

NYTRO® 10 XN

SAFETY DATA SHEET

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Version	2

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

1.1 Product identifier

Product name	NYTRO® 10 XN
Product description	Insulating oil
Product type	Liquid.
MARPOL Annex 1	Oils

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

Identified uses	
<input checked="" type="checkbox"/> Distribution of substance - Industrial Formulation and (re)packing of substances and mixtures - Industrial Use in functional fluids - Industrial Use in functional fluids - Professional Lubrication at high energy conditions in metal working operations - Industrial Lubrication at high energy conditions in metal working operations - Professional	
Uses advised against	Reason
This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.	-

1.3 Details of the supplier of the safety data sheet

Supplier/Manufacturer	Head office: Nynas AB P.O. Box 10700 SE-121 29 Stockholm SWEDEN +46 8 602 12 00 (Office hours 8 am - 4.30 pm (CET)) www.nynas.com
e-mail address of person responsible for this SDS	ProductHSE@nynas.com

<u>National contact</u>	NYNAS-TECHNOL Handels-GmbH Grieskai 16 A-8020 Graz AUSTRIA +43 316 73 46 00
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1.4 Emergency telephone number

Telephone number	+44 (0) 1235 239 670
Hours of operation	24 hour service

National advisory body/Poison Centre

+43 1 406 43 43 (Austrian Poison Control Centre)

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SECTION 3: Composition/information on ingredients

Distillates (petroleum), hydrotreated light naphthenic	REACH #: 01-2119480375-34 EC: 265-156-6 CAS: 64742-53-6 Index: 649-466-00-2	>99	Asp. Tox. 1, H304	[1]
2,6-di-tert-butyl-p-cresol	REACH #: 01-2119555270-46 EC: 204-881-4 CAS: 128-37-0	<0.3	Aquatic Acute 1, H400 (M=1) Aquatic Chronic 1, H410 (M=1) See Section 16 for the full text of the H statements declared above.	[1] [2]

Annex I Nota L applies to the base oil(s) in this product. Nota L - The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs or vPvBs or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- [5] Substance of equivalent concern
- [6] Additional disclosure due to company policy

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.
Inhalation	If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If casualty is unconscious and: If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if adverse health effects persist or are severe. Maintain an open airway.
Skin contact	Wash with soap and water. Remove contaminated clothing and shoes. Handle with care and dispose of in a safe manner. Seek medical attention if skin irritation, swelling or redness develops and persists. Accidental high pressure injection through the skin requires immediate medical attention. Do not wait for symptoms to develop.
Ingestion	Always assume that aspiration has occurred. Do not induce vomiting. Can enter lungs and cause damage. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Seek professional medical attention or send the casualty to a hospital. Do not wait for symptoms to develop. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Before attempting to rescue casualties, isolate area from all potential sources of ignition including disconnecting electrical supply. Ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry into confined spaces.

SECTION 4: First aid measures

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact	Eye contact may cause redness and transient pain.
Inhalation	Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation.
Skin contact	No known significant effects or critical hazards.
Ingestion	May be fatal if swallowed and enters airways.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	Due to low viscosity there is a risk of aspiration if the product enters the lungs. Treat symptomatically.
Specific treatments	Always assume that aspiration has occurred.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Use dry chemical, CO ₂ , water spray (fog) or foam.
Unsuitable extinguishing media	Do not use direct water jets on the burning product; they could cause splattering and spread the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	In a fire or if heated, a pressure increase will occur and the container may burst. This substance will float and can be reignited on surface water. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous thermal decomposition products	Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including carbon monoxide, H ₂ S, SO _x (sulfur oxides) or sulfuric acid and unidentified organic and inorganic compounds.

5.3 Advice for firefighters

Special precautions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Avoid breathing vapour or mist. Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency. Stop leak if safe to do so. Avoid direct contact with the product. Stay upwind/keep distance from source. In case of large spillages, alert occupants in downwind areas.
	Eliminate all ignition sources if safe to do so. Spillages of limited amounts of product, especially in the open air when vapours will be usually quickly dispersed, are dynamic situations, which will presumably limit the exposure to dangerous concentrations.

Note : recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction

SECTION 6: Accidental release measures

	and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.
For emergency responders	<p>Small spillages: normal antistatic working clothes are usually adequate.</p> <p>Large spillages: full body suit of chemically resistant and thermal resistant material should be used. Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. Note : gloves made of PVA are not water-resistant, and are not suitable for emergency use. Safety helmet, antistatic non-skid safety shoes or boots. Goggles and /or face shield, if splashes or contact with eyes is possible or anticipated.</p> <p>Respiratory protection : A half or full-face respirator with filter(s) for organic vapours (and when applicable for H2S) a Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.</p>
6.2 Environmental precautions	<p>Water polluting material. May be harmful to the environment if released in large quantities. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Prevent product from entering sewers, rivers or other bodies of water. If necessary dike the product with dry earth, sand or similar non-combustible materials. In case of soil contamination, remove contaminated soil and treat in accordance with local regulations.</p> <p>In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents.</p> <p>If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this is not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities.</p>
6.3 Methods and material for containment and cleaning up	
Small spill	Stop leak if without risk. מתאימים דליקים שאינם חומרים עם שנשפך חומר לספוג.
Large spill	Large spillages may be cautiously covered with foam, if available, to limit vapour cloud formation. Do not use water jet. When inside buildings or confined spaces, ensure adequate ventilation. Transfer collected product and other contaminated materials to suitable containers for recovery or safe disposal. Approach the release from upwind. Contaminated absorbent material may pose the same hazard as the spilt product.
6.4 Reference to other sections	<p>See Section 1 for emergency contact information.</p> <p>See Section 8 for information on appropriate personal protective equipment.</p> <p>See Section 13 for additional waste treatment information.</p>

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

General information	Obtain special instructions before use. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use and store only outdoors or in a well-ventilated area. Hazard of slipping on spilt product. Avoid release to the environment.
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7.1 Precautions for safe handling

