DATA SHEET

WS 102 INTERIOR EPOXY

WS 102 INT 2.1 Interior Epoxy is a high build, two component, 100% solids epoxy coating system used for applications up to 20 mils and is capable of self-levelling and may be tinted. Its exceptional heat and chemical resistance properties make the coating suitable for applications in harsh environments, such as humid conditions, without creating a foggy surface.

WS 102 has a flexibility of 7% at 20°C (68°F) and a long pot life of 35 minutes, allowing for larger batches and a faster turn around time with minimal labour.

WS 102 is approved by CFIA (Canadian Food Inspection Agency) if incidental contact should occur in federally and provincially inspected meat/poultry plants.

FEATURES

- **Fast curing**
- **Long pot life (35 minutes @ 20°C (68°F)**
- **Excellent compressive, flexural and tensile strengths**
- **Fill and hides minor surface imperfections**
- **Strong chemical resister**
- **Good vapour permeability**
- **Good workability**
- **Low odor**
- **May be used as a filler when mixed with sand**
- **May be tinted**

USES

WS 102 fills and seamlessly hides surface imperfections, as well as hairline cracks, to become an integral component of the substrate as it is used on interior applications to waterproof and protect new or existing, interior horizontal concrete structures (including: aircraft hangars, vehicle repair bays, paper mills, service stations, water treatment facilities, waste treatment facilities, meat packing and food processing facilities, dairies, canneries, etc.) and protects:

- **Fast curing**
- **Substrate from chemicals including: gasoline, aviation fuel, brake fluids, alkalis and solvents**
- **Leakage and moisture intrusion**
- **Scaling and spalling**
- **Deterioration of reinforcing steel caused by chloride, acid, ingress, etc.**

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Email: team@weatherskin.com

With outstanding chemical properties, WS 102 may be industrially, commercially and municipally used or for displaying multicoloured quartz aggregates. It is designed for one coat applications for up to 20 mils but may be built up within the re-coat window. When mixed with aggregates (sand), WS 102 may be used as a filler or to create a durable, skid resistant surface. All the while to prolong the life of a concrete floor and reduce maintenance costs.

SUGGESTED SYSTEM COMPONENTS

WS Primer	Bonding Primer diluted with max. 10% WS Epoxy Reducer
Topcoat or Intercoat	WS 102 INT 2.1 Interior Epoxy
Alternative Topcoat	WS 104, WS107 or WS 103 (for applications subjected to UV radiation)

SYSTEM ESTIMATING GUIDE

Primer

- Diluted with 10% (max.) of WS Epoxy Reducer
- Film thickness @ 5-6 mils
- 270-320 sq. ft./gallon coverage

Topcoat

- Squeegee, roller or trowel application
- Film thickness @ 12-20 mils
- 80-130 sq. ft./gallon coverage

Intercoat

- Squeegee application
- Film thickness @ 6-12 mils
- 160-300 sq. ft/gallon coverage

Note: Coverage will vary according to surface texture and porosity.

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GENERAL DATA

Standard Colors	**Clear, 01, 03, 04, 06, 10, 11, 13, 20, 21, 30, 35, 36, 41, 60, 63**
Solids Content	**100%**
Viscosity	**940 CP @ 25.5°C**
VOC	**0**
Appearance	**Clear**
Finish	**Glossy**
Mix Ratio	**2 volumes Resin (A) with 1 volume Hardener (B)**
Mixing Method	**Low speed jiffy mixer**
Pot Life	**35 minutes @ 20°C (68°F)**
Thinning	**Not recommended**
Flash Point	**Greater than 280°C (536°F)**
Specific Weights	• **9.6 lbs/gallon (Resin)** • **8.1 lbs/gallon (Hardener)**
Recommended WFT	**6-20 mils**
DFT @ 6 mils WFT	**6 mils**
Coverage @ 6 mils WFT	**270 sq. ft./gallon**
Application Method	**Squeegee, roller or trowel**
Shelf Life	**1 year, unopened**

Note: Longer drying times are required for lower temperatures and/or conditions in high humidity.

