

From: [Air.Pollution Control](#)
To: [APC Permitting](#)
Subject: FW: Permit #975063 Start up and Application for Operating Permit
Date: Thursday, December 3, 2020 8:27:38 AM
Attachments: [54-0047 ABB Installation Products Construction to Operating Permit December 2020.pdf](#)
[Hyprotec.pdf](#)
[Pavco Hypro Yellow UVS.pdf](#)
[Pavco Clean R 235.pdf](#)
[Pavco Hypro Fe Inh.pdf](#)
[Pavco Liquiclean Lectro NA.pdf](#)
[Pavco Merlin Brightener.pdf](#)
[Pavco Merlin Starter.pdf](#)
[Pavco Zinc Dip Part A.pdf](#)
[Pavco Zinc Dip Part B.pdf](#)
[Sulfuric Acid.pdf](#)
[Nitric Acid.pdf](#)
[Emissions Calculations #05081.xlsx](#)
[#05081 Supporting Documents.pdf](#)

From: Lisa A. Woods-Neisler <lisa.neisler@us.abb.com>
Sent: Thursday, December 3, 2020 06:17
To: Air.Pollution Control <Air.Pollution.Control@tn.gov>
Subject: [EXTERNAL] Permit #975063 Start up and Application for Operating Permit

To Whom it Concerns,

Please see the attached files for the start up notification and application for operating permit for Permit #975063. Also attached is supporting documentation including emission calculations, SDSs, and equipment specifications. If you have any questions or concerns please feel free to contact me. Please confirm receipt of this email application.

Thanks,
Lisa Neisler

Appendix 1: Startup Certification

Start Up Certification – submit one for each source included in this permit

Start Up Certification for Source 54-0047-

The permittee shall certify the initial start-up date(s) of the new or modified air contaminant source(s) regulated by this permit by submitting

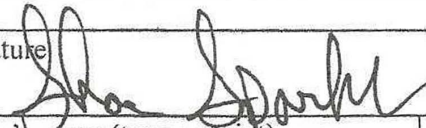
A COPY OF THE FRONT PAGE OF THIS PERMIT, with the information required in A) and B) of this certification completed, to the Technical Secretary's representatives listed below:

A) DATE OF INITIAL START-UP: 11 / 9 / 20
month day year

B) Anticipated operating rate: 100 percent of maximum rated capacity

For the purpose of complying with this condition, "initial start-up" of the air contaminant source shall be the date the new or modified source began operation for the production of product for sale, use as raw materials, or steam or heat production under the terms of this permit.

The undersigned affirms that this person has the full authority to represent and bind the permittee in environmental permitting affairs. The undersigned further affirms that the above provided information is true to the best of his/her knowledge and belief.

Signature 	Date <u>12/2/2020</u>	
Signer's name (type or print) <u>Shane Sparks</u>	Title <u>Plant Manager</u>	Phone (with area code) <u>423-745-6588</u>

Note: This certification is not an application for an operating permit. At a minimum, the appropriate application form, usually an APC-100, must be submitted requesting an operating permit. The application must be submitted in accordance with the requirements of this permit.

The completed certification shall be submitted to the Permit Program at the address listed below or via e-mail, no later than thirty (30) days after the air contaminant source is started-up.

TN Dept. of Environment and Conservation
Attn: Permit Program
Division of Air Pollution Control
William R. Snodgrass TN Tower, 15th Floor
312 Rosa L. Parks Avenue
Nashville, TN 37243

or
Adobe Portable Document Format (PDF)
Copy to: Air.Pollution.Control@TN.gov

Tenn. Comp. R. & Regs. 1200-03-09-.02(3)(b)

(end of conditions)

SH

STATE OF TENNESSEE
AIR POLLUTION CONTROL BOARD
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243



Permit to Construct or Modify an Air Contaminant Source Issued Pursuant to Tennessee Air Quality Act

Date Issued: January 15, 2019
Date Amended: May 2, 2019
Date Expires: January 15, 2021

Permit Number

975063

Facility ID: 54-0047

Issued To:
ABB Installation Products Inc.

Installation Address
260 Dennis Street
Athens

Installation Description
Electroplating Machine zinc coating and chromium conversion
(2) Wet Packed-Bed Scrubbers

Emission Source Reference No.
54-0047-16
40 CFR 63 Subpart WWWWWW

The holder of this permit shall comply with the conditions contained in this permit as well as all applicable provisions of the Tennessee Air Pollution Control Comprehensive Rules and Regulations (Tenn. Comp. R. & Regs.).

General Conditions

- G1.** The application that was utilized in the preparation of this permit is dated September 21, 2018 and is signed by Shane Sparks, the Plant Manager for the permitted facility. If this person terminates their employment or is assigned different duties and is no longer the responsible person to represent and bind the facility in environmental permitting affairs, the owner or operator of this air contaminant source shall notify the Technical Secretary of the change. Said notification shall be in writing and submitted within thirty (30) days of the change. The notification shall include the name and title of the new person assigned by the source owner or operator to represent and bind the facility in environmental permitting affairs. All representations, agreement to terms and conditions and covenants made by the former responsible person that were used in the establishment of limiting permit conditions on this permit will continue to be binding on the facility until such time that a revision to this permit is obtained that would change said representations, agreements and covenants.

