

**Eastman(TM) Turbo Oil 2389**

Version            Revision Date:            MSDS Number:            Date of last issue: 01/25/2016  
3.2                07/20/2016                150000097796            Date of first issue: 02/28/2014  
SDSUS / PRD / 0001

---

**SECTION 1. IDENTIFICATION**

Product name                                : Eastman(TM) Turbo Oil 2389  
Product code                                : 34360-00, E3436001, P3436000, P3436001, P3436002

**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 number             : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321  
    For emergency transportation information, in the United States:  
    call CHEMTREC at 800-424-9300 or call 423-229-2000.

**Recommended use of the chemical and restrictions on use**

Recommended use                          : Lubricant  
Restrictions on use                        : None known.

---

**SECTION 2. HAZARDS IDENTIFICATION****GHS Classification**

Not a hazardous substance or mixture.

**GHS Label element**

Not a hazardous substance or mixture.

**Other hazards**

Prolonged skin contact may defat the skin and produce dermatitis.

---

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS****Components**

Chemical Name	CAS-No.	Concentration (% w/w)
Tricresyl phosphate	1330-78-5	< 2.5
N-phenyl-1-naphthylenamine	90-30-2	< 1
N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene	68411-46-1	< 1

---

**SECTION 4. FIRST AID MEASURES**

If inhaled                                    : Move to fresh air.  
    If breathing is difficult, give oxygen.  
    Consult a physician if necessary.

---

**Eastman(TM) Turbo Oil 2389**

Version	Revision Date:	MSDS Number:	Date of last issue: 01/25/2016
3.2	07/20/2016	150000097796	Date of first issue: 02/28/2014
SDSUS / PRD / 0001			

---

- In case of skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.  
Wash contaminated clothing before reuse.  
If symptoms persist, call a physician.
- 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 : Rinse mouth.  
Call a physician or poison control centre immediately.  
Do NOT induce vomiting.  
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : Prolonged skin contact may defat the skin and produce dermatitis.  
Contact with hot product will cause thermal burns.  
Inhalation of thermal decomposition products may lead to adverse effects including pulmonary edema.
- Notes to physician : Treat symptomatically.
- 

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : Water spray  
Foam  
Dry powder  
Carbon dioxide (CO<sub>2</sub>)
- Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.
- Specific hazards during fire-fighting : Hazardous combustion products  
carbon dioxide, carbon monoxide  
oxides of phosphorus
- Further information : In case of fire and/or explosion do not breathe fumes.  
Use water spray to cool unopened containers.  
Prevent fire extinguishing water from contaminating surface water or the ground water system.
- Special protective equipment for firefighters : 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.  
Material can create slippery conditions.  
Use personal protective equipment.  
Local authorities should be advised if significant spillages
-

**Eastman(TM) Turbo Oil 2389**

Version	Revision Date:	MSDS Number:	Date of last issue: 01/25/2016
3.2	07/20/2016	150000097796	Date of first issue: 02/28/2014
SDSUS / PRD / 0001			

cannot be contained.

Environmental precautions : 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 : Handle in accordance with good industrial hygiene and safety practice.  
Do not get in eyes.  
Do not get on skin or clothing.  
Wash thoroughly after handling.  
Do not breathe vapours or spray mist.  
Use only in area provided with appropriate exhaust ventilation.  
Drain or remove substance from equipment prior to break-in or maintenance.  
Wear appropriate personal protective equipment.

Conditions for safe storage : Keep containers tightly closed in a cool, well-ventilated place.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components 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 respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

**Hand protection**

Material : Recommended gloves:

Material : Nitrile rubber

Remarks : Wear suitable gloves. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for

**Eastman(TM) Turbo Oil 2389**

Version      Revision Date:      MSDS Number:      Date of last issue: 01/25/2016  
3.2          07/20/2016          150000097796      Date of first issue: 02/28/2014  
SDSUS / PRD / 0001

---

your use conditions.

Eye protection                      : Wear safety glasses with side shields (or goggles).  
Protective measures                : Ensure that eye flushing systems and safety showers are located close to the working place.

