUID, TOXIC, N.O.S. (N,N’-Di-sec-butyl-p-fenyleendiamine)
Class: 8
Subsidiary risk: 6.1
Packing group: III
Labels: 8 (6.1)
EmS Code: F-A, S-B
Marine pollutant: yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation
49 CFR
UN/ID/NA number: UN 2922
Proper shipping name: Corrosive liquids, toxic, n.o.s.
(N,N'-Di-sec-butyl-p-fenyleendiamine)
Class: 8
Subsidiary risk: 6.1
Packing group: III
Labels: Class 8 - Corrosive, Class 6 - Toxic Substance (Division 6.1)
ERG Code: 154
Marine pollutant: no

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.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know
SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards: No SARA Hazards

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

The ingredients of this product are reported in the following inventories:
DSL: All components of this product are on the Canadian DSL
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
PICCS: 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: On the inventory, or in compliance with the inventory

TSCA list
No substances are subject to a Significant New Use Rule.
No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:

HMIS® IV:

| HEALTH | * | 3 |
| FLAMMABILITY | 1 |
| PHYSICAL HAZARD | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; 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; KECl - 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Oth-
Sources of key data used to compile the Material Safety Data Sheet:

Revision Date: 04/12/2019

The information provided in this Material 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.