

NATURAL ADVANTAGE

PURE SCIENCE LLC

Chemwatch Hazard Alert Code: 3

Version No: 2.0

Safety Data Sheet according to OSHA HazCom Standard (2012)

Issue Date: 11/1/2024

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S.GHS.USA.EN

SECTION 1: IDENTIFICATION

Product Identifier	
Product name	NATURAL ADVANTAGE
Synonyms	Not Available
Other means of identification	SKU: PS-NA-1000

Recommended Use Of The Chemical And Restrictions On Use	
Relevant identified uses	Industrial Cleaner

Responsible Party Contact Information	
Registered company name	Pure Science
Address	20474 A South Hillcrest Drive Porter Texas 77365
Telephone	+1 (713) 501-9756
Fax	Not Available
Website	www.purescience.us
Email	info@purescience.us

Emergency Phone Numbers	
Association / Organization	CHEMWATCH
Emergency telephone numbers	+1 (877) 715-9305
Other emergency telephone numbers	+1 (855) 237-5573 (toll-free)

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of the substance or mixture



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

Eye Care	
Classification	Serious Eye Damage / Eye Irritation Category 1

Label Elements	
Hazard Pictogram(s)	

Signal Word	Danger
Hazard Statements	
H318	Industrial Cleaner
Hazard(s) Not Otherwise Classified	
NA	
Precautionary Statement(s) Prevention	
P280	Wear protective gloves, protective clothing, eye protection and face protection.
Precautionary Statement(s) Response	
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor/physician/first aider.
Precautionary statement(s) Storage	
NA	
Precautionary Statement(s) Disposal	
NA	

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Substances - See section below for composition of Mixtures

Mixtures		
CAS No	%[weight]	Name
Not Available	10-20	alkylphenol ethoxylate

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4: FIRST AID MEASURES

Description Of First Aid Measures	
Eye Contact	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> Immediately hold eyelids apart and flush the eye continuously with running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in the event of irritation.
Inhalation	<ul style="list-style-type: none"> If fumes, aerosols or combustion products are inhaled, remove from contaminated area. Other measures are usually unnecessary
Ingestion	<ul style="list-style-type: none"> If swallowed do NOT induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully.

	<ul style="list-style-type: none"> • Never give liquid to a person showing signs of being sleepy or with reduced awareness, i.e. becoming unconscious. • Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. • Seek medical advice.
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Most important symptoms and effects, both acute and delayed - See Section 11

Indication of any immediate medical attention and special treatment needed.

Any material aspirated during vomiting may produce lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing	
<i>Extinguishing Media</i>	<ul style="list-style-type: none"> • Foam • Dry chemical powder • BCF (where regulations permit) • Carbon dioxide. • Water spray or fog - large fires only

Special Hazards Arising From The Substrate Or Mixture	
<i>Fire Incompatibility</i>	Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result

Special Protective Equipment And Precautions For Fire-Fighters	
<i>Fire Fighting</i>	<ul style="list-style-type: none"> • Alert Fire Brigade and tell them location and nature of hazard. • Wear full body protective clothing with breathing apparatus. • Prevent, by any means available, spillage from entering drains or water course. • Use water delivered as a fine spray to control fire and cool adjacent area. • Avoid spraying water onto liquid pools. • DO NOT approach containers suspected to be hot. • Cool fire exposed containers with water spray from a protected location. • If it is safe to do so, remove containers from the path of fire.
<i>Fire/Explosion Hazard</i>	<ul style="list-style-type: none"> • Combustible. • Slight fire hazard when exposed to heat or flame. • Heating may cause expansion or decomposition leading to violent rupture of containers. • On combustion, may emit toxic fumes of carbon monoxide (CO). • May emit acrid smoke. • Mists containing combustible materials may be explosive. <p>Combustion products include:</p> <ul style="list-style-type: none"> • carbon dioxide (CO₂) • other pyrolysis products typical of burning organic material. • May emit poisonous fumes. • May emit corrosive fumes.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures - See section 8

Environmental precautions - See section 12

Methods And Material For Containment And Cleaning Up	
<i>Minor Spills</i>	<ul style="list-style-type: none"> • Remove all ignition sources. • Clean up all spills immediately. • Avoid breathing vapors and contact with skin and eyes. • Control personal contact with the substance, by using protective equipment.