---

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance                        : liquid  
Colour                                : amber  
Odour                                 : No data available  
Odour Threshold                    : not determined  
Melting point/freezing point    : -54 °C  
Flash point                         : 210 °C  
    Method: Cleveland open cup  
Evaporation rate                    : not determined  
Flammability (solid, gas)        : Not applicable  
Vapour pressure                    : not determined  
Relative density                    : 0.95 (15.6 °C)  
Density                                : 950 kg/m<sup>3</sup> (15.6 °C)  
Solubility(ies)  
    Water solubility                : insoluble  
Partition coefficient: n-  
    octanol/water                    : Not applicable  
Viscosity  
    Viscosity, kinematic            : 11.5 mm<sup>2</sup>/s (40 °C)  
    3 mm<sup>2</sup>/s (100 °C)  
Explosive properties                : Classification Code: Not classified  
Oxidizing properties                : Not classified

---

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity                            : None reasonably foreseeable.

---

**Eastman(TM) Turbo Oil 2389**

Version      Revision Date:      MSDS Number:      Date of last issue: 01/25/2016  
3.2          07/20/2016          150000097796      Date of first issue: 02/28/2014  
SDSUS / PRD / 0001

---

Chemical stability                   : Stable under normal conditions.  
Conditions to avoid                 : Keep away from sources of ignition - No smoking.  
Incompatible materials             : Strong oxidizing agents  
Hazardous decomposition         : Emits acrid smoke and fumes when heated to decomposition.  
products

---

**SECTION 11. TOXICOLOGICAL INFORMATION****Acute toxicity**

Not classified based on available information.

**Product:**

Acute oral toxicity                 : LD50 Oral (Rat): > 10,000 mg/kg  
Assessment: Not classified  
  
Acute inhalation toxicity         : Acute toxicity estimate (Expert judgement): Exposure time: 4 h  
Assessment: The substance or mixture has no acute inhalation toxicity  
Remarks: Read-across from a similar material  
  
Acute dermal toxicity               : LD50 Dermal (Rabbit): > 3,160 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**Components:****Tricresyl phosphate:**

Acute oral toxicity                 : LD50 Oral (Rat): > 5,000 mg/kg  
  
Acute inhalation toxicity         : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
  
Acute dermal toxicity               : LD50 Dermal (Rabbit): > 10,000 mg/kg

**N-phenyl-1-naphthylenamine:**

Acute oral toxicity                 : LD50 Oral (Rat): 1,250 mg/kg  
  
Acute dermal toxicity               : LD50 Dermal (Rabbit): > 2,000 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.

**Product:**

Species: Rabbit  
Exposure time: 24 h  
Assessment: Based on available data, the classification criteria are not met.  
Result: slight

**Components:**

**Eastman(TM) Turbo Oil 2389**

Version      Revision Date:      MSDS Number:      Date of last issue: 01/25/2016  
3.2          07/20/2016          150000097796      Date of first issue: 02/28/2014  
SDSUS / PRD / 0001

---

**Tricresyl phosphate:**

Species: Rabbit  
Exposure time: 24 h  
Assessment: Not classified as hazardous.  
Result: Non-irritating to the skin.

**N-phenyl-1-naphthylenamine:**

Species: Rabbit  
Assessment: Not classified  
Result: none

**Serious eye damage/eye irritation**

Not classified based on available information.

**Product:**

Species: Rabbit  
Result: slight  
Assessment: No eye irritation

**Components:****Tricresyl phosphate:**

Species: Rabbit  
Assessment: Not classified

**N-phenyl-1-naphthylenamine:**

Species: Rabbit  
Result: slight  
Assessment: Not classified

**Respiratory or skin sensitisation**

Skin sensitisation: Not classified based on available information.  
Respiratory sensitisation: Not classified based on available information.

**Product:**

Test Type: Skin Sensitization  
Species: Humans  
Assessment: Does not cause skin sensitisation.  
Method: Human Repeat Insult Patch Test  
Remarks: Read-across from a similar material

**Components:****Tricresyl phosphate:**

Test Type: Skin Sensitization  
Assessment: Not classified

**N-phenyl-1-naphthylenamine:**

Assessment: Skin sensitisation  
Result: sensitizing

**Germ cell mutagenicity**

Not classified based on available information.

**Eastman(TM) Turbo Oil 2389**

Version	Revision Date:	MSDS Number:	Date of last issue: 01/25/2016
3.2	07/20/2016	150000097796	Date of first issue: 02/28/2014
SDSUS / PRD / 0001			

**Product:**

Genotoxicity in vitro : Test Type: Mutagenicity  
Metabolic activation: Read-across from a similar material  
Result: Based on available data, the classification criteria are not met.