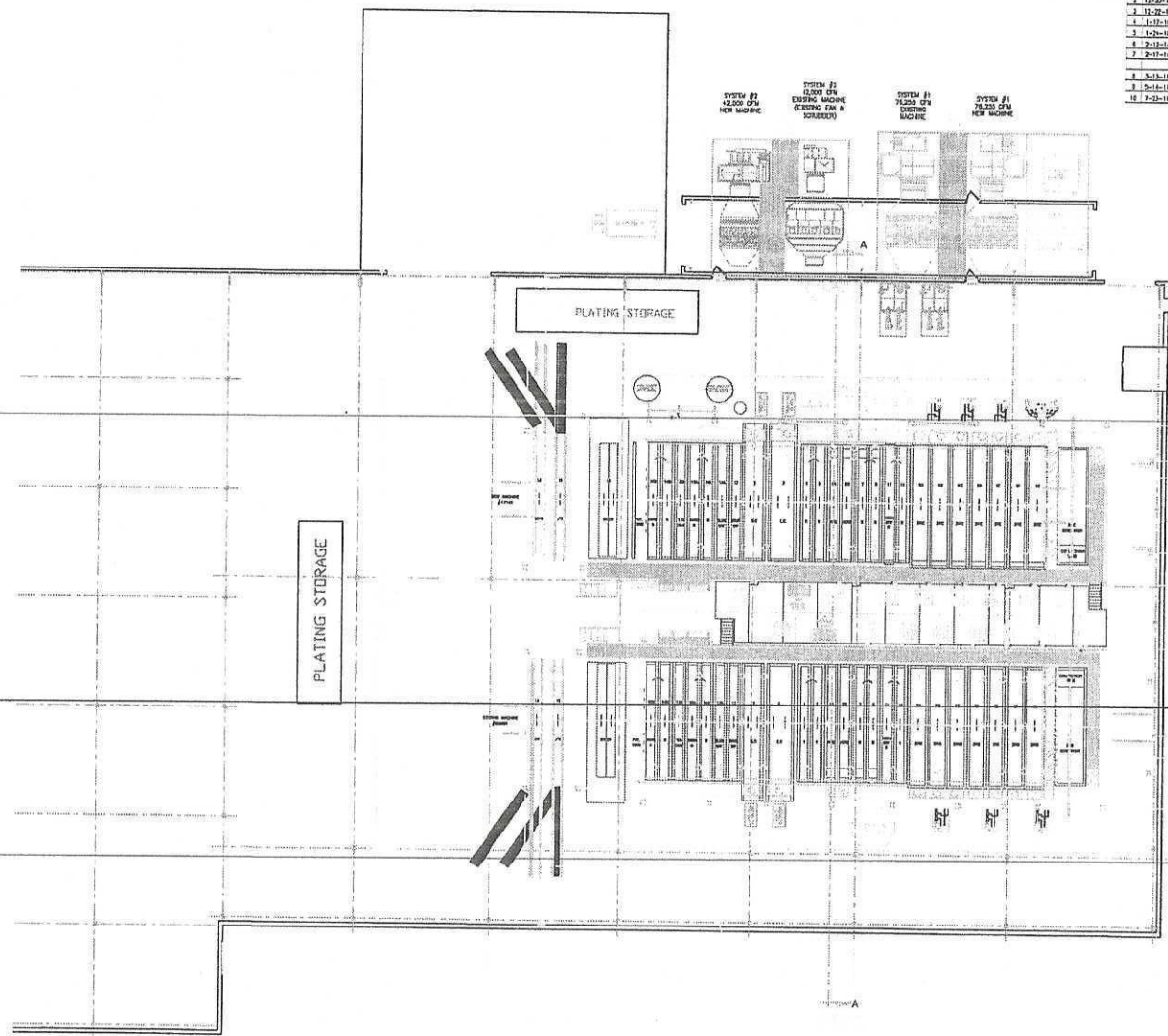
Tenn. Comp. R. & Regs. 1200-03-09-.03(8)

(conditions continued on next page)

Michelle W. Avery
TECHNICAL SECRETARY

No Authority is Granted by this Permit to Operate, Construct, or Maintain any Installation in Violation of any Law, Statute, Code, Ordinance, Rule, or Regulation of the State of Tennessee or any of its Political Subdivisions.

POST AT INSTALLATION ADDRESS



REV.	DATE	BY	DESCRIPTION
1	12-15-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
2	12-20-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
3	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
4	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
5	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
6	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
7	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
8	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
9	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
10	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
11	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
12	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
13	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
14	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
15	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR
16	12-22-17	AM	ISSUED AS-BUILT, FLOOR, FINE-GRANULAR, FINE-GRANULAR, FINE-GRANULAR

SYSTEM #1
NEW MACHINE

SYSTEM #2
NEW MACHINE

SYSTEM #3
NEW MACHINE

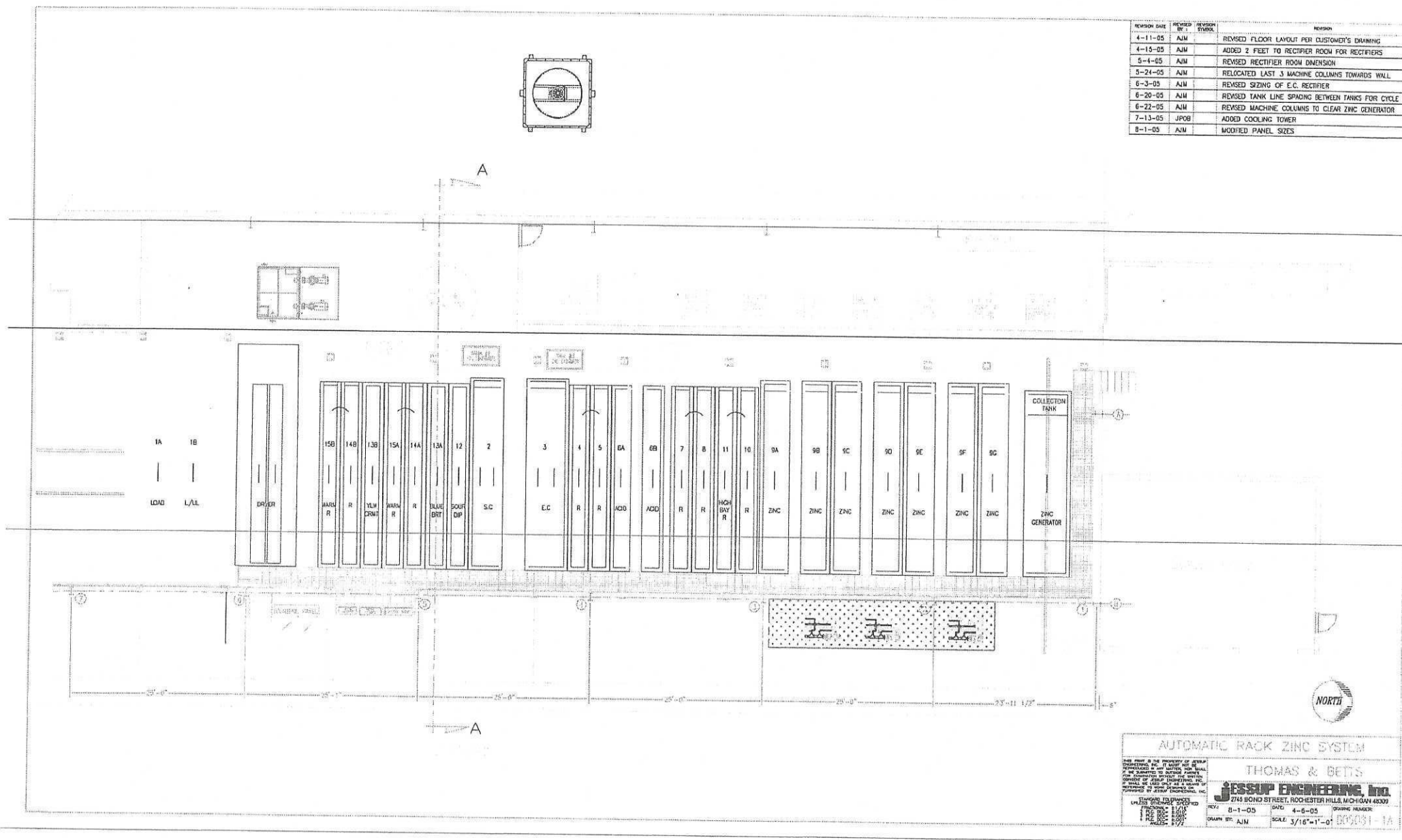
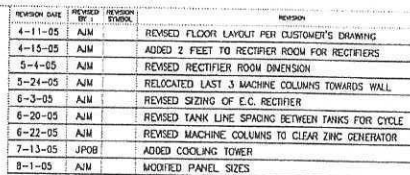
SYSTEM #4
NEW MACHINE