	<ul style="list-style-type: none"> Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable, labelled container for waste disposal.
Major Spills	<p>Moderate hazard:</p> <ul style="list-style-type: none"> Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. No smoking, naked lights or ignition sources. Increase ventilation. Stop leak if safe to do so. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling. Absorb remaining product with sand, earth or vermiculite. Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains. If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7: HANDLING AND STORAGE

Precautions For Safe Handling	
Safe Handling	<ul style="list-style-type: none"> Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until the atmosphere has been checked. Avoid smoking, naked lights or ignition sources. Avoid contact with incompatible materials. When handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. The atmosphere should be regularly checked against established exposure standards to ensure safe working conditions. DO NOT allow clothing wet with material to stay in contact with skin
Other Information	<ul style="list-style-type: none"> Store in original containers. Keep containers securely sealed. No smoking, naked lights or ignition sources. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storage and handling recommendations contained within this SDS.


Conditions For Safe Storage, Including Any Incompatibilities	
Suitable Container	<ul style="list-style-type: none"> Metal can or drum Packaging as recommended by manufacturer. Check all containers are clearly labelled and free from leaks.
Storage Incompatibility	<ul style="list-style-type: none"> Avoid reaction with oxidizing agents

SECTION 8: EXPOSURE CONTROLS / PERSONEL PROTECTION

Control parameters - Occupational Exposure Limits (OEL)

INGREDIENT DATA - Not Available

Emergency Limits			
Ingredient	TEEL-1	TEEL-2	TEEL-3
Natural Advantage	Not Available	Not Available	Not Available
Ingredient	Original IDLH	Revised IDLH	
Natural Advantage	Not Available	Not Available	

Exposure Controls																					
Appropriate Engineering Controls	<p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard 'physically' away from the worker and ventilation that strategically 'adds' and 'removes' air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.</p> <p>Employers may need to use multiple types of controls to prevent employee overexposure.</p> <p>General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouses or closed storage areas. Air contaminants generated in the workplace possess varying 'escape' velocities which, in turn, determine the 'capture velocities' of fresh circulating air required to effectively remove the contaminant.</p> <table border="1"> <thead> <tr> <th>Type of Contaminant</th><th>Air Speed:</th></tr> </thead> <tbody> <tr> <td>solvent, vapors, degreasing etc., evaporating from tank (in still air)</td><td>0.25-0.5 m/s (50-100 f/min)</td></tr> <tr> <td>aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)</td><td>0.5-1 m/s (100-200 f/min.)</td></tr> <tr> <td>direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)</td><td>1-2.5 m/s (200-500 f/min)</td></tr> <tr> <td>grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).</td><td>2.5-10 m/s (500-2000 f/min.)</td></tr> </tbody> </table> <p>Within each range the appropriate value depends on:</p> <table border="1"> <thead> <tr> <th>Lower End Of The Range</th><th>Upper End Of The Range</th></tr> </thead> <tbody> <tr> <td>1. Room air currents minimal or favorable to capture</td><td>1. Disturbing room air currents</td></tr> <tr> <td>2. Contaminants of low toxicity or of nuisance value only</td><td>2. Contaminants of high toxicity</td></tr> <tr> <td>3. Intermittent, low production.</td><td>3. High production, heavy use</td></tr> <tr> <td>4. Large hood or large air mass in motion</td><td>4. Small hood - local control only</td></tr> </tbody> </table> <p>Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore, the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.</p>	Type of Contaminant	Air Speed:	solvent, vapors, degreasing etc., evaporating from tank (in still air)	0.25-0.5 m/s (50-100 f/min)	aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)	direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min)	grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)	Lower End Of The Range	Upper End Of The Range	1. Room air currents minimal or favorable to capture	1. Disturbing room air currents	2. Contaminants of low toxicity or of nuisance value only	2. Contaminants of high toxicity	3. Intermittent, low production.	3. High production, heavy use	4. Large hood or large air mass in motion	4. Small hood - local control only
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Individual Protection Measures, Such as Personal Protective Equipment																					
Eye And Face Protection	<ul style="list-style-type: none"> Safety glasses with side shields. Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent] Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily 																				