Genotoxicity in vivo : Test Type: Mutagenicity  
Result: Based on available data, the classification criteria are not met.  
Remarks: Read-across from a similar material

**Components:****Tricresyl phosphate:**

Genotoxicity in vitro : Test Type: various  
Result: Based on available data, the classification criteria are not met.  
Remarks: Not classified

Genotoxicity in vivo : Test Type: various  
Result: Based on available data, the classification criteria are not met.

**Carcinogenicity**

Not classified based on available information.

**IARC**

No component 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 identified as a carcinogen or potential carcinogen by OSHA.

**NTP**

No component 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**

Not classified based on available information.

**Product:**

Effects on fertility : Species: Rat  
Remarks: No known significant effects or critical hazards.

Effects on foetal development : Species: Rat  
Remarks: No known significant effects or critical hazards.

Reproductive toxicity - Assessment : No toxicity to reproduction

**Components:**

**Eastman(TM) Turbo Oil 2389**

Version      Revision Date:      MSDS Number:      Date of last issue: 01/25/2016  
3.2          07/20/2016          150000097796      Date of first issue: 02/28/2014  
SDSUS / PRD / 0001

---

**Tricresyl phosphate:**

Effects on fertility

:      Species: Rat

Remarks: Suspected of damaging fertility.

Effects on foetal development

:      Species: Rat  
Remarks: Suspected of damaging the unborn child.

Reproductive toxicity - Assessment

:      May damage the unborn child. Suspected of damaging fertility.

**STOT - single exposure**

Not classified based on available information.

**Product:**

Exposure routes: inhalation (dust/mist/fume)

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

**Components:****Tricresyl phosphate:**

Assessment: Based on available data, the classification criteria are not met.

**STOT - repeated exposure**

Not classified based on available information.

**Product:**

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**Components:****Tricresyl phosphate:**

Assessment: Based on available data, the classification criteria are not met.

**N-phenyl-1-naphthylenamine:**

Assessment: Not classified

**Repeated dose toxicity****Product:**

Remarks: No known significant effects or critical hazards.

**Components:****Tricresyl phosphate:**

Species: Rat

NOEL: 300 mg/l



**Eastman(TM) Turbo Oil 2389**

Version      Revision Date:      MSDS Number:      Date of last issue: 01/25/2016  
 3.2          07/20/2016          150000097796      Date of first issue: 02/28/2014  
 SDSUS / PRD / 0001

---

**Aspiration toxicity**

Not classified based on available information.

**Product:**

No aspiration toxicity classification

**Components:****Tricresyl phosphate:**

Not classified

**Experience with human exposure****Product:**

Inhalation                                  : Remarks: None known.

Skin contact                                : Remarks: Prolonged skin contact may defat the skin and produce dermatitis.

Eye contact                                 : Remarks: Contact with the eyes may be very painful but does not cause damage.

Ingestion                                    : Remarks: None known.

---

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Product:**

Toxicity to fish                            : LC50 (Fish):  
 Exposure time: 96 h  
 Remarks: Not classified as hazardous.  
 (limit of solubility in fresh water)  
 Read-across from a similar material

Toxicity to daphnia and other         : EC50 (Daphnia magna (Water flea)):  
 aquatic invertebrates                    Exposure time: 48 h  
 Remarks: Not classified as hazardous.  
 (limit of solubility in fresh water)  
 Read-across from a similar material

Toxicity to algae                            : NOEC (Pseudokirchneriella subcapitata (algae)):  
 Exposure time: 72 h  
 Remarks: No toxicity at the limit of solubility  
 (limit of solubility in fresh water)  
 Read-across from a similar material

Toxicity to fish (Chronic tox-         : NOEC (Fish):  
 icity)    Remarks: No toxicity at the limit of solubility  
 (limit of solubility in fresh water)  
 Read-across from a similar material

---

**Eastman(TM) Turbo Oil 2389**

Version      Revision Date:      MSDS Number:      Date of last issue: 01/25/2016  
3.2          07/20/2016          150000097796      Date of first issue: 02/28/2014  
SDSUS / PRD / 0001

---

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC:  
Remarks: No toxicity at the limit of solubility (limit of solubility in fresh water)  
Read-across from a similar material

**Components:****Tricresyl phosphate:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.6 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.146 mg/l  
Exposure time: 48 h

M-Factor (Acute aquatic toxicity) : 1

**N-phenyl-1-naphthylenamine:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.44 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.30 - 0.68 mg/l  
Exposure time: 48 h

Toxicity to bacteria : EC50 (Bacteria): Exposure time: 3 h

**Persistence and degradability****Product:**

Biodegradability : Result: Readily biodegradable  
Biodegradation: 92.36 %  
Exposure time: 28 d  
Remarks: Read-across from a similar material

Biochemical Oxygen Demand (BOD) : Remarks: No data available

Chemical Oxygen Demand (COD) : Remarks: No data available

BOD/COD : Remarks: No data available

**Bioaccumulative potential****Product:**

Bioaccumulation : Remarks: Not applicable  
Mixture

**Components:****Tricresyl phosphate:**

Bioaccumulation : Bioconcentration factor (BCF): 2,000  
Remarks: No information available.