PLATING STORAGE

PLATING STORAGE



		J. J. & J. J. ENGINEERING, INC. 17161 171st Avenue, Suite 100 Northridge, CA 91321 (818) 711-1111 www.jjandj.com	
PROJECT: 17161 171st Avenue, Suite 100 DRAWING: 17161 171st Avenue, Suite 100 SCALE: 1/8" = 1'-0"		SHEET: 17161 171st Avenue, Suite 100 DATE: 12/22/17 BY: AM	



XXIII - TANK SCHEDULE**THOMAS & BETTS****JESSUP ENGINEERING INC.**

TANK No.	PROCESS	No. CELLS	TANK DOT "	TANK VOL GAL	TANK CONSTRUCT /LINING	OVERFLOW TYPE SIZE	DRN SIZE	BTM DRN SIZE	C'FLW TO TNK#	TANK TEMP (F)	HEATING/ COOLING EQUIP	EXHAUST CFM/SYS	AIR AGT CFM	LEVEL CNTL	FLTR RATE TPH	DC PWR SUPPLY AMP/VOLT	BELT TYPE
1A/B	LOAD/UNLOAD	2	120	---	MILD STL	--	--	--									
2	SOAK CLEAN	2	46	4,220	MILD STL	ET/12"	3"	--		180	MS COIL	X		AUTO			2
3	ELECTROCLEAN	2	62	5,690	MILD STL	ET/12"	3"	--		170	MS COIL	X		AUTO		15,000/18	2
4	RINSE	1	24	2,200	MS/PVC	EW/4"	3"	3"					52				1
5	RINSE	1	24	2,200	MS/PVC	EW/4"	3"	--	PC4				52				1
6A	ACID (SULFURIC)	1	24	2,200	MS/PVC	--	--	--				X					1
6B	ACID (SULFURIC)	1	24	2,200	MS/PVC	--	--	--				X					2
7	RINSE	1	24	2,200	MS/PVC	EW/4"	3"	3"				X					2
8	RINSE	1	24	2,200	MS/PVC	EW/4"	3"	--	PC7				52				1
9A	ALKALINE ZINC	1	40	3,670	MS/PP	ET/12"	4"	3"					52				1
9B	ALKALINE ZINC	1	40	3,670	MS/PP	ET/12"	4"	3"		110	EXT. P&F	X			1.5	10,000/12	2
9C	ALKALINE ZINC	1	40	3,670	MS/PP	ET/12"	4"	3"		110	EXT. P&F	X				10,000/12	2
9D	ALKALINE ZINC	1	40	3,670	MS/PP	ET/12"	4"	3"		110	EXT. P&F	X			1.5	10,000/12	2
9E	ALKALINE ZINC	1	40	3,670	MS/PP	ET/12"	4"	3"		110	EXT. P&F	X				10,000/12	2
9F	ALKALINE ZINC	1	40	3,670	MS/PP	ET/12"	4"	3"		110	EXT. P&F	X				10,000/12	2
9G	ALKALINE ZINC	1	40	3,670	MS/PP	ET/12"	4"	3"		110	EXT. P&F	X			1	10,000/12	2
10	RINSE	1	24	2,200	MS/PVC	EW/4"	3"	3"		110	EXT. P&F	X				10,000/12	2
11	HIGH BAY RINSE	1	24	2,200	MS/PVC	EW/4"	3"	--	PC10				52				1
12	SOUR DIP	1	24	2,200	316SS	--	--	--					52				1
13A	BLUE BRIGHT	1	24	2,200	316SS	--	--	--					52				1
14A	RINSE	1	24	2,200	MS/PVC	EW/4"	3"	3"					52				1
15A	WARM RINSE	1	24	2,200	MS/PVC	EW/4"	3"	--	PC14A	100	SS COIL		52				1
13B	YELLOW CHROMATE	1	24	2,200	316SS	--	--	--					52				1
14B	RINSE	1	24	2,200	MS/PVC	EW/4"	3"	3"					52				1
15B	WARM RINSE	1	24	2,200	MS/PVC	EW/4"	3"	--	PC14B	100	SS COIL		52				1
16	DRYER	2	48	---	ALUM STL	--	--	2"									2