SECTION 7: Handling and storage


Protective measures	<p>Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with eyes, skin and clothing. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.</p> <p>Prevent the risk of slipping. Take precautionary measures against static discharge. Avoid splash filling of bulk volumes when handling hot liquid product. Empty containers retain product residue and can be hazardous.</p> <p>Avoid release to the environment.</p> <p>Nota : See Section 8 for information on appropriate personal protective equipment. See section 13 for waste disposal information.</p>
Advice on general occupational hygiene	<p>Ensure that proper housekeeping measures are in place. Contaminated materials should not be allowed to accumulate in the workplaces and should never be kept inside the pockets. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash hands thoroughly after handling. Change contaminated clothes at the end of working shift. See also Section 8 for additional information on hygiene measures.</p>
7.2 Conditions for safe storage, including any incompatibilities	<p>Storage area layout, tank design, equipment and operating procedures must comply with the relevant regional, national or local legislation. Storage installations should be designed with adequate bunds in case of leaks or spills. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.</p> <p>Store separately from oxidising agents.</p> <p>Recommended materials for containers, or container linings use mild steel, stainless steel. Not suitable : Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.</p> <p>Keep only in the original container or in a suitable container for this kind of product. Keep container tightly closed and sealed until ready for use. Do not store in unlabelled containers. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Empty containers may contain harmful, flammable/combustible or explosive residue or vapours. Do not cut, grind, drill, weld, reuse or dispose of containers unless adequate precautions are taken against these hazards. Store locked up. Protect from sunlight.</p>
7.3 Specific end use(s)	
Recommendations	Not available.
Industrial sector specific solutions	Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
<p> Naphth - 2,6-diertiary Butyl-4-Methyl Phenol (BHT) (CAS; 128-37-0) OEL 2,6-diertiary Butyl-4-Methyl Phenol (BHT) (CAS; 128-37-0)</p>	<p>Regulation on Limit Values - MAC (Austria, 12/2011). TWA: 10 mg/m³ 8 hours. [Air contaminant] Regulation on Limit Values - MAC (Austria, 12/2011). TWA: 10 mg/m³ 8 hours.</p>

SECTION 8: Exposure controls/personal protection

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
Distillate (petroleum), hydrotreated light naphthenic 2,6-Di-tert-butyl-p-cresol	DNEL	Long term Inhalation	5,4 mg/m ³	Workers	Local
	DNEL	Long term Inhalation	5,8 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	1,74 mg/m ³	Consumers	Systemic
	DMEL	Long term Dermal	8,3 mg/kg bw/day	Workers	Systemic
	DMEL	Long term Dermal	5 mg/kg bw/day	Consumers	Systemic

PNECs

Product/ingredient name	Compartment Detail	Value	Method Detail
2,6-Di-tert-butyl-p-cresol	Soil	1,04 mg/kg wwt	Equilibrium Partitioning Assessment Factors
	Sewage Treatment Plant	100 mg/l	
	Sediment	1,29 mg/kg wwt	Equilibrium Partitioning Assessment Factors
	Secondary Poisoning	16,7 mg/kg	
	Marine water	0,4 µg/l	
Fresh water	4 µg/l	Assessment Factors	

PNEC Summary

Hydrocarbon Block Method (Petrisk)

8.2 Exposure controls

Appropriate engineering controls

Mechanical ventilation and local exhaust will reduce exposure via the air. Use oil resistant material in construction of handling equipment. Store under recommended conditions and if heated, temperature control equipment should be used to avoid overheating.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location. Wash contaminated clothing before reuse.

Eye/face protection

Recommended: Safety glasses with side shields.

Skin protection

Hand protection

4 - 8 hours (breakthrough time): nitrile rubber

Body protection

Wear protective clothing if there is a risk of skin contact. Change contaminated clothes at the end of working shift.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

SECTION 8: Exposure controls/personal protection

Respiratory protection	Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary.
Environmental exposure 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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Light yellow
Odour	Odourless/Light petroleum.
Odour threshold	Not applicable.
pH	Not applicable.
Melting point/freezing point	-60°C
Initial boiling point and boiling range	>250°C
Flash point	Closed cup: >140°C [Pensky-Martens.]
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapour pressure (Calculated)	0,01 kPa [room temperature]
Density	0,88 g/cm ³ [15°C]
Solubility(ies)	Insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	>270°C
Decomposition temperature	>280°C
Viscosity	Kinematic (40°C): 0,076 cm ² /s (7,6 cSt)
Explosive properties	Not available.
Oxidising properties	Not available.
DMSO extractable compounds for base oil substance(s) according to IP346	< 3%

SECTION 10: Stability and reactivity

10.1 Reactivity	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	Stable under normal conditions.
10.3 Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	Oxidising agent.
10.5 Incompatible materials	Keep away from extreme heat and oxidizing agents.
10.6 Hazardous decomposition products	Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including carbon monoxide, H ₂ S, SO _x (sulfur oxides) or sulfuric acid and unidentified organic and inorganic compounds.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure	Remarks
Distillates (petroleum), hydrotreated light naphthenic 2,6-di-tert-butyl-p-cresol	LC50 Inhalation Dusts and mists	Rat - Male, Female	>5,53 mg/l	4 hours	EMBSI 1988a (similar material)
	LD50 Dermal	Rabbit	>5000 mg/kg	-	API 1982 (similar material)
	LD50 Oral	Rat	>5000 mg/kg	-	API 1986a (similar material)
	LD50 Dermal	Rat	>5000 mg/kg	-	Supplier's information
	LD50 Oral	Rat	>5000 mg/kg	-	Supplier's information

Conclusion/Summary No known significant effects or critical hazards.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Observation	Remarks
Distillates (petroleum), hydrotreated light naphthenic 2,6-di-tert-butyl-p-cresol	Skin - Non-irritant to skin.	Rabbit	0 to 0,8	24 to 72 hours	UBTL 1984e (similar material)
	Eyes - Non-irritating to the eyes.	Rabbit	0,17 to 0,33	24 to 72 hours	UBTL 1984i (similar material)
	Eyes - Redness of the conjunctivae	Rabbit	0,5	-	Supplier's information
	Eyes - Iris lesion	Rabbit	0	-	Supplier's information
	Eyes - Oedema of the conjunctivae	Rabbit	0,1	-	-

Skin No known significant effects or critical hazards.

Eyes No known significant effects or critical hazards.

Respiratory No known significant effects or critical hazards.

Sensitisation

Product/ingredient name	Route of exposure	Species	Result	Remarks
Distillates (petroleum), hydrotreated light naphthenic	skin	Guinea pig	Not sensitizing	UBTL 1984j,k,l (similar material)

Skin No known significant effects or critical hazards.

Respiratory No known significant effects or critical hazards.

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Distillates (petroleum), hydrotreated light naphthenic 2,6-di-tert-butyl-p-cresol	OECD 473 473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: with and without	Negative	-
	476 In vitro	Experiment: In vitro	Negative	-

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	Mammalian Cell Gene Mutation Test	Subject: Mammalian-Animal Cell: Somatic Experiment: In vitro	Negative	-
	473 In vitro Mammalian Chromosomal Aberration Test	Subject: Mammalian-Animal Cell: Germ		

Conclusion/Summary No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure	Remarks
Distillates (petroleum), hydrotreated light naphthenic	Negative - Dermal	Mouse - Female	0,22 to 0,25 ml	78 weeks; Various	Doak, 1983, McKee, 1989 (similar material)

Conclusion/Summary The base oil(s) in this product is based on an severely hydrotreated distillate. The product should not be regarded as a carcinogen.