**Eastman(TM) Turbo Oil 2389**

Version      Revision Date:      MSDS Number:      Date of last issue: 01/25/2016  
3.2          07/20/2016          150000097796      Date of first issue: 02/28/2014  
SDSUS / PRD / 0001

---

Partition coefficient: n-      : Pow: 860,000  
octanol/water                  log Pow: 5.93

**Mobility in soil****Components:****Tricresyl phosphate:**

Distribution among environ-      : log Koc: 4.31  
mental compartments

**Other adverse effects****Product:**

Ozone-Depletion Potential      : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

---

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues                  : Dispose of in accordance with local regulations.

---

**SECTION 14. TRANSPORT INFORMATION****International Regulation****IATA-DGR**

Not regulated as a dangerous good

**IMDG-Code**

Not regulated as a dangerous good

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**National Regulations****49 CFR**

Not regulated as a dangerous good

---

**SECTION 15. REGULATORY INFORMATION****EPCRA - Emergency Planning and Community Right-to-Know Act**

**SARA 311/312 Hazards**                  : No SARA Hazards

---

**Eastman(TM) Turbo Oil 2389**

Version          Revision Date:          MSDS Number:          Date of last issue: 01/25/2016  
 3.2                  07/20/2016                150000097796          Date of first issue: 02/28/2014  
 SDSUS / PRD / 0001

---

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**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.

**Clean Air Act**

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCOMI Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

**The components of this product are reported in the following inventories:**

TSCA : On TSCA Inventory  
 DSL : All components of this product are on the Canadian DSL  
 AICS : On the inventory, or in compliance with the inventory  
 KECI : On the inventory, or in compliance with the inventory  
 PICCS : Not listed  
 IECSC : 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.

---

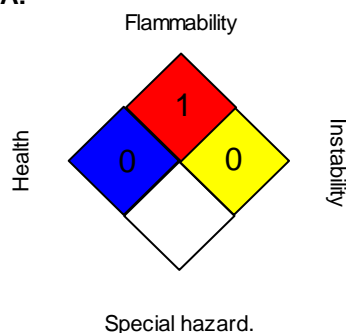
**SECTION 16. OTHER INFORMATION****Full text of other abbreviations**

(Q)SAR - (Quantitative) Structure Activity Relationship; ASTM - American Society for the Testing of Materials; bw - Body weight; DIN - Standard of the German Institute for Standardisation; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response;

**Eastman(TM) Turbo Oil 2389**

Version      Revision Date:      MSDS Number:      Date of last issue: 01/25/2016  
 3.2            07/20/2016            150000097796      Date of first issue: 02/28/2014  
 SDSUS / PRD / 0001

EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized 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; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; 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; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; 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; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; DSL - Domestic Substances List (Canada); KECI - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; EHS - Extremely Hazardous Substance; HMIS - Hazardous Materials Identification System; MSHA - Mine Safety and Health Administration; NFPA - National Fire Protection Association; RCRA - Resource Conservation and Recovery Act; RQ - Reportable Quantity; SARA - Superfund Amendments and Reauthorization Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice; ERG - Emergency Response Guide; NTP - National Toxicology Program; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods

**Further information****NFPA:****HMIS III:**

<b>HEALTH</b>	<b>0</b>
<b>FLAMMABILITY</b>	<b>1</b>
<b>PHYSICAL HAZARD</b>	<b>0</b>

0 = not significant, 1 = Slight,  
 2 = Moderate, 3 = High  
 4 = Extreme, \* = Chronic

Sources of key data used to compile the Safety Data Sheet : [www.EastmanAviationSolutions.com](http://www.EastmanAviationSolutions.com)  
 Revision Date : 07/20/2016

**Eastman(TM) Turbo Oil 2389**

Version	Revision Date:	MSDS Number:	Date of last issue: 01/25/2016
3.2	07/20/2016	150000097796	Date of first issue: 02/28/2014

SDSUS / PRD / 0001

---

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.

US / EN