TANK WIDTH 312

TANK DEPTH 72

MS = MILD STEEL

TI = TITANIUM

SS = STAINLESS STEEL

PVDF = TEFLON EQUIVALENT

PVC = POLYVINYL CHLORIDE

DRN = DRAIN

HTR = HIGH TEMP RUBBER

DOT = DIRECTION OF TRAVEL

PP = POLYPROPYLENE

CFM = CUBIC FEET/ MINUTE

FRP = FIBERGLASS

AGT = AGITATION

GPM = GALLONS/ MINUTE

FLTR = FILTER

HB = HYDROSTATIC BUBBLER

LVL = LEVEL CONTROL

TPH = TURNS/ HOUR

C'FL = COUNTERFLOW

BC = BAFFLE COUNTERFLOW

PC = PIPED COUNTERFLOW

M = PUMP COUNTERFLOW

W = SIDE WEIR OVERFLOW

EW = END WEIR OVERFLOW

T = SIDE TRAP OVERFLOW

Jessup Plater #05081

VOC Calculation

No VOC Content

HAP Calculations

The new plating process contains no HAP materials.

AP-42 CALCULATIONS FOR PM

CONTROLLED EMISSIONS (AP-42 CHAPTER 12.20)

$E_{fm} = (\text{Emission Factor for metal } m \text{ in gr/dscf}) = 0.028 \times E_{fcr} \times C_m$

Where:

E_{fcr} = Emission factor for controlled hard chromium electroplating emissions

= 2.10E-05

$E_{fcr} (PM)$ = Emission factor for controlled hard chromium electroplating emissions

= 4.40E-05

C_m = Bath concentration of Metal M

= 2 oz/gal

$E_{fm} (\text{Emission factor for Zinc}) = 0.028 \times E_{fcr} \times C_m = 1.18E-06$

$E_{fm} (\text{Emission factor for Particulate Matter}) = 0.028 \times E_{fcr} (PM) \times C_m = 2.46E-06$

Emissions are calculated using these emission factors and formula:

$\text{Emissions} = E_{fm} (\text{gr/dscf}) \times \text{flow rate (cfm)} \times \text{operating time (min/yr)} / 7000 \text{ gr/lb}$

Where:

Scrubber # Flow rate 76255 cfm

Operating Time 8760 hours/year x 60 minutes/hour = 525,600 min/year

PM Emissions (Controlled) = $2.46E-06 (\text{gr/dscf}) \times 51460 (\text{cfm}) \times 525,600 (\text{min/yr}) / 7,000 (\text{gr/lb}) =$ 14.09 lbs/year 1.61E-03 lbs/hr.

Zinc Emissions (Controlled) = $1.18E-06 \times 51,460 (\text{cfm}) \times 525,600 (\text{min/yr}) / 7000 (\text{gr/lb}) =$ 6.76 lbs/year 3.38E-03 lbs/hr.

Where: Scrubber # 20.84 lbs/year 4.99E-03 lbs/hr.

Scrubber # Flow rate 37900 cfm

Operating Time 525,600 min/year

PM Emissions (Controlled) = $2.46E-06 (\text{gr/dscf}) \times 37,900 (\text{cfm}) \times 525,600 (\text{min/yr}) / 7,000 (\text{gr/lb}) =$ 7.00 lbs/year 7.99E-04 lbs/hr.

Zinc Emission. (Controlled) Zinc = $1.18E-06 (\text{gr/dscf}) \times 37900 (\text{cfm}) \times 525,600 (\text{min/yr}) / 7,000 (\text{gr/lb}) =$ 3.36 lbs/year 1.68E-03

***Assume Zinc Emissions are PM emissions and are less than 10 microns in size Scrubber # 10.36 lbs/year 2.48E-03 lbs/hr.

Zinc Emissions + PM Emissions = Total PM Emissions (assuming particle size is less than 10 microns for Zinc)

Total PM Emissions = 0.00746 lbs/hr = 6.54E+01 lbs/year **3.27E-02 tons/year**

Total PM plater Emissions = 3.27E-02 tons/year



SAFETY DATA SHEET

HYPROTEC

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **HYPROTEC**
PRODUCT CODE: ZC1405R
CHEMICAL FAMILY NAME: Mixture
U.N. NUMBER: UN3264
U.N. DANGEROUS GOODS CLASS: Class 8, Corrosive liquid, Acidic, Inorganic, n.o.s. (Contains Ammonium Bifluoride), PG II
SUPPLIER/MANUFACTURER'S NAME: **PAVCO INC**
ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
EMERGENCY PHONE: **TOLL-FREE in USA/Canada** 1-800-424-9300 Chemtrec
BUSINESS PHONE: 1-704-496-6800 (Product Information)
BUSINESS FAX: 1-704-496-6810
WEB SITE: www.pavco.com
DATE OF PREPARATION: October 22, 2012
DATE OF LAST REVISION: October 22, 2012

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a blue/green liquid with a slight odor.

Health Hazards: Prolonged or repeated exposure to this product may cause skin and/or respiratory irritation. Contact with eyes may cause severe irritation and/or burns. Ingestion may cause nausea, diarrhea, and gastrointestinal discomfort.

Flammability Hazards: This product is Non-Flammable

Reactivity Hazards: None known.

Environmental Hazards: No data available on this product and its effects on aquatic life if released into the environment.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS



CANADA (WHMIS) SYMBOLS



EUROPEAN and (GHS) Hazard Symbols



Signal Word: **Danger!**

GHS LABELING AND CLASSIFICATION:

CLASSIFICATION OF SUBSTANCE OR MIXTURE IN ACCORDANCE WITH 29 CFR 1200 (OSHA HCS) AND THE EUROPEAN UNION DIRECTIVES:

This product does meet the definition of a hazardous substance or preparation as defined by 29 CFR 1910. 1200 and the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC and subsequent Directives.