CHEMICAL RESISTANCE DATA—PERFORMANCE

ACIDS	CONCENTRATION (%)	IMMERSI ON	SPILLS	FUMES
Acetic	*5*	*Yes*	*Yes*	*Yes*
Fatty	*-*	*-*	*Yes*	*Yes*
Citric	*-*	*Yes*	*Yes*	*Yes*
Hydrochlori c	*30*	*-*	*Yes*	*Yes*
Lactic	*10*	*Yes*	*Yes*	*Yes*
Phosphoric	*10*	*Yes*	*Yes*	*Yes*
Sulfuric	*50*	*Yes*	*Yes*	*Yes*
Sulfuric	*90*	*-*	*Yes*	*Yes*

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ALKALIS	CONCENTRATION (%)	IMMERSI ON	SPILLS	FUMES
Ammonia	*10*	*Yes*	*Yes*	*Yes*
Caustic Salts	*-*	*Yes*	*Yes*	*Yes*
Detergents	*Various*	*Yes*	*Yes*	*Yes*
Sodium Hydroxide	*50*	*Yes*	*Yes*	*Yes*
Sodium Hypo Chloride	*10*	*Yes*	*Yes*	*Yes*

BREAK FLUIDS	CONCENTRATION (%)	IMMERSI ON	SPILLS	FUMES
Skydrol, A and B	*-*	*Yes*	*Yes*	*Yes*
Hyjet	*-*	*Yes*	*Yes*	*Yes*

SOLVENTS	CONCENTRATION (%)	IMMERSI ON	SPILLS	FUMES
Acetone (7 days cure)	*-*	*-*	*Yes*	*Yes*
Gasoline	*-*	*Yes*	*Yes*	*Yes*
Aliphatic Hydrocarbons	*-*	*Yes*	*Yes*	*Yes*
Ketones (7 day cure)	*-*	*-*	*Yes*	*Yes*
Carbon Tetrachloride	*-*	*-*	*Yes*	*Yes*
Xylene	*-*	*Yes*	*Yes*	*Yes*

SALTS	CONCENTRATION (%)	IMMERSI ON	SPILLS	FUMES
Metal Salts (various)	*-*	*Yes*	*Yes*	*Yes*

Chemical exposure at temperature range 16°C (60°F) to 27°C (80°F)
Intermediate: 2 days
Maximum: 7 days

Limitations

- **Avoid applying in direct sunlight in times of increased heat. May result in air bubbling underneath surface, wrinkling, blistering and pinholes.**
- **Not for exterior use, immersion or applications near moisture on the underside of coating**
- **Do not apply in temperatures below 10°C/60°F and above 30°C/86°F**
- **Do not thin (unless for priming purposes) as it will slow down cure time and reduce product quality. Re- coat times will also be affected.**
- **Do not spray product**
- **Do not freeze Part A or B**

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Email: team@weatherskin.com

CURING RESIN PERFORMANCE

DESCRIPTION	TEST METHOD	RESULTS
Solids Content	*ASTM D2597*	*100%*
Hardness (Shore D)	*ASTM D2240*	*82*
Compressive Strength	*ASTM D695*	*13100 psi*
Compressive Modules	*ASTM D695*	*331000 psi*
Tensile Strength	*ASTM D638*	*8200 psi*
Tensile Modulus	*ASTM D638*	*433000 psi*
Elongation at Break	*ASTM D638*	*7%*
Flexural Strength	*ASTM D790*	*12400 psi*
Adhesion	*ASTM D4541*	*350 psi*
Izod Impact Strength	*ASTM D256*	*0.52 ft. lbs./in. notch*
Taber Abrasion (CS-10)	*ASTM D4060*	*33 mg loss (100 cycles)*
Water Resistance	*ASTM D570*	*0.16%*
Fungus/Bacteria Resistance	*Mil-F-52505*	*No support of growth (TT- P-34)*

MAXIMUM TEMPERATURE LIMITS

Dry Heat	*110°C (230°F)*
Spills	*66°C (150°F)*
Immersion	*66°C (150°F)*
Cold	*-40°C (-40°F)*

Above temperatures are laboratory test results.