	available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].
<i>Skin Protection</i>	See hand protection below
<i>Hands/Feet Protection</i>	<ul style="list-style-type: none"> Wear chemical protective gloves, e.g. PVC. Wear safety footwear or safety gumboots, e.g. Rubber <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.</p> <ul style="list-style-type: none"> Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: frequency and duration of contact, chemical resistance of glove material, glove thickness and dexterity <p>Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).</p> <ul style="list-style-type: none"> When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. Some glove polymer types are less affected by movement, and this should be taken into account when considering gloves for long-term use. Contaminated gloves should be replaced. <p>As defined in ASTM F-739-96 in any application, gloves are rated as:</p> <ul style="list-style-type: none"> Excellent when breakthrough time > 480 min Good when breakthrough time > 20 min Fair when breakthrough time < 20 min Poor when glove material degrades <p>For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.</p> <p>It should be emphasized that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.</p> <p>Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task.</p> <p>Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:</p> <ul style="list-style-type: none"> Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of. <p>Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.</p>
<i>Body protection</i>	See hand protection below
<i>Other protection</i>	<p>Overalls</p> <p>P.V.C apron</p> <p>Barrier cream</p> <p>Skin cleansing cream</p> <p>Eye wash unit</p>

Respiratory protection

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Required Minimum Protection Factor	Maximum Gas/Vapor Concentration Present In Air PPM (by volume)	Half-Face Respirator	Full-Face Respirator
up to 10	1000	A-AUS / Class1 P2	-
up to 50	1000	-	A-AUS / Class 1 P2
up to 50	5000	Airline *	-
up to 100	5000	-	A-2 P2
up to 100	10000	-	A-3 P2
100+	-	-	Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN),

E = Sulfur dioxide(SO₂), G = Agricultural chemicals, K = Ammonia(NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX =

Low boiling point organic compounds(below 65 degC)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapor concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odors through the respirator. The odor may indicate that the mask is not functioning properly, that the vapor concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties			
Appearance	Clear, yellow to amber		
Physical state	Liquid	Relative density (Water = 1)	0.89 - 0.91
Odor	Mild fatty	Partition coefficient n-octanol / water	Not Available
Odor threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Available	Decomposition temperature (°C)	Not Available
Melting point / freezing point (°C)	0	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	>280	Molecular weight (g/mol)	Not Available
Flash point (°C)	>200	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidizing properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapor pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water	Partly miscible	pH as a solution (10%)	5 - 9
Vapor density (Air = 1)	Not Available	VOC g/L	Not Available

SECTION 10: STABILITY AND REACTIVITY

STABILITY AND REACTIVITY	
Reactivity	See section 7
Chemical stability	Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerization will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11: TOXICOLOGICAL INFORMATION

Information On Toxicological Effects	
<i>Inhaled</i>	The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
<i>Ingestion</i>	Accidental ingestion of the material may be damaging to the health of the individual. Nonionic surfactants may produce localized irritation of the oral or gastrointestinal lining and induce vomiting and mild diarrhea.
<i>Skin Contact</i>	Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons. Non-ionic surfactants cause less irritation than other surfactants as they have less ability to denature protein in the skin. Open cuts, abraded or irritated skin should not be exposed to this material. Entry into the bloodstream through, for example, cuts, abrasions or lesions may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
<i>Eye</i>	If applied to the eyes, this material causes severe eye damage. Non-ionic surfactants can cause numbing of the cornea, which masks discomfort normally caused by other agents and leads to corneal injury. Irritation varies depending on the duration of contact, the nature and concentration of the surfactant.
<i>Chronic</i>	Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless, exposure by all routes should be minimized as a matter of course. Exposure to alkyl phenolics is associated with reduced sperm count and fertility in males. Prolonged or repeated skin contact may cause degreasing, followed by drying, cracking and skin inflammation.