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex VI

EC# 231-791-2 This substance is not classified in the Annex VI of Directive 67/548/EEC

EC# 235-595-8 This substance is not classified in the Annex VI of Directive 67/548/EEC

EC# 231-714-2 Index# 007-004-00-1

CAS# 10026-24-1 is not listed in ESIS

EC# 215-676-4 Index# 009-009-00-4

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Acute Oral Toxicity Category 4

Skin Corrosive Category 1B



SAFETY DATA SHEET

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Hazard Statement(s):

H302: Harmful if swallowed
H314: Causes severe skin burns and eye damage
H320: Causes eye irritation
H333: May be harmful if inhaled

Precautionary Statement(s):

P260: Do not breathe dust/fume/gas/mist/vapors/spray
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product
P280: Wear protective gloves/protective clothing/eye protection/face protection

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[C] Corrosive, [Xn] Harmful, [Xi] Irritant

Risk Phrases:

R22: Harmful if swallowed
R34: Causes burns
R36/37/38: Irritating to eyes, respiratory system and skin

Safety Phrases:

S24/25: Avoid contact with skin and eyes.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S46: If swallowed, seek medical advice immediately and show container or label.

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Corrosive: Eye exposure may produce severe irritation and chemical burns.

SKIN CONTACT: Can be moderately corrosive. Contact may not cause symptoms for several hours.

INHALATION HAZARDS: May be irritating to the respiratory tract.

INGESTION HAZARDS: Can cause spontaneous vomiting, chest and abdominal pain, and difficulty swallowing with drooling. Corrosive injury to the mouth, throat, esophagus, and stomach may result in perforation, hemorrhage, and narrowing of the gastrointestinal tract.

CHRONIC: None Known

TARGET ORGANS:

ACUTE: Eye, respiratory System, Skin

CHRONIC: None Known

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Water	7732-18-5	231-791-2	Not Listed	40 - 50%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Basic Chrome Sulfate	12336-95-7	235-595-8	1309	20 - 30%	HAZARD CLASSIFICATION: SELF CLASSIFIED - [Xn] Harmful, [Xi] Irritant RISK PHRASES: R22, R36/37/38
Nitric Acid	7697-37-2	231-714-2	0183	10 - 15%	HAZARD CLASSIFICATION: [C] Corrosive RISK PHRASES: R34
Cobalt Sulfate	10026-24-1	Not Listed in ESIS	Not Listed	<5%	HAZARD CLASSIFICATION: SELF CLASSIFIED - [Xn] Harmful, [Xi] Irritant RISK PHRASES: R22, R36/37/38
Ammonium Bifluoride	1341-49-7	215-676-4	Not Listed	<5%	HAZARD CLASSIFICATION: [C] Corrosive, [Xn] Harmful; RISK PHRASES: R34, R22
Balance of other ingredients are non-hazardous or hazardous in less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

SAFETY DATA SHEET

HYPROTEC

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or SDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:

AUTOIGNITION TEMPERATURE:

FLAMMABLE LIMITS (in air by volume, %):

FIRE EXTINGUISHING MATERIALS:

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Explosion Sensitivity to Mechanical Impact:

Explosion Sensitivity to Static Discharge:

SPECIAL FIRE-FIGHTING PROCEDURES:

Non-Flammable

Not Applicable

Lower (LEL): Not Applicable Upper (UEL): Not Applicable

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

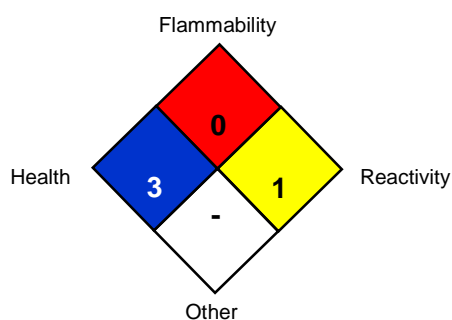
Material may splatter when water is first applied. Material will heat up with the addition of water.

Not Sensitive.



Not Sensitive

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			3
FLAMMABILITY HAZARD (RED)			0
PHYSICAL HAZARD (YELLOW)			1
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: SMALL SPILL: Absorb material with rags, floor absorbent, vermiculite, or other absorbent material and transfer to an appropriate container. LARGE SPILL: Dike the area of the spill to prevent spreading. The material may then be taken up with vacuum or absorbent material and transferred to appropriate containers.

Notify proper authorities if required by local, state, or federal regulations.

Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).



SAFETY DATA SHEET

HYPROTEC

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Store in a cool place in original container and protect from sunlight. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Water	7732-18-5	Not Listed	Not Listed	Not Listed
Basic Chrome Sulfate	12336-95-7	Not Listed	Not Listed	Not Listed
Nitric Acid	7697-37-2	2 ppm	2 ppm	2 ppm
Cobalt Sulfate	10026-24-1	0.02 mg/m ³	0.1 mg/m ³	0.02 mg/m ³
Ammonium Bifluoride	1341-49-7	Not Listed	Not Listed	Not Listed

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:

Liquid

APPEARANCE & ODOR:

Blue/green liquid with a slight odor.

ODOR THRESHOLD (PPM):

Slight

VAPOR PRESSURE (mmHg):

Not Available

VAPOR DENSITY:

Not Available

EVAPORATION RATE (nBuAc = 1):

Not Available

BOILING POINT (C°):

95°C - 105°C (203°F - 221°F)

FREEZING POINT (C°):

Not Available

pH:

<4.5

SPECIFIC GRAVITY 20°C: (WATER =1)

1.41



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SOLUBILITY IN WATER (%)
% VOLATILE WEIGHT:

Complete
None

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of carbon, nitrogen and chrome.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Reacts with bases, and metals, such as iron, and zinc.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Incompatible materials

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is not available for this product

CAS# 7697-37-2 Oral LD50 1267 mg/kg Rat

CAS# 12336-95-7 Oral LD 50 7760 mg/kg Rat

CAS# 10026-24-1 Oral LD50 582 mg/kg Rat

SUSPECTED CANCER AGENT: One or more of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore are considered to be, nor suspected to be a cancer-causing agent by these agencies.