Reproductive toxicity

Conclusion/Summary No known significant effects or critical hazards.

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure	Remarks
Distillates (petroleum), hydrotreated light naphthenic	Negative - Dermal	Rat	0 to 2000 mg/kg mg/kg/day	-	(similar material)

Conclusion/Summary No known significant effects or critical hazards.

Aspiration hazard

Product/ingredient name	Result
Distillates (petroleum), hydrotreated light naphthenic	ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1

Information on likely routes of exposure Not available.

Potential acute health effects

Eye contact Eye contact may cause redness and transient pain.
 Inhalation Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation.
 Skin contact No known significant effects or critical hazards.
 Ingestion May be fatal if swallowed and enters airways.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
2,6-Di-tert-butyl-p-cresol	Chronic NOAEL Oral	Rat	25 mg/kg	28 days; 7 days per week

General No known significant effects or critical hazards.
 Carcinogenicity The base oil(s) in this product is based on an severely hydrotreated distillate. The product should not be regarded as a carcinogen.
 Mutagenicity No known significant effects or critical hazards.
 Teratogenicity No known significant effects or critical hazards.

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SECTION 11: Toxicological information

Product/ingredient name No known significant effects or critical hazards.
 Fertility effects No known significant effects or critical hazards.

Other information Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Distillates (petroleum), hydrotreated light naphthenic 2,6-di-tert-butyl-p-cresol	Acute LL50 >10000 mg/l	Aquatic invertebrates.	96 hours
	Acute LL50 >100 mg/l	Fish	96 hours
	Acute NOEL >100 mg/l	Algae	72 hours
	Chronic NOEL 10 mg/l	Aquatic invertebrates.	21 days
	Acute EC50 0,61 mg/l	Daphnia - Magna	48 hours
	Acute IC50 >0,4 mg/l	Algae - Desmodesmus Subspicatus	72 hours
	Chronic NOEC 0,316 mg/l	Daphnia - Magna	21 days

Conclusion/Summary Harmful to aquatic life with long lasting effects.

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
2,6-di-tert-butyl-p-cresol	OECD 301C 301C Ready Biodegradability - Modified MITI Test (I)	4,5 % - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Distillates (petroleum), hydrotreated light naphthenic	-	-	Inherent
2,6-di-tert-butyl-p-cresol	-	-	Not readily

Conclusion/Summary Inherently biodegradable.

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Distillates (petroleum), hydrotreated light naphthenic	2 to 6	<500	low
2,6-di-tert-butyl-p-cresol	5,1	>500	high

Conclusion/Summary The product has a potential to bioaccumulate.

12.4 Mobility in soil

Mobility High mobility in soil predicted, based on log Kow > 3.0.

12.5 Results of PBT and vPvB assessment

Not applicable.

Not applicable.

12.6 Other adverse effects

Insoluble in water. Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal

Where possible (e.g. in the absence of relevant contamination), recycling of used substance is feasible and recommended. This substance can be burned or incinerated, subject to national/local authorizations, relevant contamination limits, safety regulations and air quality legislation. Contaminated or waste substance (not directly recyclable): Disposal can be carried out directly, or by delivery to qualified waste handlers. National legislation may identify a specific organization, and/or prescribe composition limits and methods for recovery or disposal.

Hazardous waste

Yes.

European waste catalogue (EWC)

Waste code	Waste designation
13 03 07*	mineral-based non-chlorinated insulating and heat transmission oils

Packaging

Methods of disposal

The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

SECTION 14: Transport information

International transport regulations

	ADR/RID	ADN	IMO/IMDG Classification	ICAO/IATA Classification
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

14.6 Special precautions for user

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex I of MARPOL 73/78 and the IBC Code

Oils

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles Not applicable.

Other EU regulations

Seveso Directive

This product is not controlled under the Seveso Directive.

National regulations

Limitation of the use of organic solvents Permitted.

International lists

National inventory

Australia	All components are listed or exempted.
Canada	All components are listed or exempted.
China	All components are listed or exempted.
Japan	Japan inventory (ENCs): All components are listed or exempted. Japan inventory (ISHL): All components are listed or exempted.
Malaysia	All components are listed or exempted.
New Zealand	All components are listed or exempted.
Philippines	All components are listed or exempted.
Republic of Korea	All components are listed or exempted.
Taiwan	All components are listed or exempted.
United States	All components are listed or exempted.
Thailand	Not determined.
Turkey	All components are listed or exempted.
Viet Nam	Not determined.

15.2 Chemical safety assessment Complete.

SECTION 16: Other information

Revision comments Not available.

Indicates information that has changed from previously issued version.

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
 ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
 ATE = Acute Toxicity Estimate
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
 CMR = Carcinogen, Mutagen or Reproductive toxicant
 CSA = Chemical Safety Assessment
 CO₂ = carbon dioxide
 DNEL = Derived No Effect Level

SECTION 16: Other information

EC50 = Half maximal effective concentration
 EUH statement = CLP-specific Hazard statement
 IATA = International Air Transport Association
 IC50 = Half maximal inhibitory concentration
 IMDG = International Maritime Dangerous Goods
 LC50 = Median lethal concentration
 LD50 = Median lethal dose
 PNEC = Predicted No Effect Concentration
 PBT = Persistent, Bioaccumulative and Toxic
 RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
 REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006]
 SCBA = Self-Contained Breathing Apparatus
 SVHC = Substances of Very High Concern

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Asp. Tox. 1, H304 Aquatic Chronic 3, H412	Expert judgment Expert judgment
Full text of abbreviated H statements	H304 May be fatal if swallowed and enters airways. H400 Very toxic to aquatic life. H410 Very toxic to aquatic life with long lasting effects. H412 Harmful to aquatic life with long lasting effects.
Full text of classifications [CLP/GHS]	Aquatic Acute 1, H400 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 Aquatic Chronic 1, H410 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1 Aquatic Chronic 3, H412 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3 Asp. Tox. 1, H304 ASPIRATION HAZARD - Category 1

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Notice to reader

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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Identification of the substance or mixture