Natural Advantage	
<i>TOXICITY</i>	NOT AVAILABLE
<i>IRRITATION</i>	NOT AVAILABLE
<i>Legend</i>	<i>Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances</i>

Affects Matrix			
<i>Acute Toxicity</i>	X	<i>Carcinogenicity</i>	X
<i>Skin Irritation/Corrosion</i>	X	<i>Reproductivity</i>	X
<i>Serious Eye Damage/Irritation</i>		<i>STOT - Single Exposure</i>	X
<i>Respiratory or Skin Sensitization</i>	X	<i>STOT - Repeated Exposure</i>	X
<i>Mutagenicity</i>	X	<i>Aspiration Hazard</i>	X

Legend: X – Data either not available or does not fill the criteria for classification
– Data available to make classification

SECTION 12: ECOLOGICAL INFORMATION

Natural Advantage					
Toxicity	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available

Legend:	<p>Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data</p>
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Surfactants are in general toxic to aquatic organisms due to their surface-active properties. Historically, synthetic surfactants were often composed of branched alkyl chains resulting in poor biodegradability which led to concerns about their environmental effects. Today however, many of them, for example those used in large amounts, globally, as detergents, are linear and therefore readily biodegradable and considered to be of rather low risk to the environment. A linear structure of the hydrophobic chain facilitates the approach of microorganism while branching, in particular at the terminal position, inhibits biodegradation. Also, the bioaccumulation potential of surfactants is usually low due to the hydrophilic units. Linear surfactants are not always preferred however, as some branching (that ideally does not hinder ready biodegradability) is often preferable from a performance point of view. The reduction in wastewater of organic contaminants such as surfactants can either be a consequence of adsorption onto sludge or aerobic biodegradation in the biological step. Similar sorption and degradation processes occur in the environment as a consequence of direct release of surfactants into the environment from product use, or through effluent discharge from sewage treatment plants in surface waters or the application of sewage sludge on land. However, a major part of surfactants in wastewater will be efficiently eliminated in the sewage treatment plant. Although toxic to various organisms, surfactants in general only have a limited effect on the bacteria in the biological step. There are occasions however, where adverse effects have been noticed due to e.g. large accidental releases of softeners from laundry companies.

For Phenols: Ecotoxicity - Phenols with log Pow >7.4 are expected to exhibit low toxicity to aquatic organisms however; the toxicity of phenols with a lower log Pow is variable. Dinitrophenols are more toxic than predicted from QSAR estimates. Hazard information for these groups is not generally available.

For Surfactants: Kow cannot be easily determined due to hydrophilic/hydrophobic properties of the molecules in surfactants. BCF value: 1-350.

Aquatic Fate: Surfactants tend to accumulate at the interface of the air with water and are not extracted into one or the other liquid phases.

Terrestrial Fate: Anionic surfactants are not appreciably sorbed by inorganic solids. Cationic surfactants are strongly sorbed by solids, particularly clays. Significant sorption of anionic and non-ionic surfactants has been observed in activated sludge and organic river sediments. Surfactants have been shown to improve water infiltration into soils with moderate to severe hydrophobic or water-repellent properties.

Ecotoxicity: Some surfactants are known to be toxic to animals, ecosystems and humans, and can increase the diffusion of other environmental contaminants. The acute aquatic toxicity generally is considered to be related to the effects of the surfactant properties on the organism and not to direct chemical toxicity. Surfactants should be considered to be toxic to aquatic species under conditions that allow contact of the chemicals with the organisms. Surfactants are expected to transfer slowly from water into the flesh of fish. During this process, readily biodegradable surfactants are expected to be metabolized rapidly during the process of bioaccumulation. Surfactants are not to be considered to show bioaccumulation potential if they are readily biodegradable.