Cobalt Sulfate (Listed as Cobalt)

CAS# 10026-24-1

ACGIH: A3

IARC: 2B

CAS# 7697-37-2

IARC: 2A

CAS# 1341-49-7

IARC: 3

CAS# 12336-95-7

IARC: 3

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin, eyes and respiratory system.

SENSITIZATION OF PRODUCT: This product is not considered a skin sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: No information concerning the effects of this product and its components on the human reproductive system.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No specific data is available for this product, however this product should be considered as having possible adverse effects to the environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No data available

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: Not Known



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EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT; IATA; IMO; ADR:

THIS PRODUCT IS CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Corrosive liquid, acidic, Inorganic, n.o.s. (Contains Ammonium Bifluoride)

HAZARD CLASS NUMBER and DESCRIPTION: Class 8 Corrosive

UN IDENTIFICATION NUMBER: UN3264

PACKING GROUP: PGII

DOT LABEL(S) REQUIRED: Corrosive

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): 154

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is classified as Dangerous Goods, per regulations of Transport Canada

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

SARA 313 Reporting CAS# 12336-95-7 20-30%, CAS# 7697-37-2 10-15%, CAS# 1341-49-7 1-5%.

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes Chronic Health: Yes Fire: No Reactivity: Yes

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): CAS# 7697-37-2 1,000 Lbs.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): One or more of the ingredients are on the California Proposition 65 lists. Cobaltous Sulfate, heptahydrate.

WARNING! This product contains ingredients that are known to the State of California to cause cancer or reproductive harm.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as a Class D Division 2B Materials causing other toxic effects and Class E Corrosive materials, as per the Controlled Product Regulations



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EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

GHS MSDS Compliance PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

End of SDS Sheet



SAFETY DATA SHEET

Nitric Acid 65 - 70%

Section 1. Identification

Product identifier : Nitric Acid 65 - 70%

Other means of identification : 1906-27313
Historic MSDS #:16051

Product type : Liquid.

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

Identified uses	
Manufacture of chemical products. Manufacture of specialty fertilizers.	
Uses advised against	Reason
Product is not intended for consumer use. Reserved for industrial and professional use only.	Risk assessment.

Supplier's details : Agrium Wholesale
13131 Lake Fraser Drive, S.E.
Calgary, Alberta, Canada, T2J 7E8

Agrium U.S. Inc.
Suite 1700, 4582 South Ulster St.
Denver, Colorado, U.S.A., 80237

Company phone number (North America):
1-800-403-2861 (Customer Service)

Emergency telephone number (with hours of operation) : Agrium 24 Hr Emergency Telephone Numbers:
English:
Transportation Emergencies: 1-800-792-8311
Medical Emergencies: 1-303-389-1653

French or Spanish:
Transportation or Medical Emergencies: 1-303-389-1654

Section 2. Hazard identification

Classification of the substance or mixture : OXIDIZING LIQUIDS - Category 3
CORROSIVE TO METALS - Category 1
SKIN CORROSION - Category 1A
SERIOUS EYE DAMAGE - Category 1

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS label elements

Hazard pictograms



Signal word : Danger

Hazard statements : May intensify fire; oxidizer.
May be corrosive to metals.
Causes severe skin burns and eye damage.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 2. Hazard identification

Prevention	: Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials. Keep only in original packaging. Wash hands thoroughly after handling.
Response	: Absorb spillage to prevent material damage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	: Store locked up. Store in a corrosion resistant container with a resistant inner liner.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements	: None known.
Other hazards which do not result in classification	: None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Ingredient name	% (w/w)	CAS number
Nitric acid	65 - 70	7697-37-2
Water	30 - 35	7732-18-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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 and hence require reporting in this section.

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

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact	: Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
Inhalation	: Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. 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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: Get medical attention immediately. Call a poison center or physician. Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First-aid measures

- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : Severely irritating to the respiratory system.
- Skin contact** : Causes severe burns.
- Ingestion** : Corrosive to the digestive tract. May cause burns to the mouth, throat and stomach. May cause respiratory irritation.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Adverse symptoms may include the following:
coughing
respiratory tract irritation
wheezing and breathing difficulties
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
yellow staining of the skin
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting
difficulty swallowing
throat and stomach pain
respiratory tract irritation
wheezing and breathing difficulties

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Nitric acid is an acid which may cause coagulative necrosis. Treatment is symptomatic and supportive. The extent of injury depends on duration of exposure and concentration of liquid. Do not attempt to use chemicals to neutralize the exposure. 24 Hr Medical Emergency telephone number for professional support: English: 1-303-389-1653; French or Spanish: 1-303-389-1654.
- Specific treatments** : Outcomes can be improved by minimizing time to decontamination and extending decontamination times to reduce tissue damage. Expert opinion indicates extended decontamination is required to remove corrosive chemicals. Skin and eye decontamination should be performed for a minimum of 20 - 30 minutes. Extended decontamination times may be required depending on the exposure. To avoid hypothermia, irrigation water should be maintained at a comfortable temperature. If the patient is not in extremis, it may be necessary to delay transport to emergency care facilities to ensure adequate decontamination time. However, early patient transport may be necessary depending on the patient's condition or the availability of water. If possible, continue skin and/or eye irrigation during emergency medical transport. Double-bag contaminated clothing and personal belongings of the patient.

Section 4. First-aid measures

- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. Depending on the situation, the rescuer should wear an appropriate mask, gloves, protective clothing and possibly, a self-contained breathing apparatus. Mouth-to-mouth resuscitation of oral exposure patients is not recommended. First-aiders with contaminated clothing should be properly decontaminated.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Non-flammable. Material will not burn. The product acts as an oxidizing agent, and supports combustion by liberating oxygen even if smothered. Use an extinguishing agent suitable for the surrounding fire.

- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : Oxidizing material. May intensify fire. In a fire or if heated, a pressure increase will occur and the container may burst. Corrosive liquid. Reacts violently with water.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
Acidic corrosive material
nitrogen oxides

- Special protective actions for fire-fighters** : No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Decontaminate tools, equipment and personal protective equipment in a segregated area.

- 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.