Product definition	Mixture
Product name	NYTRO® 10 XN

Section 1 - Title

Short title of the exposure scenario	Distribution of substance- Industrial (Other Lubricant Base Oils, IP346<3%, H304)
List of use descriptors	<p>Identified use name: Distribution of substance - Industrial</p> <p>Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC15</p> <p>Substance supplied to that use in form of: Substance</p> <p>Sector of end use: SU03</p> <p>Subsequent service life relevant for that use: No.</p> <p>Environmental Release Category: ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ESVOC SpERC 1.1b.v1</p> <p>Market sector by type of chemical product: Not applicable.</p> <p>Article category related to subsequent service life: Not applicable.</p>
Environmental contributing scenarios	Distribution of substance
Health Contributing scenarios	Distribution of substance

Number of the ES	9.3.1b
Industry Association	Concawe 2012
Generic exposure scenario	01a
Processes and activities covered by the exposure scenario	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.
Additional information	Industrial

Section 2 - Exposure controls

Product characteristics	Substance is complex UVCB. Predominantly hydrophobic
Amounts used	<p>Fraction of EU tonnage used in region 0.1</p> <p>Regional use tonnage (tonnes/year) 8.5E+5</p> <p>Fraction of Regional tonnage used locally 1</p> <p>Maximum daily site tonnage (kg/day) 1.7E+4</p>
Frequency and duration of use	<p>Continuous release</p> <p>Emission days (days per year) 100</p>
Environment factors not influenced by risk management	<p>Local freshwater dilution factor 10</p> <p>Local marine water dilution factor 100</p>
Other conditions affecting environmental exposure	<p>Release fraction to air from process (initial release prior to RMM) 1.0E-4</p> <p>Release fraction to wastewater from process (initial release prior to RMM) 1.0E-7</p> <p>Release fraction to soil from process (initial release prior to RMM) 1.0E-5</p>
Technical conditions and measures at process level (source) to prevent release	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment. If discharging to municipal sewage treatment plant, no on-site wastewater treatment required.
Risk management measures - Air	Treat air emission to provide a typical removal efficiency of (%) 90

Section 2 - Exposure controls

Risk management measures - Water	Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%) 64.4 If discharging to municipal sewage treatment plant, provide the required on-site wastewater removal efficiency of (%) 0
Organisational measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via on-site sewage treatment (%) 94.7 Total efficiency of removal from wastewater after on-site and off-site (municipal treatment plant) RMMs (%) 94.7 Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (kg/day) 1.1E+5 Assumed on-site sewage treatment plant flow (m ³ /d) 2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing scenario controlling worker exposure for 0: Distribution of substance	
Product characteristics	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Concentration of substance in mixture or article	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	Liquid
Frequency and duration of use	Covers daily exposures up to 8 hours
Other conditions affecting workers exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature) Assumes a good basic standard of occupational hygiene is implemented Aspiration hazard if swallowed. Aspiration means the entry of a liquid substance directly into the trachea and lower respiratory tract. Aspiration of hydrocarbon substances can result in severe acute effects such as chemical pneumonitis, varying degree of pulmonary injury or death. This property relates to the potential for low viscosity material to spread quickly into the deep lung and cause severe pulmonary tissue damage. Classification of a hydrocarbon substance for aspiration hazard is made on the basis of reliable human evidence or on the basis of physical properties. Do not induce vomiting as there is high risk of aspiration. IF SWALLOWED: Immediately call a POISON CENTER or physician.
Contributing scenarios - Operational conditions and risk management measures	
General exposures (closed systems) No other specific measures identified.	
General exposures (open systems) No other specific measures identified.	
Process sampling No other specific measures identified.	
Laboratory activities No other specific measures identified.	
Bulk transfers closed systems No other specific measures identified.	
Bulk transfers open systems No other specific measures identified.	
Drum and small package filling	

Section 2 - Exposure controls

No other specific measures identified.	
Equipment cleaning and maintenance Drain down and flush system prior to equipment break-in or maintenance.	
Storage Store substance within a closed system.	
Conditions and measures related to personal protection and hygiene	
Personal protection	See Section 8 of the safety data sheet (general health and safety measures). See Section 8 of the safety data sheet (personal protective equipment).

Section 3 - Exposure estimation and reference to its source

Website:	Not applicable.
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Exposure estimation and reference to its source - Environment: 2: Distribution of substance	
Exposure assessment (environment):	Not available.
Exposure estimation and reference to its source	Hydrocarbon Block Method (Petrorisk)

Exposure estimation and reference to its source - Workers: 1: Distribution of substance	
Exposure assessment (human):	Not available.
Exposure estimation and reference to its source	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SPERC factsheet. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - "Site-Specific Production" worksheet.
Health	The CLP hazard statement H304: May be fatal if swallowed and enters airways (the DPD risk phrase R65: Harmful: may cause lung damage if swallowed) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. kinematic viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL (derived no effect levels) cannot be derived. This general qualitative CSA (chemical safety assessment) approach aims to reduce/avoid contact or incidents with the substance. However, implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance. Exposures should be controlled to at least the levels that represent an acceptable level of risk such that the implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the substance hazard is negligible, and the risk is considered to be controlled to a level of no concern. There are no routine anticipated exposures by ingestion related to any supported uses of the substance. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific risk. For any substance, classifies as H304 (R65), these measures should be communicated via the safety data sheet by use of the following phrase: Do not ingest.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

If swallowed then seek immediate medical assistance.

Identification of the substance or mixture

Product definition	Mixture
Product name	NYTRO® 10 XN

Section 1 - Title

Short title of the exposure scenario	Formulation & (re)packing of substances and mixtures- Industrial (Other Lubricant Base Oils, IP346<3%)
List of use descriptors	<p>Identified use name: Formulation and (re)packing of substances and mixtures - Industrial</p> <p>Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC14, PROC15</p> <p>Substance supplied to that use in form of: Substance</p> <p>Sector of end use: SU10, SU03</p> <p>Subsequent service life relevant for that use: No.</p> <p>Environmental Release Category: ERC02, ESVOC SpERC 2.2.v1</p> <p>Market sector by type of chemical product: Not applicable.</p> <p>Article category related to subsequent service life: Not applicable.</p>
Environmental contributing scenarios	Formulation and (re)packing of substances and mixtures
Health Contributing scenarios	Formulation and (re)packing of substances and mixtures

Number of the ES	9.4.1b
Industry Association	Concawe 2012
Generic exposure scenario	02
Processes and activities covered by the exposure scenario	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
Additional information	Industrial