For Alkylphenols and their Ethoxylates, or Propoxylates (APE): Not Available

Environmental fate: Alkylphenols are found everywhere in the environment, when released. Releases are generally as wastes; they are extensively used throughout industry and in the home. Alkylphenol ethoxylates are widely used surfactants in domestic and industrial products, which are commonly found in wastewater discharges and in sewage treatment plant effluents. These substances can load considerably in various environmental compartments.

Atmospheric Fate: Alkylphenols released to the atmosphere will exist in the vapor phase and are thought to be degraded by reaction with hydroxyl radicals, with a calculated half-life, for nonylphenol, of 0.3 days. However, emissions to the air will be limited.

Terrestrial Fate: These substances will adsorb to organic soil substances. Adsorption decreases as certain chains in the chemical get longer and increases if water is present.

Aquatic Fate: These substances will partition to the sediment if they are released to water. These substances are expected to undergo primary breakdown in oxygenated river water at a relatively fast rate. Nonylphenols are susceptible to breakdown by sunlight in water. Light breakdown of with ethoxylated nonylphenol in water is much slower and is not expected to be an important fate process. The non-biological breakdown of these substances is negligible and biological breakdown of these substances does not readily take place. The half-life in surface water may be around 30 days.

Ecotoxicology: There is concern that APE metabolites, (NP, OP, NPE1-3), can mimic natural hormones and that the levels of the substances present in the environment may be sufficient to disrupt endocrine function in wildlife and humans. Organisms in different levels of the food chain may experience different responses to the natural hormone mimics found in these substances. These substances are not expected to be toxic to *Daphnia magna* water fleas; however, negative impacts on male fathead minnow reproduction have been noted. These substances may have a profound negative affect on reproduction in adult fishes. Alkylphenols are not readily biodegradable. The full breakdown pathway for APES has not yet been determined.

Biodegradation of APES produces less biodegradable products: alkylphenol mono- and di-ethoxylates, alkylphenoxy acetic / alkylphenoxy polyethoxy acetic acids, and alkylphenols. These metabolites frequently persist through sewage treatment and in rivers. Alkylphenols will accumulate in low oxygen conditions. Metabolites of APES accumulate in organisms and are more toxic than the original compound. Estrogen mimicking effects have been seen in rainbow trout, mice, and chicken embryos. The insecticide chlordane, (Kepone), shows similar behavior to alkylphenols, accumulating in liver and fat tissue, and eliciting estrogen mimicking activity. Green algae are the most sensitive species.

DO NOT Discharge Into Sewers Or Waterways.

Persistence and Degradability

<i>Ingredient</i>	<i>Persistence: Water/Soil</i>	<i>Persistence: Air</i>
-	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative Potential	
<i>Ingredient</i>	<i>Bioaccumulation</i>
-	No Data available for all ingredients

Mobility In Soil	
<i>Ingredient</i>	<i>Mobility</i>
-	No Data available for all ingredients

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Treatment Methods	
<i>Product / Packaging Disposal</i>	<p>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.</p> <p>A Hierarchy of Controls seems to be common, the user should investigate</p> <ul style="list-style-type: none"> • Reduction • Resue • Recycling • Disposal (if all else fails) <p>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf-life considerations should also be applied in making decisions of this type.</p> <p>Note that properties of a material may change in use, and recycling or reuse may not always be appropriate:</p> <ul style="list-style-type: none"> • DO NOT allow wash water from cleaning or process equipment to enter drains. • It may be necessary to collect all wash water for treatment before disposal. • In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. Where in doubt contact the responsible authority. • Recycle wherever possible or consult manufacturer for recycling options. Consult State Land Waste Authority for disposal. • Bury or incinerate residue at an approved site. • Recycle containers if possible or dispose of in an authorized landfill.