- Remark** : Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Contain and collect the water used to fight the fire for later treatment and disposal.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". Refer to Emergency Response Guidebook, Guide 157 for further information regarding spill control and Isolation/Protective Action Distances Guidelines.

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Small spill** : Put on appropriate personal protective equipment (see Section 8). Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Do not absorb in sawdust or other combustible material. It may lead to a fire risk when it dries out. Neutralize acids by applying basic substances (soda ash or lime) or use an acid spill kit. Dispose of via a licensed waste disposal contractor.
- Large spill** : Put on appropriate personal protective equipment (see Section 8). Approach release from upwind. Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Absorb spillage to prevent material damage. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Do not absorb in sawdust or other combustible material. It may lead to a fire risk when it dries out. The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Contaminated absorbent material may pose the same hazard as the spilled product. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from clothing, incompatible materials and combustible materials. Keep away from alkalis. Keep away from heat. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Separate from reducing agents and combustible materials. Keep container tightly closed and sealed until ready for use. Do not allow water to enter container because a violent reaction may occur. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Contains nitric acid. Will corrode incompatible metals and many plastic materials. 304 or 316 stainless steel are acceptable materials of construction. Storage tanks should be designed to API Standard 650. Tanks should be vented and painted white or in light, heat-reflecting colors. Piping should be welded schedule 40 stainless steel. Ensure that all pumps, valves, meters, are of compatible material. Gaskets should be of Teflon. Secondary containment is recommended where practical or required by law. Refer to NFPA 400 Hazmat Code for further information.

Occupational exposure limits

Ingredient name	Exposure limits
<p>Canadian Regulations</p> <p>Nitric acid</p>	<p>CA Alberta Provincial (Canada, 4/2009). 15 min OEL: 4 ppm 15 minutes. 15 min OEL: 10 mg/m³ 15 minutes. 8 hrs OEL: 2 ppm 8 hours. 8 hrs OEL: 5.2 mg/m³ 8 hours.</p> <p>CA British Columbia Provincial (Canada, 4/2014). TWA: 2 ppm 8 hours. STEL: 4 ppm 15 minutes.</p> <p>CA Ontario Provincial (Canada, 1/2013). TWA: 2 ppm 8 hours. TWA: 5.2 mg/m³ 8 hours. STEL: 4 ppm 15 minutes. STEL: 10 mg/m³ 15 minutes.</p> <p>CA Quebec Provincial (Canada, 1/2014). TWA_{EV}: 2 ppm 8 hours. TWA_{EV}: 5.2 mg/m³ 8 hours. STEV: 4 ppm 15 minutes. STEV: 10 mg/m³ 15 minutes.</p>
<p>U.S. Federal Regulations</p> <p>Nitric acid</p>	<p>ACGIH TLV (United States, 4/2014). TWA: 2 ppm 8 hours. TWA: 5.2 mg/m³ 8 hours. STEL: 4 ppm 15 minutes. STEL: 10 mg/m³ 15 minutes.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 2 ppm 8 hours. TWA: 5 mg/m³ 8 hours. STEL: 4 ppm 15 minutes. STEL: 10 mg/m³ 15 minutes.</p> <p>NIOSH REL (United States, 10/2013). TWA: 2 ppm 10 hours. TWA: 5 mg/m³ 10 hours. STEL: 4 ppm 15 minutes. STEL: 10 mg/m³ 15 minutes.</p> <p>OSHA PEL (United States, 2/2013). TWA: 2 ppm 8 hours. TWA: 5 mg/m³ 8 hours.</p>
<p>Water</p>	<p>None assigned.</p>

Appropriate engineering controls

- If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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.

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. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. Recommended:
butyl rubber
neoprene
Viton®
Contact your personal protective equipment supplier to verify the compatibility of the equipment for the intended purpose.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Wear suitable coveralls capable of preventing significant penetration of the substance or chemical-resistant protective suit. Recommended:
Tychem® SL
Tychem® F
Tychem® ThermoPro
Tychem® TK
or equivalent
Contact your personal protective equipment supplier to verify the compatibility of the equipment for the intended purpose.
- 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. Recommended: Impervious rubber safety boots. Contact your personal protective equipment supplier to verify the compatibility of the equipment for the intended purpose.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. For U.S. work sites where respiratory protection is required, ensure that a respiratory protection program meeting 29 CFR 1910.134 requirements is in place. Full chemical-resistant suit and self-contained breathing apparatus should be worn only by trained and authorized persons.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid. [Oily liquid.]
- Color** : Colorless to light yellow.
- Odor** : Pungent.
- Odor threshold** : Not available.
- pH** : <1
- Melting point** : Not available.
- Boiling point** : Not available.
- Flash point** : Not applicable.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not applicable. The substance will not burn. Oxidizing liquid. Material supports combustion.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: 6.1 kPa (46 mm Hg) [room temperature] 27.5 kPa (206 mm Hg) [50°C]
Vapor density	: 2.2 [Air = 1]
Relative density	: Not available.
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Water-soluble liquid
Partition coefficient: n-octanol/water	: -2.3
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: Not available.
Viscosity	: Not available.

Section 10. Stability and reactivity

Reactivity	: Reactive or incompatible with the following materials: Inorganic hydroxide. Organic chemicals. Avoid contamination by any source including metals, dust and organic materials. Reacts violently when water is added to this product. Reacts violently with bases. Incompatible with halogens. Refer to NFPA 400 Hazardous Materials Code for further information on the safe storage and handling of hazardous materials.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following: Contact with incompatible substances. contact with combustible materials Reactions may include the following: risk of causing or intensifying fire May be corrosive to metals. Contact your sales representative or a metallurgical specialist to ensure compatability with your equipment.
Conditions to avoid	: Drying on clothing or other combustible materials may cause fire. Keep away from clothing, incompatible materials and combustible materials. Refer to NFPA 400 Hazardous Materials Code for further information on the safe storage and handling of hazardous materials.
Incompatible materials	: Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Contact your sales representative or a metallurgical specialist to ensure compatability with your equipment. Reactive or incompatible with the following materials: alkalis combustible materials reducing materials reactive metals
Hazardous decomposition products	: Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Contact your sales representative or a metallurgical specialist to ensure compatability with your equipment.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Nitric acid	LC50 Inhalation Vapor	Rat	244 ppm	30 minutes
Water	LD50 Oral	Rat	>90 g/kg	-

Conclusion/Summary : Corrosive to the respiratory tract. Corrosive to the digestive tract. Corrosive to eyes and skin.