Section 2 - Exposure controls

Product characteristics	Substance is complex UVCB. Predominantly hydrophobic
Amounts used	<p>Fraction of EU tonnage used in region 0.1</p> <p>Regional use tonnage (tonnes/year) 8.5E+5</p> <p>Fraction of Regional tonnage used locally 1</p> <p>Annual site tonnage (tonnes/year) 3.0E+4</p> <p>Maximum daily site tonnage (kg/day) 1.0E+5</p>
Frequency and duration of use	<p>Continuous release</p> <p>Emission days (days per year) 300</p>
Environment factors not influenced by risk management	<p>Local freshwater dilution factor 10</p> <p>Local marine water dilution factor 100</p>
Other conditions affecting environmental exposure	<p>Release fraction to air from process (initial release prior to RMM) 2.5E-3</p> <p>Release fraction to wastewater from process (initial release prior to RMM) 5.0E-6</p> <p>Release fraction to soil from process (initial release prior to RMM) 0.0001</p>
Technical conditions and measures at process level (source) to prevent release	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	<p>Risk from environmental exposure is driven by freshwater sediment.</p> <p>Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to municipal sewage treatment plant, no on-site wastewater treatment required.</p>

Section 2 - Exposure controls

Risk management measures - Air	Treat air emission to provide a typical removal efficiency of (%) 0
Risk management measures - Water	Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%) 69.5 If discharging to municipal sewage treatment plant, provide the required on-site wastewater removal efficiency of (%) 0
Organisational measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
Conditions and measures related to sewage treatment plant	Not applicable as there is no release to wastewater. Estimated substance removal from wastewater via on-site sewage treatment (%) 94.7 Total efficiency of removal from wastewater after on-site and off-site (municipal treatment plant) RMMs (%) 94.7 Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (kg/day) 5.7E+5 Assumed on-site sewage treatment plant flow (m ³ /d) 2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing scenario controlling worker exposure for 0: Formulation and (re)packing of substances and mixtures	
Product characteristics	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Concentration of substance in mixture or article	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	Liquid
Frequency and duration of use	Covers daily exposures up to 8 hours
Other conditions affecting workers exposure	<p>Operation is carried out at elevated temperature (> 20°C above ambient temperature) Assumes a good basic standard of occupational hygiene is implemented Aspiration hazard if swallowed. Aspiration means the entry of a liquid substance directly into the trachea and lower respiratory tract. Aspiration of hydrocarbon substances can result in severe acute effects such as chemical pneumonitis, varying degree of pulmonary injury or death. This property relates to the potential for low viscosity material to spread quickly into the deep lung and cause severe pulmonary tissue damage. Classification of a hydrocarbon substance for aspiration hazard is made on the basis of reliable human evidence or on the basis of physical properties. Do not induce vomiting as there is high risk of aspiration. IF SWALLOWED: Immediately call a POISON CENTER or physician.</p> <p>Contributing scenarios - Operational conditions and risk management measures</p> <p>General exposures (closed systems) No other specific measures identified.</p> <p>General exposures (open systems) No other specific measures identified.</p> <p>Batch processes at elevated temperatures No other specific measures identified.</p> <p>Use in contained batch processes No other specific measures identified.</p> <p>Process sampling No other specific measures identified.</p>

Section 2 - Exposure controls

	Laboratory activities No other specific measures identified.
	Bulk transfers Dedicated facility No other specific measures identified.
	Mixing operations (open systems) No other specific measures identified.
	Transfer from/pouring from containers Manual Non-dedicated facility No other specific measures identified.
	Drum/batch transfers Dedicated facility No other specific measures identified.
	Production of preparation or articles by tableting, compression, extrusion or pelletisation No other specific measures identified.
	Drum and small package filling No other specific measures identified.
	Equipment cleaning and maintenance Drain down and flush system prior to equipment break-in or maintenance.
	Storage Store substance within a closed system.
Conditions and measures related to personal protection and hygiene	
Personal protection	See Section 8 of the safety data sheet (general health and safety measures). See Section 8 of the safety data sheet (personal protective equipment).

Section 3 - Exposure estimation and reference to its source

Website:	Not applicable.
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Exposure estimation and reference to its source - Environment: 2: Formulation and (re)packing of substances and mixtures	
Exposure assessment (environment):	Not available.
Exposure estimation and reference to its source	Hydrocarbon Block Method (Petrorisk)

Exposure estimation and reference to its source - Workers: 1: Formulation and (re)packing of substances and mixtures	
Exposure assessment (human):	Not available.
Exposure estimation and reference to its source	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

<p>Environment</p>	<p>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SPERC factsheet. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - "Site-Specific Production" worksheet.</p>
<p>Health</p>	<p>The CLP hazard statement H304: May be fatal if swallowed and enters airways (the DPD risk phrase R65: Harmful: may cause lung damage if swallowed) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. kinematic viscosity) that can occur during ingestion and also if it is vomited following ingestion.</p> <p>A DNEL (derived no effect levels) cannot be derived.</p> <p>This general qualitative CSA (chemical safety assessment) approach aims to reduce/avoid contact or incidents with the substance.</p> <p>However, implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance.</p> <p>Exposures should be controlled to at least the levels that represent an acceptable level of risk such that the implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the substance hazard is negligible, and the risk is considered to be controlled to a level of no concern.</p> <p>There are no routine anticipated exposures by ingestion related to any supported uses of the substance. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific risk.</p> <p>For any substance, classifies as H304 (R65), these measures should be communicated via the safety data sheet by use of the following phrase: Do not ingest. If swallowed then seek immediate medical assistance.</p>

Identification of the substance or mixture

Product definition	Mixture
Product name	NYTRO® 10 XN

Section 1 - Title

Short title of the exposure scenario	Uses in Functional fluids - Industrial (Other Lubricant Base Oils, IP346<3%, H304)
List of use descriptors	<p>Identified use name: Use in functional fluids - Industrial</p> <p>Process Category: PROC01, PROC03, PROC08a, PROC08b, PROC02, PROC04, PROC09</p> <p>Substance supplied to that use in form of: Substance</p> <p>Sector of end use: SU03</p> <p>Subsequent service life relevant for that use: No.</p> <p>Environmental Release Category: ERC07,</p> <p>Market sector by type of chemical product: Not applicable.</p> <p>Article category related to subsequent service life: Not applicable.</p>
Environmental contributing scenarios	Use in functional fluids
Health Contributing scenarios	Use in functional fluids

Number of the ES	9.37.1b
Industry Association	Concawe 2012
Generic exposure scenario	13a
Processes and activities covered by the exposure scenario	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.
Additional information	Industrial