Test Section

Apply WS 102 in an inconspicuous area about 5x5 ft. and examine for compatibility with any existing coatings and adhesion. Refer to surface preparation and application instructions.

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Preliminary Floor Inspection and Surface Preparation

Ensure area is clean, stable, dry and at temperatures above 10°C/60°F and below 30°C/86°F for successful application. New concrete must be cured for at least 28 days. Test vapour drive according to ASTM D4263.

Perform following tests if there is any uncertainty to any present curing compound or other coatings on the floor:

- Pour a cup of water on 3 or 4 areas on the floor. If any water bubbles out, it's an indicator that there is no curing compounds or coatings within the floor. If water cohesion is present, it indicates curing compounds or other coatings are present. Remove by chemical or mechanical means.
- Drop muriatic acid on the floor. Acid bubbling indicates a curing compound, or any other coating is not present.
- Examine for moisture presence. Test vapour drive according to ASTM D4263. Vapour drive should not exceed 3 lbs. / 1000 sq. ft./ 24 hours. Follow instructions according to test kits. Remove any debris, residue, sealant or curing compounds and coatings before testing.

Remove any and all surface contaminants including: oil, grease, wax, dirt, laitance, and etc. To clean concrete, use mechanical methods such as: shot-blasting, scarification, and high-pressure water blasting. Sweep and vacuum remaining dirt and dust. Another method is to use a degreaser to remove surface contaminants. Follow up by rinsing and scrubbing using water. Do not use unbuffered acids or other solvents to remove contaminants. Avoid sweeping compounds to remove dust.

Use of WS Primer

New dense surfaces, such as tile, stone (should it contain silicate), smooth concrete, densified concrete, etc., should be free of oil, dirt, grease, curing compounds or other bond breakers. Can be coated with WS Primer resulting in a more efficient and less costly surface preparation such as shot blasting, scarification or grinding.

Mixing and Tinting

Clear application — WS 102 may be applied clear. Prepare by accurately measuring 2 parts by volume of resin (A) and 1 part by volume of hardener (B) into a clean mixing container. Mix for 2-3 minutes and scrape sides and bottom of mixing container to ensure complete mixing.

Tinted application — WS 102 may also be applied tinted. Prepare by accurately measuring 2 parts by volume of resin (A) with the colorant first into a clean mixing container, prior to mixing 1 part by volume of hardener (B) into the tinted Part A/colorant mixture. Do not count the colorants into the volume ratio of the resin (A) and the hardener (B). If using more than a can of colorant, mix all colorant cans in a container prior to use to ensure consistent color as variations between cans/batches or small amounts of colorant left in cans can occur. Mix for 2-3 minutes using a low speed jiffy mixer and scrape sides and bottom of mixing container to ensure complete mixing. Avoid introducing air bubbles when mixing.

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- Due to the difference in viscosity of the resin (A) and hardener (B), thoroughly mix both components to avoid partially cured and weak spots within the coating.
- When using a high gallon bulk drum kit, use a mixing ratio of 2 parts resin (A) and1 part hardener (B), by volume. Do not count colorants in volume ratio.
- Measurement accuracy is an essential component to the quality of product and color consistency between batches, if tinted.

Colorant Data

Kit Size	Colors (# 01, 03, 04, 06, 20, 21, 36, 41, 63)	Colors (# 10, 11, 30, 35, 60)
3 gallon kit	1 quart (0.9 L)	2 quarts (1.9 L)
15 gallon kit	5 quarts (4.7 L)	

Application

WS 102 may be used as is. Thinning or solvent reduction is not recommended. Apply by pouring a bead of material in a ribbon form on the surface to be coated. Do not leave material in container for long periods of time as material will set, reducing its pot life. Use a serrated squeegee to evenly spread poured material to its desired thickness using a slow and steady motion, without exceeding 20 mils with 1 coat. Back roll using a high-quality nap roller and avoid excessive agitation of the material, especially at thinner coats between 6-12 mils as it may result in pinholes or bubbles in film. Use a porcupine roller on thicker built surfaces (12-20 mils) after 10 minutes, to remove any excess bubbles.