SECTION 14: TRANSPORTATION INFORMATION

Labels Required	
<i>Marine</i>	No

Transport	
<i>Land Transport (DOT)</i>	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
<i>Air Transport</i>	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
<i>Sea Transport</i>	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
<i>Transport in bulk according to Annex II of MARPOL and the IBC code</i>	Not Applicable

Transport In Bulk In Accordance With MARPOL Annex V And The IMSBC Code	
Product Name	Group
alkylphenol ethoxylate	Not Available

Transport In Bulk In Accordance With The IGC Code	
Product Name	Group
alkylphenol ethoxylate	Not Available

SECTION 15: REGULATORY INFORMATION

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

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 Hazard Categories	
Flammable (Gases, Aerosols, Liquids, or Solids)	No
Gas under pressure	No
Explosive	No
Self-heating	No
Pyrophoric (Liquid or Solid)	No
Pyrophoric Gas	No
Corrosive to metal	No
Oxidizer (Liquid, Solid or Gas)	No
Organic Peroxide	No
Self-reactive No	No
In contact with water emits flammable gas	No
Combustible Dust	No
Skin Corrosion or Irritation	No
Respiratory or Skin Sensitization	No
Serious eye damage or eye irritation	No
Specific target organ toxicity (single or repeated exposure)	No
Aspiration Hazard	No
Germ cell mutagenicity	No
Simple Asphyxiant	No
Hazards Not Otherwise Classified	No

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

None Reported

State Regulations

US. California Proposition 65 - None Reported

National Inventory Status	
National Inventor	Status
Canada - DSL	Yes
Europe - EINEC / ELINCS / NLP	Yes
USA - TSCA	Yes
Legend	Yes = All CAS declared ingredients are on the inventory

No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

SECTION 16: OTHER INFORMATION

Revision And Issuances			
Description	Date	Revision No.	Description
SDS Summary Version	07/14/2023	0.2	Toxicological information - Acute Health (skin), Hazards identification - Classification
Major Release	07/15/2023	1.2	Major Release
Revision	11/01/2024	2.0	Reformatted with grammatical corrections
Revision (Placeholder)			
Revision (Placeholder)			

Other information:

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and Abbreviations	
PC —TWA	Permissible Concentration-Time Weighted Average
PC —STEL	Permissible Concentration-Short Term Exposure Limit
IARC	International Agency for Research on Cancer
ACGIH	American Conference of Governmental Industrial Hygienists
STEL	Short Term Exposure Limit
TEEL	Temporary Emergency Exposure Limit
IDLH	Immediately Dangerous to Life or Health Concentrations ES: Exposure Standard
ES	Exposure Standard
OSF	Odor Safety Factor
NOAEL	No Observed Adverse Effect Level
LOAEL	Lowest Observed Adverse Effect Level
TLV	Threshold Limit Value
LOD	Limit Of Detection OTV
OTV	Odor Threshold Value
BCF	Bio-Concentration Factors BEI
BEI	Biological Exposure Index
AIIC	Australian Inventory of Industrial Chemicals DSL: Domestic Substances List
DSL	Domestic Substances List
NDSL	Non-Domestic Substances List
IECSC	Inventory of Existing Chemical Substance in China
EINECS	European Inventory of Existing Commercial chemical Substances
ELINCS	European List of Notified Chemical Substances
NLP	No-Longer Polymers
ENCS	Existing and New Chemical Substances Inventory
KECI	Korea Existing Chemicals Inventory
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances
TSCA	Toxic Substances Control Act

<i>TCSI</i>	Taiwan Chemical Substance Inventory
<i>INSQ</i>	Inventario Nacional de Sustancias Químicas
<i>NCI</i>	National Chemical Inventory
<i>FBEPH</i>	Russian Register of Potentially Hazardous Chemical and Biological Substances
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END OF SAFETY DATA SHEET – NATURAL ADVANTAGE