Section 2 - Exposure controls

Product characteristics	Substance is complex UVCB. Predominantly hydrophobic
Amounts used	<p>Fraction of EU tonnage used in region 0.1</p> <p>Regional use tonnage (tonnes/year) 1.2E+3</p> <p>Fraction of Regional tonnage used locally 1</p> <p>Annual site tonnage (tonnes/year) 1.0E+1</p> <p>Maximum daily site tonnage (kg/day) 5.0E+2</p>
Frequency and duration of use	<p>Continuous release</p> <p>Emission days (days per year) 20</p>
Environment factors not influenced by risk management	<p>Local freshwater dilution factor 10</p> <p>Local marine water dilution factor 100</p>
Other conditions affecting environmental exposure	<p>Release fraction to air from process (initial release prior to RMM) 5.0E-4</p> <p>Release fraction to wastewater from process (initial release prior to RMM) 1.0E-6</p> <p>Release fraction to soil from process (initial release prior to RMM) 0.001</p>
Technical conditions and measures at process level (source) to prevent release	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	<p>Risk from environmental exposure is driven by freshwater sediment.</p> <p>Prevent discharge of undissolved substance to or recover from onsite wastewater.</p> <p>If discharging to municipal sewage treatment plant, no on-site wastewater treatment required.</p>
Risk management measures - Air	Treat air emission to provide a typical removal efficiency of (%) 0

Section 2 - Exposure controls

Risk management measures - Water	Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%) 64.4 If discharging to municipal sewage treatment plant, provide the required on-site wastewater removal efficiency of (%) 0
Organisational measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via on-site sewage treatment (%) 94.7 Total efficiency of removal from wastewater after on-site and off-site (municipal treatment plant) RMMs (%) 94.7 Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/day) 3.3E+3 Assumed on-site sewage treatment plant flow (m ³ /d) 2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing scenario controlling worker exposure for 0: Use in functional fluids	
Product characteristics	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Concentration of substance in mixture or article	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	Liquid With potential for aerosol generation
Frequency and duration of use	Covers daily exposures up to 8 hours
Other conditions affecting workers exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature) Assumes a good basic standard of occupational hygiene is implemented Aspiration hazard if swallowed. Aspiration means the entry of a liquid substance directly into the trachea and lower respiratory tract. Aspiration of hydrocarbon substances can result in severe acute effects such as chemical pneumonitis, varying degree of pulmonary injury or death. This property relates to the potential for low viscosity material to spread quickly into the deep lung and cause severe pulmonary tissue damage. Classification of a hydrocarbon substance for aspiration hazard is made on the basis of reliable human evidence or on the basis of physical properties. Do not induce vomiting as there is high risk of aspiration. IF SWALLOWED: Immediately call a POISON CENTER or physician.
	Contributing scenarios - Operational conditions and risk management measures
	Bulk transfers - Closed system No other specific measures identified.
	Drum/batch transfers - Dedicated facility No other specific measures identified.
	Filling of articles/equipment - closed systems No other specific measures identified.
	Filling/preparation of equipment from drums or containers - Non-dedicated facility No other specific measures identified.
	General exposures (closed systems) No other specific measures identified.
	General exposures (open systems) - Elevated temperature Restrict area of openings to equipment. Provide extract ventilation to emission points when contact with warm (>50°C) lubricant is likely.

Section 2 - Exposure controls

	Remanufacture of reject articles No other specific measures identified.
	Equipment cleaning and maintenance Drain down system prior to equipment break-in or maintenance.
	Storage Store substance within a closed system.
Conditions and measures related to personal protection and hygiene	
Personal protection	See Section 8 of the safety data sheet (general health and safety measures). See Section 8 of the safety data sheet (personal protective equipment).

Section 3 - Exposure estimation and reference to its source

Website:	Not applicable.
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Exposure estimation and reference to its source - Environment: 2: Use in functional fluids	
Exposure assessment (environment):	Not available.
Exposure estimation and reference to its source	Hydrocarbon Block Method (Petrorisk)

Exposure estimation and reference to its source - Workers: 1: Use in functional fluids	
Exposure assessment (human):	Not available.
Exposure estimation and reference to its source	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SPERC factsheet. (http://cefic.org/en/reach-for-industries-libraries.html) Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - "Site-Specific Production" worksheet.
Health	The CLP hazard statement H304: May be fatal if swallowed and enters airways (the DPD risk phrase R65: Harmful: may cause lung damage if swallowed) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. kinematic viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL (derived no effect levels) cannot be derived. This general qualitative CSA (chemical safety assessment) approach aims to reduce/avoid contact or incidents with the substance. However, implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance. Exposures should be controlled to at least the levels that represent an acceptable level of risk such that the implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the substance hazard is negligible, and the risk is considered to be controlled to a level of no concern. There are no routine anticipated exposures by ingestion related to any supported uses of the substance. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific risk. For any substance, classifies as H304 (R65), these measures should be

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

communicated via the safety data sheet by use of the following phrase: Do not ingest. If swallowed then seek immediate medical assistance.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.

Identification of the substance or mixture

Product definition	Mixture
Product name	NYTRO® 10 XN

Section 1 - Title

Short title of the exposure scenario	Uses in Functional fluids - Professional (Other Lubricant Base Oils, IP346<3%, H304)
List of use descriptors	<p>Identified use name: Use in functional fluids - Professional</p> <p>Process Category: PROC01, PROC02, PROC03, PROC08a, PROC09, PROC20</p> <p>Substance supplied to that use in form of: Substance</p> <p>Sector of end use: SU22</p> <p>Subsequent service life relevant for that use: No.</p> <p>Environmental Release Category: ERC09a, ERC09b, ESVOC SpERC 9.13b.v1</p> <p>Market sector by type of chemical product: Not applicable.</p> <p>Article category related to subsequent service life: Not applicable.</p>
Environmental contributing scenarios	Use in functional fluids
Health Contributing scenarios	Use in functional fluids

Number of the ES	9.38.1b
Industry Association	Concawe 2012
Generic exposure scenario	13b
Processes and activities covered by the exposure scenario	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.
Additional information	Professional

Section 2 - Exposure controls

Product characteristics	Substance is complex UVCB. Predominantly hydrophobic
Amounts used	<p>Fraction of EU tonnage used in region 0.1</p> <p>Regional use tonnage (tonnes/year) 1.2E+3</p> <p>Fraction of Regional tonnage used locally 1</p> <p>Annual site tonnage (tonnes/year) 6.0E-1</p> <p>Maximum daily site tonnage (kg/day) 1.6E+0</p>
Frequency and duration of use	<p>Continuous release</p> <p>Emission days (days per year) 365</p>
Environment factors not influenced by risk management	<p>Local freshwater dilution factor 10</p> <p>Local marine water dilution factor 100</p>
Other conditions affecting environmental exposure	<p>Release fraction to air from process (initial release prior to RMM) 0.05</p> <p>Release fraction to wastewater from process (initial release prior to RMM) 0.025</p> <p>Release fraction to soil from process (initial release prior to RMM) 0.025</p>
Technical conditions and measures at process level (source) to prevent release	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	Risk from environmental exposure is driven by freshwater sediment. If discharging to municipal sewage treatment plant, no on-site wastewater treatment required.
Risk management measures - Air	Treat air emission to provide a typical removal efficiency of (%) N/A