Pot Life

Pot life of WS 102 is approximately 35 minutes @ 20°C (68°F). High temperature and humidity conditions will increase curing time and reduce pot life. Pot life is relatively short as it is not a solvent based system. Avoid mixing more kits of material that can be used within this period of time.

Curing Times

Maintain floor area between 10°C (50°F) and 30°C (86°F) during application and curing. For heavy-wheeled traffic and/or chemical spillages, allow for a 72-hour cure. Screening is necessary if WS 102 cures for longer than 24 hours before subsequent re-coats. Screen to the effect that a uniform dullness is achieved. No gloss should be present on the floor before applying the next coat.

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Curing Time

Temperature	10°C (60°F)	20°C (68°F)	30°C (86°F)
Tack Free	10-14 hours	8-10 hours	6 -8 hours
Re-coat	12-36 hours	8-30 hours	6-24 hours
Full Cure	72 hours	48 hours	30 hours

Clean Up

Clean equipment immediately after use with solvents, such as WS Reducer.

Troubleshooting

Below is a list of commonly observed problems during application and possible causes.

- Fish Eyes — Oil contamination; Improper substrate cleaning; Mold release agents; Improper mixing
- Slow cure— Low product, substrate or ambient temperature; wrong mix ratios or mixing; use of thinner on product
- Peeling between coats— Re-coat time past critical; coat contamination
- Peeling from substrate— Surface preparation insufficient; hydrostatic water pressure; oil impregnation
- Whitening— Excessive moisture exposure from substrate during curing; exposure to pooling water after full cure
- Coating soft, dulling— Improper mixing; use of thinner with product, extreme weather conditions
- Fast cure— High temperatures
- Pigment flooding, floating or color streaking—Inadequate mixing of Part A with colorant

Quartz Broadcast

Consult Technical Bulletin regarding WS Granite Quartz system

Seeded Floor System

One coat of WS 102 is required over primed substrate at 15-20 mils, seeded with 30-40 mesh round sand at 0.75 lbs./0.34 kg/sq. ft. Dry overnight and remove excess sand. Apply a second coat of tinted WS 102 and sand as before. Dry second coat and remove excess sand then topcoat using tinted WS 102. Additional topcoat using WS 104 or WS 103 is optional. WS 107 Polyaspartic can also act as a top-coat.

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Slip Resistance Flooring and Coating

Embed approved aggregate into WS 102 to create a durable, slip resistance coating to provide excellent compressive and tensile strength properties designed for areas requiring a slip resistant finish. Perfect for highly oily manufacturing and assembly plants, for lift ramps and docks, (indoor) showers, lobbies and maintenance shops. Slip resistance requirements may be met by various additive grades. Degree of density of application may be altered for each facility's requirements. Determine the right amount of aggregate for the specific surface needs by evaluation.

Conductive Flooring System

WeatherSkin's Conductive Flooring System contains conductive components to provide conductivity and dissipation of static electricity. Perfect for airline hangars, computer and data processing rooms, electronic manufacturing and testing facilities and explosives manufacturing, assembling and handling facilities.

Recommendations

- Always apply test patch in an inconspicuous area to confirm substrate compatibility
- Interior use only. When exposed to direct sunlight, coating will yellow and chalk
- Seal product immediately after use
- Use a single container to accurately measure the volumes of Part A and B. For accuracy in transfer, scrape the walls of the measuring container.
- Store product in cool dry temperatures between 10°C (50°F) and 30°C (86°F)
- Use clean, dry equipment only

Exposure Risks

WS 102 contains iso-hormone diamine and other proprietary aliphatic polyamines. Corrosive and may cause severe eye and skin burns. If swallowed, may be harmful or fatal resulting in lung damage as an aspiration hazard.

Proposition 65

WS 102 does not deliberately contain any materials listed by the State of California as carcinogenic or known to cause birth defects and other reproductive harms.

Shipping Information

Dangerous goods, Class 8, UN 1760, PG III.

VOC Content

Combined (Part A and B) contains 0 g/L of VOC.

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Precautions

Keep out of reach of children. Avoid any personal contact with product and use gloves and eye protection. If TLV is exceeded or product is applied in a poorly ventilated area, use NOISH/MSHA approved respiratory protection according to federal, state, provincial and local regulations, Avoid inhalation of vapours. Empty containers may contain hazardous residues. Observe all and any warning labels until container is commercially cleaned or reconditioned.

First Aid

In case of eye contact, rinse for 15 minutes and consult a physician. For skin contact, wash thoroughly with soap and water. In case of ingestion, seek medical aid immediately— refrain from physically expelling product by vomiting. Seek medical aid immediately if in persisting physical discomfort or breathing difficulty.

Refer to Material Safety Data Sheet (MSDS) for more information.

Safety

WS 102 is certified to be formulated without lead, mercury, asbestos or chromates.

Maintenance

WS maintenance products are specifically formulated to protect and maintain WS coating surfaces. Clean surface periodically using WS Cleaner-Rejuvenator. Protect surface by regularly using WS Polish-Gloss or WS Polish-Satin.

Packaging

3 Gallon Kit (short-filled)	15 Gallon Kit	165 Gallon Bulk Kit
2 Gallons Part A	10 Gallons Part A	
1 Gallon Part B	5 Gallons Part B	

Warranty Disclaimer

We guarantee our Products adhere to the specifications of Weatherskin Coatings. Weatherskin Coatings makes no warranty or guarantee, expressed or implied, including warranties of fitness for a particular purpose or merchantability, respecting its Products. Liability, if any, is limited to refund or purchase price or replacement of the Product. All consequential damages, labor and cost of labor are hereby excluded.

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WS102 INTERIOR EPOXY HARDENER

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION

1.1 Product identifier

Trade name	**WS102 Interior Epoxy Hardener Part "B"**
Chemical name	**Blend of Phenols and Amines**

1.2 Recommended use of the product and restrictions on use

Recommended use	Industrial Use
Non- recommended use(s)	None known

1.3 Details of the supplier of the safety data sheet

Company	Weatherskin Corporation. Bay B 1120 44th Avenue SE Calgary, Alberta. Canada T2G 4W6
Telephone	403 656 9244
Toll Free	1 877 693 9224
Website	www.weatherskin.com

1.4 Emergency telephone number

Emergency In case of emergency call CANUTEC	613-996-6666

2. HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Acute Toxicity Oral	Category 4
Acute Toxicity Dermal	Category 3
Skin Corrosion / Irritation	Category 1B
Eye Damage / Eye Irritation	Category 1
Acute Aquatic Toxicity	Category 1
Chronic Aquatic Toxicity	Category 2

2.2 Label Elements

Signal word	Danger
Hazard statement	Harmful if swallowed Toxic in contact with skin Causes severe skin burns and eye damage May cause an allergic skin reaction Harmful if inhaled May cause respiratory irritation Harmful to aquatic life with long lasting effects
Precautionary Statements	Wear protective gloves/ protective clothing/ eye protection/ face protection. Use only outdoors or in a well-ventilated area. Do not eat, drink, or smoke when using this product. Wash with plenty of water and soap thoroughly after handling. Avoid release to the environment. Avoid breathing fumes/ vapors/ spray.
Symbols	

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3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

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3.2 Mixtures

Flexible Interior Epoxy / HARDENER

HAZARDOUS INGREDIENTS	C.A.S.#	WEIGHT %
Nonylphenol	84852153	30 - 70
Polyoxyalkyleneamine	90-46-100	10 - 40
Isophoronediamine	3236-53-1	10 - 40
N-Aminoethylpiperazine	140-31-8	5 - 25