Section 2 - Exposure controls

Risk management measures - Water	Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%) 64.9 If discharging to municipal sewage treatment plant, provide the required on-site wastewater removal efficiency of (%) 0
Organisational measures to prevent/limit release from site	Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via on-site sewage treatment (%) 94.7 Total efficiency of removal from wastewater after on-site and off-site (municipal treatment plant) RMMs (%) 94.7 Maximum allowable site tonnage (M _{safe}) based on release following total wastewater treatment removal (kg/day) 1.1E+1 Assumed on-site sewage treatment plant flow (m ³ /d) 2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing scenario controlling worker exposure for 0: Use in functional fluids	
Product characteristics	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Concentration of substance in mixture or article	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	Liquid With potential for aerosol generation
Frequency and duration of use	Covers daily exposures up to 8 hours
Other conditions affecting workers exposure	<p>Operation is carried out at elevated temperature (> 20°C above ambient temperature) Assumes a good basic standard of occupational hygiene is implemented Aspiration hazard if swallowed. Aspiration means the entry of a liquid substance directly into the trachea and lower respiratory tract. Aspiration of hydrocarbon substances can result in severe acute effects such as chemical pneumonitis, varying degree of pulmonary injury or death. This property relates to the potential for low viscosity material to spread quickly into the deep lung and cause severe pulmonary tissue damage. Classification of a hydrocarbon substance for aspiration hazard is made on the basis of reliable human evidence or on the basis of physical properties. Do not induce vomiting as there is high risk of aspiration. IF SWALLOWED: Immediately call a POISON CENTER or physician.</p> <p>Contributing scenarios - Operational conditions and risk management measures</p> <p>Bulk transfers - Closed system No other specific measures identified.</p> <p>Drum/batch transfers - Dedicated facility No other specific measures identified.</p> <p>Filling of articles/equipment - closed systems No other specific measures identified.</p> <p>Filling/preparation of equipment from drums or containers - Non-dedicated facility No other specific measures identified.</p> <p>General exposures (closed systems) No other specific measures identified.</p> <p>General exposures (open systems) - Elevated temperature Restrict area of openings to equipment. Provide extract ventilation to emission points when contact with warm (>50°C) lubricant is likely.</p>

Section 2 - Exposure controls

	Remanufacture of reject articles No other specific measures identified.
	Equipment cleaning and maintenance Drain down system prior to equipment break-in or maintenance.
	Storage Store substance within a closed system.
Conditions and measures related to personal protection and hygiene	
Personal protection	See Section 8 of the safety data sheet (general health and safety measures). See Section 8 of the safety data sheet (personal protective equipment).

Section 3 - Exposure estimation and reference to its source

Website:	Not applicable.
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Exposure estimation and reference to its source - Environment: 2: Use in functional fluids	
Exposure assessment (environment):	Not available.
Exposure estimation and reference to its source	Hydrocarbon Block Method (Petrorisk)

Exposure estimation and reference to its source - Workers: 1: Use in functional fluids	
Exposure assessment (human):	Not available.
Exposure estimation and reference to its source	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SPERC factsheet. (http://cefic.org/en/reach-for-industries-libraries.html) Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - "Site-Specific Production" worksheet.
Health	The CLP hazard statement H304: May be fatal if swallowed and enters airways (the DPD risk phrase R65: Harmful: may cause lung damage if swallowed) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. kinematic viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL (derived no effect levels) cannot be derived. This general qualitative CSA (chemical safety assessment) approach aims to reduce/avoid contact or incidents with the substance. However, implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance. Exposures should be controlled to at least the levels that represent an acceptable level of risk such that the implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the substance hazard is negligible, and the risk is considered to be controlled to a level of no concern. There are no routine anticipated exposures by ingestion related to any supported uses of the substance. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific risk. For any substance, classifies as H304 (R65), these measures should be

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communicated via the safety data sheet by use of the following phrase: Do not ingest. If swallowed then seek immediate medical assistance.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.

Identification of the substance or mixture

Product definition	Mixture
Product name	NYTRO® 10 XN

Section 1 - Title

Short title of the exposure scenario	Use of lubricants in high energy open processes - Industrial (2,6-di-tert-butyl-p-cresol)
List of use descriptors	<p>Identified use name: Lubrication at high energy conditions in metal working operations - Industrial</p> <p>Process Category: PROC01, PROC02, PROC08b, PROC17</p> <p>Substance supplied to that use in form of: As such</p> <p>Sector of end use: SU03</p> <p>Subsequent service life relevant for that use: No.</p> <p>Environmental Release Category: ERC04</p> <p>Market sector by type of chemical product: PC24, PC25</p>
Environmental contributing scenarios	
Health Contributing scenarios	

Number of the ES	Not applicable.
Industry Association	Not applicable.
Generic exposure scenario	Not applicable.
Processes and activities covered by the exposure scenario	
Additional information	Industrial

Section 2 - Exposure controls

Product characteristics	<p>solid</p> <p>Melting/Freezing Point (°C): 69.8</p>
Concentration of substance in mixture or article	Covers percentage substance in the product up to XX%
Amounts used	<p>Annual site tonnage</p> <p>16.5 t/a</p>
Frequency and duration of use	Continuous release(d/a): 300
Environment factors not influenced by risk management	<p>Local freshwater dilution factor 10</p> <p>Receiving surface water flow is 18000 m³/d.</p> <p>Local marine water dilution factor 100</p>
Other conditions affecting environmental exposure	Not applicable.
Technical conditions and measures at process level (source) to prevent release	<p>% Release fraction to wastewater from process (initial release prior to RMM) 0.2</p> <p>% Release fraction to air from process (initial release prior to RMM) 0.01</p> <p>% Release fraction to soil from process (initial release prior to RMM) 0</p>
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	<p>On-site wastewater treatment required.</p> <p>Ensure all waste water is collected and treated via a waste water treatment plant.</p> <p>Floors should be impervious, resistant to liquids and easy to clean.</p>
Organisational measures to prevent/limit release from site	Ensure operatives are trained to minimise exposures.
Conditions and measures related to sewage treatment plant	Size of industrial sewage treatment plant (m³/d): 2000,

Section 2 - Exposure controls

Conditions and measures related to external treatment of waste for disposal	No special measures are required. General information, See section 13 for waste disposal information.
Conditions and measures related to external recovery of waste	See section 13 for waste disposal information.