4 FIRST AID MEASURES

EYE CONTACT	Small amounts splashed into the eyes can cause irreversible tissue damage and blindness. Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. If eye irritation persists: get medical attention. Continue rinsing eyes during transport to hospital. Protect unharmed eye. Keep eye wide open while rinsing.
SKIN CONTACT	If on skin or hair, take off immediately all contaminated clothing and shoes. Rinse skin, washing thoroughly with soap and water. Do not use solvents or thinners to clean skin. Get medical attention if irritation persists. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
INHALATION	If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
INGESTION	Clean mouth with water and drink afterwards plenty of water. Keep respiratory tract clear. Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed by a physician. Do not give milk or alcoholic beverages. Immediately call a POISON CENTER / Doctor.

5 FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Dry chemical, CO2, water spray or regular foam.
Unsuitable extinguishing media	Full water jet, because this may spread the fire.

5.2 Hazards

Flammable properties and hazards	Product is not considered a fire hazard. Containers can build up pressure if exposed to heat.
Hazardous combustion products	Hazardous decomposition products formed under fire conditions are carbon dioxide, carbon monoxide, and nitrogen oxides. Phenol and other toxic vapors may be generated.
Specific hazards during fire-fighting	Do not allow run-off from fire-fighting to enter drains or water courses.

5.3 Fire-fighting instructions

Do not inhale combustion gases. Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures.

Use personal protective equipment. Wear chemical safety glasses, rubber boots and heavy rubber gloves. Ensure adequate ventilation. Prevent further leakage or spillage if safe to do so.

6.2 Environmental precautions

Do not allow to enter drains, waterways, sewers, basements or confined areas. Do not discharge into the subsoil / soil. Absorb spills with inert material and place in a chemical waste container. If the product contaminates rivers and lakes or drains inform the respective authorities.

6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, universal binder, sawdust). Keep in suitable, closed containers for disposal.

7 HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid all personal contact. Use personal protective equipment. Use adequate ventilation. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator.

7.2 Hygiene considerations.

Wash hands before breaks and after work. Remove soiled or soaked clothing immediately. Wash contaminated clothes before reuse. Do not eat, drink or smoke when handling this product. Remove contaminated clothing and protective equipment before entering eating areas.

7.3 Safe storage procedures

Keep away from heat. Keep containers tightly closed in a dry, well ventilated place. Empty containers retain product residue and can be hazardous.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 EXPOSURE LIMITS

Hazardous Components (Chemical Name)	CAS#	OSHAPEL	ACGIHTLV	OTHER LIMIT
Nonylphenol	84852153	No data	No data	No data
Polyoxyalkyleneamine	90-46-100	No data	No data	No data
Isophoronediamine	3236-53-1	No data	No data	No data
N-Aminoethylpiperazine	140-31-8	No data	No data	No data

8.2 EXPOSURE CONTROLS

ENGINEERING CONTROLS

Use local exhaust ventilation to maintain airborne concentrations at safe levels. Suitable respiratory equipment should be used in cases of insufficient ventilation or where demand it.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Equipment	Wear a NIOSH-certified (or equivalent) organic vapour and ammonia/ particulate respirator.
Eye Protection	Use tightly fitting chemical splash goggles. Wear face shield if splashing hazard exists.
Hand Protection	Use impermeable gloves. Neoprene or butyl-rubber gloves.
Body Protection	Use impervious clothing and chemical resistant boots. Consider using resistant coveralls and aprons, if extensive exposure is possible.
Other Protective Equipment	Ensure that eyewash stations and safety showers are close to the workstation location.
General Hygiene Consideration	Do not breathe mist or vapor. Avoid all contact. Do not eat, drink, or smoke when using this product. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Do not take contaminated clothes home.
Environmental Exposure Controls	Avoid runoff into storm sewers and ditches which lead to waterways. May be hazardous to the environment if released in large quantities.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State	Liquid (oily liquid).
Color	Clear, slightly yellow.
Odor	Ammonia-like.

Properties

Boiling Point	Not applicable
Freezing Point	Not applicable
Flash Point	Not applicable
pH	10
Specific Gravity	1.0 - 1.2 g/ cm^3
Viscosity	2500 cP
VOC content	0
Evaporation rate	Slower than n-Butyl Acetate
Solubility in water	Negligible
Vapour pressure	Not applicable
Vapour density	No applicable
Auto ignition Point	Not applicable

10 STABILITY AND REACTIVITY

Chemical Stability	Stable under normal conditions
Hazardous Polymerization	Will not occur under normal conditions
Conditions to avoid	High temperatures, direct sunlight.
Incompatible Materials	Strong oxidizing agents, acids, halogenated compounds, ammonia, carbon monoxide, carbon dioxide, aldehydes, ketones. Reacts also with copper, aluminum, zinc, and their alloys.
Hazardous decomposition products	None known.

11 TOXICOLOGICAL INFORMATION

11.1 Acute Toxicity

Ingredient Name	Test	Species	Result	Exposure
Nonyl Phenol	LD50 Dermal	Rabbit	2140 mg/kg	
	LD50 Oral	Rat	580 mg/kg	
	Sub-acute NOAEL Oral	Rat	100 mg/kg	28 days
	Sub-acute NOAEL Oral	Rat	50 mg/kg	28 days
Polyoxyalkyleneamine	LD50 Dermal	Rabbit	2980 mg/kg	
	LD50 Oral	Rat	2885 mg/kg	
Isophoronediamine	LD50 Oral	Rat	1030 mg/kg	
	Dermal		No data available	
N-Aminoethylpiperazine	LD50 Oral	Rat	2000 - 5000 mg/kg	
	LD50 Dermal	Rabbit	200 - 1000 mg/kg	

11.2 Skin Corrosion and / or Irritation

Nonylphenol	Corrosive to the skin. Causes burns.
Polyoxyalkyleneamine	Corrosive to the skin. Causes burns.
Isophoronediamine	Corrosive to the skin.
N-Aminoethylpiperazine	Symptoms may be delayed. Toxic in contact with skin. May cause an allergic skin reaction. Causes severe skin burns.

11.3 Eye Damage or Irritation

Nonylphenol	
Polyoxyalkyleneamine	Corrosive to eyes. Causes burns.
Isophoronediamine	Species: Rabbit. Result: Risk of serious damage to eyes. Method: OECD guideline 405.
N-Aminoethylpiperazine	Causes serious eye damage.

11.4 Respiratory and Skin Sensitization

Nonylphenol	Route: Skin. Species: Guinea pig. Result: Not sensitizing.
Polyoxyalkyleneamine	Route: Skin. Species: Guinea pig. Result: Not sensitizing.
Isophoronediamine	Guinea pig sensitization test. Species: Guinea pig. Result: Sensitizing. Method: OECD guideline 406.
N-Aminoethylpiperazine	May cause sensitization by skin contact.

11.5 Germ Cell Mutagenicity

Nonylphenol	Test: OECD 476 in vitro Mammalian cell gene Mutation test Experiment: In vitro. Subject: Mammalian animal Metabolic activation:+/-. Result: Negative.
Polyoxyalkyleneamine	No known significant effects or critical hazards.
Isophoronediamine	Experimental/ calculated data: Arnes-test. No mutagenic effects reported. Micronucleus assay: No mutagenic effects reported.
N-Aminoethylpiperazine	Genotoxicity in vitro: Arnes test result: Negative. Genotoxicity in vivo: Result: No evidence of genotoxic effects in vivo.

11.6 Carcinogenicity

For the ingredients in this product, no known significant effects or critical hazards.

11.7 Reproductive Toxicity

No known significant effects or critical hazards

11.8 Specific Target Organs Effect

May cause damage to the kidneys.

11.9 Aspiration Hazards

No aspiration hazard expected.

12 ECOLOGICAL INFORMATION

12.1 Environmental Effects

Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment. It is biodegradable, but has a lot of potential for bioaccumulation. Water polluting material. May be harmful to the environment if released in large quantities.