Contributing scenario controlling worker exposure for 0:	
Product characteristics	Melting/Freezing Point (°C): 69.8
Concentration of substance in mixture or article	≤100%
Physical state	Liquid
Frequency and duration of use	Exposure duration per day: >4 h (half shift). Exposure duration per year: 230 d
Human factors not influenced by risk management	Respiratory (m³/d): 10 Body weight: 70 kg
Other conditions affecting workers exposure	The product should be handled at room temperature.
Technical conditions and measures at process level (source) to prevent release	No special measures required.
Technical conditions and measures to control dispersion from source towards the worker	PROC01, PROC02, PROC08b Assumes activities are at room temperature. Handle only in a place with local exhaust ventilation (or other adequate ventilation). Efficiency of at least 90 %
	PROC17 Handle only in a place with local exhaust ventilation (or other adequate ventilation). Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	Ensure operatives are trained to minimise exposures.
Conditions and measures related to personal protection and hygiene	
Personal protection	Wear protective clothing. See Section 8 of the safety data sheet (personal protective equipment).
	PROC01, PROC02, PROC08b Wear protective gloves. Efficiency of at least 90%
	PROC 17b Wear protective gloves. Efficiency of at least 80%

Section 3 - Exposure estimation and reference to its source

Website:	Not available.
Exposure estimation and reference to its source - Environment: 1:	
Exposure assessment (environment):	EUSES(v2.1).
Exposure estimation and reference to its source	Risk characterisation ratio (PEC/PNEC): <1

Section 3 - Exposure estimation and reference to its source

Exposure estimation and reference to its source - Workers: 2:

Exposure assessment (human):	Used ECETOC TRA model (May 2010 release).(3.0)
Exposure estimation and reference to its source	Risk characterisation ratio DNELs <1

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment	Not available.
Health	Not available.

Environment	Not applicable.
Health	Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection. See Section 8 for information on appropriate personal protective equipment.

Identification of the substance or mixture

Product definition	Mixture
Product name	NYTRO® 10 XN

Section 1 - Title

Short title of the exposure scenario	Use of lubricants in high energy open processes - Professional (2,6-di-tert-butyl-p-cresol)
List of use descriptors	Identified use name: Lubrication at high energy conditions in metal working operations - Professional Process Category: PROC01, PROC02, PROC08b, PROC17 Substance supplied to that use in form of: As such Sector of end use: SU22 Subsequent service life relevant for that use: No. Environmental Release Category: ERC08a Market sector by type of chemical product: PC24, PC25
Environmental contributing scenarios	
Health Contributing scenarios	

Number of the ES	Not applicable.
Industry Association	Not applicable.
Generic exposure scenario	Not applicable.
Processes and activities covered by the exposure scenario	
Additional information	Professional

Section 2 - Exposure controls

Product characteristics	solid Melting/Freezing Point (°C): 69.8
Concentration of substance in mixture or article	Covers percentage substance in the product up to XX%
Amounts used	Annual site tonnage 27.5 t/a
Frequency and duration of use	Continuous release 365 days.
Environment factors not influenced by risk management	Local freshwater dilution factor 10 Receiving surface water flow is 18000 m³/d. Local marine water dilution factor 100
Other conditions affecting environmental exposure	Not applicable.
Technical conditions and measures at process level (source) to prevent release	% Release fraction to wastewater from process (initial release prior to RMM) 0.2 % Release fraction to air from process (initial release prior to RMM) 0,1 % Release fraction to soil from process (initial release prior to RMM) 1
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	On-site wastewater treatment required. Ensure all waste water is collected and treated via a waste water treatment plant. Floors should be impervious, resistant to liquids and easy to clean.
Organisational measures to prevent/limit release from site	Ensure operatives are trained to minimise exposures.
Conditions and measures related to sewage treatment plant	Size of industrial sewage treatment plant (m³/d): 2000,

Section 2 - Exposure controls

Conditions and measures related to external treatment of waste for disposal	No special measures are required. Send to an appropriate hazardous waste incineration facility, in compliance with legislation. General information See section 13 for waste disposal information.
Conditions and measures related to external recovery of waste	See section 13 for waste disposal information.

Contributing scenario controlling worker exposure for 0:	
Product characteristics	Melting/Freezing Point (°C): 69.8
Concentration of substance in mixture or article	≤100%
Physical state	Liquid
Amounts used	Not applicable.
Frequency and duration of use	Exposure duration per year: 230 d PROC01; PROC02; PROC08b Exposure duration per day: >4 h (half shift). PROC 17: Exposure duration per day:0.25-1(h/d)
Human factors not influenced by risk management	Respiratory (m³/d): 10 Body weight:70 kg
Other conditions affecting workers exposure	The product should be handled at room temperature. Indoor
Technical conditions and measures at process level (source) to prevent release	No special measures required.
Technical conditions and measures to control dispersion from source towards the worker	PROC01; PROC02; PROC08b: Handle only in a place with local exhaust ventilation (or other adequate ventilation). Efficiency of at least 80 % PROC 17 Handle only in a place with local exhaust ventilation (or other adequate ventilation). Efficiency of at least 80%
Organisational measures to prevent/limit releases, dispersion and exposure	Ensure operatives are trained to minimise exposures.
Conditions and measures related to personal protection and hygiene	
Personal protection	Wear protective clothing. See Section 8 of the safety data sheet (personal protective equipment). PROC01; PROC02; PROC08b: Wear protective gloves. Efficiency of at least 90% PROC 17: Wear protective gloves. Efficiency of at least80%

Section 3 - Exposure estimation and reference to its source

Website:	Not available.
Exposure estimation and reference to its source - Environment: 1:	
Exposure assessment (environment):	EUSES(v2.1).
Exposure estimation and reference to its source	Risk characterisation ratio (PEC/PNEC): <1

Section 3 - Exposure estimation and reference to its source

Exposure estimation and reference to its source - Workers: 2:

Exposure assessment (human):	Used ECETOC TRA model (May 2010 release).(3.0)
Exposure estimation and reference to its source	Risk characterisation ratio DNELs <1

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment	Not available.
Health	Not available.

Environment	Not applicable.
Health	Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection. See Section 8 for information on appropriate personal protective equipment.