12.2 Aquatic Ecotoxicity

Substance	Test	Result	Species	Exposure
Nonylphenol		Acute EbC50 (biomass) 0.0563 mg/L Fresh water	Algae	72 hours Static
		Acute EC50 0.085 mg/L Fresh water	Daphnia	48 hours Static
		Chronic EbC10 0.0033 mg/L Fresh water	Algae	72 hours Static
		Chronic NOEC 0.0047 mg/LFresh water	Fish	33 days
		Chronic NOEC 0.024 mg/L Fresh water	Daphnia	21 days Semistatic
Polyoxyalkyleneamine		Acute LC50>220 mg/L	Fish	96 hours
Isophoronediamine	Acute. Directive 84/449/EEC	LC50:110 mg/L	Leuciscus idus	96 hours Semistatic
	Chronic	Study scientifically not justified	Fish	
	Acute OECD Guideline 202	EC50: 23 mg/L	Daphnia magna	48 hours Static

Substance	Test	Result	Species	Exposure
		EC50: 288 mg/L	Chaetogammarus marinus	Semistatic
	Chronic Directive: OECD Guideline 202	NOEC: 3 mg/L	Daphnia magna	21 days
	Directive 88/301/EEC	EC50 > 50 mg/L	Green Algae	72 hours
	DIN 28412	EC10: 1120 mg/L	Bacterium	18 hours
N-Aminoethylpiperazine		LC50 > 100 mg/L	Pimephales prometas (fathead minnow)	96 hours
		EC50 > 10-100 mg/L	Daphnia magna (water flea)	48 hours
		EC50 > 100 mg/L	Pseudokirchneriella subcapitata (green algae)	72 hours

12.3 Persistence and Degradability

Substance	Result	Method	Dose
Nonylphenol	62% inherent - 28 days	OECD Ready Biodegradability Manometric Respirometry test	31 mg/L Oxygen consumption
	53% inherent 28 days	OECD 301B Ready Biodegradability CO2 Evolution Test	12.2 mg/L Carbon dioxide production
Polyoxyalkyleneamine	7.23% inherent 28 days	OECD 301B Biodegradability - CO2 Evolution Test	Inoculum: Activated Sludge
Isophoronediamine	Not readily biodegradable by OECD Criteria	Directive 92/69 EEC, C.4-A (aerobic) DOC Reduction	Degree of elimination 8% (28 days)
N-Aminoethylpiperazine	Not readily Biodegradable	OECD Test Guideline 301D	

12.4 Bioaccumulation

Nonylphenol	LogPow: 3.8 to 4.77	Potential: High
Polyoxyalkyleneamine	No data available	
Isophoronediamine	Based on the Log Pow	Accumulation in organisms is not to be expected
N-Aminoethylpiperazine	No data available	

12.5 Mobility in Soil

Nonylphenol	No data available
Polyoxyalkyleneamine	No data available
Isophoronediamine	Transport between environmental compartments: Calculated Absorption/ water - soil KOC: 928 log KOC: 2.97
N-Aminoethylpiperazine	No data available

12.6 Other Adverse Effects

Isophorenediamine	Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.
N-Aminoethylpiperazine	Biochemical Oxygen Demand (BOD) < 60% BOD, 28 days, Closed Bottle Test (OECD 301D)

13 DISPOSAL CONSIDERATIONS

Waste Disposal Method

Incinerate or dispose of unused material, residues and containers in a licensed facility in accordance with all applicable local, state, and federal regulations. Do not discharge substance/ product into sewage system. Do not contaminate pond, waterways or ditches with chemical or used container. The product should not be allowed to enter drains, water courses, or the soil.

14 TRANSPORTATION INFORMATION

14.1 Identification, UN number	UN 2735
14.2 Shipping Name	Amines Liquid, Corrosive, N.O.S.
14.3. Hazard Class	8
14.4 Packing Group	III

15 OTHER INFORMATION

Waste Disposal Method

Preparation Date	July 2, 2017
MSDS prepared by	Weatherskin Corp. 403 656 9244

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