Irritation/Corrosion

Not available.

Conclusion/Summary

Skin : Corrosive to the skin.
Eyes : Corrosive to eyes.
Respiratory : Corrosive to the respiratory tract.

Sensitization

Not available.

Conclusion/Summary

Skin : No known significant effects or critical hazards.
Respiratory : No known significant effects or critical hazards.

Mutagenicity

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

Carcinogenicity

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

Reproductive toxicity

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Skin contact
 Eye contact
 Inhalation

Potential acute health effects

Eye contact : Causes serious eye damage.
Inhalation : Severely irritating to the respiratory system.
Skin contact : Causes severe burns.
Ingestion : Corrosive to the digestive tract. May cause burns to the mouth, throat and stomach. May cause respiratory irritation.

Section 11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Adverse symptoms may include the following:
coughing
respiratory tract irritation
wheezing and breathing difficulties
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
yellow staining of the skin
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting
difficulty swallowing
throat and stomach pain
respiratory tract irritation
wheezing and breathing difficulties

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Corrosive to the eyes, skin, respiratory system and digestive tract.
- Potential delayed effects** : Skin: scarring
Respiratory Tract: pulmonary edema

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Chronic bronchitis

Potential chronic health effects

- Conclusion/Summary** : Adverse effects are typically the result of acute overexposure. These effects may be long term or permanent in nature.
- General** : See above
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Nitric acid	Acute LC50 180 mg/l Marine water	Crustaceans - Carcinus maenas - Adult	48 hours
	Acute LC50 72 mg/l Fresh water	Fish - Gambusia affinis - Adult	96 hours

- Conclusion/Summary** : Harmful to aquatic organisms.

Persistence and degradability

Section 12. Ecological information

Conclusion/Summary : Readily biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Nitric acid	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Nitric acid	-2.3	-	low
Water	-1.38	-	low

Mobility in soil







Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	DOT Classification	Mexico Classification	IMDG	IATA
UN number	2031	2031	2031	Not available.	Not available.
UN proper shipping name	NITRIC ACID, other than red fuming, with at least 65%, but not more than 70% nitric acid	NITRIC ACID other than red fuming, with at least 65%, but not more than 70% nitric acid	NITRIC ACID other than red fuming, with at least 65%, but not more than 70% nitric acid.	Not available.	Not available.
Transport hazard class(es)	8 (5.1)  	8, (5.1)  	8 (5.1)  	Not available.	Not available.
Packing group	II	II	III	-	-
Environmental hazards	No.	No.	No.	No.	No.

Section 14. Transport information

Additional information	<u>Explosive Limit and Limited Quantity Index</u> 1 <u>Passenger Carrying Ship Index</u> Forbidden <u>Passenger Carrying Road or Rail Index</u> Forbidden Classification per the current revision, Transportation of Dangerous Goods Regulation, Part 2, Sec 2.3.	<u>Reportable quantity</u> 1000 lbs / 454 kg [85.667 gal / 324.29 L] Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements. <u>Packaging instruction</u> Passenger aircraft Quantity limitation: Forbidden. Cargo aircraft Quantity limitation: 30 L <u>Special provisions</u> A6, B2, B47, B53, IB2, IP15, T8, TP2	<u>Special provisions</u> P001 IBC02 PP81 B15 T8 TP2	-	-
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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.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: Nitric acid

CEPA Toxic substances : None of the components are listed.

Canada inventory : All components are listed or exempted.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Section 15. Regulatory information

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: All components are listed or exempted.
China	: All components are listed or exempted.
Europe	: All components are listed or exempted.
Japan	: 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.
Turkey	: Not determined.

<u>U.S. Federal Regulations</u>	: TSCA 8(a) CDR Exempt/Partial exemption: Not determined
	TSCA 8(b) inventory: All components are listed or exempted.
	Clean Water Act (CWA) 311: Nitric acid
	Clean Air Act (CAA) 112 regulated toxic substances: Nitric acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304 Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Nitric acid	65 - 70	Yes.	1000	85.7	1000	85.7

SARA 304 RQ : 1000 lbs / 454 kg [85.7 gal / 324.3 L]

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Nitric acid	65 - 70	Yes.	No.	No.	Yes.	No.

SARA 313

Section 15. Regulatory information

	Product name	CAS number	%
Form R - Reporting requirements	Nitric Acid 65 - 70%	7697-37-2	65 - 70
Supplier notification	Nitric Acid 65 - 70%	7697-37-2	65 - 70

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts	: The following components are listed: Nitric acid
New York	: The following components are listed: Nitric acid
New Jersey	: The following components are listed: Nitric acid
Pennsylvania	: The following components are listed: Nitric acid
California Prop. 65	: Not listed.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	3
Flammability	0
Physical hazards	1

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA).

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)



Copyright ©2013, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of printing	: 4/7/2016
Date of issue/Date of revision	: 4/7/2016
Date of previous issue	: No previous validation
Version	: 2

Indicates information that has changed from previously issued version.

This Safety Data Sheet has been revised to comply with Hazcom 2012 and WHMIS 2015 requirements.

Prepared by	: Agrium Wholesale Environment, Health, Safety and Security e-mail: productsafety@agrium.com
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Section 16. Other information

Key to abbreviations

- : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations
 HPR = Hazardous Products Regulations

Procedure used to derive the classification

Classification	Justification
OXIDIZING LIQUIDS - Category 3	Weight of evidence
CORROSIVE TO METALS - Category 1	Weight of evidence
SKIN CORROSION - Category 1A	Weight of evidence
SERIOUS EYE DAMAGE - Category 1	Weight of evidence

References

- : Transportation of Dangerous Goods Act and Clear Language Regulations, current edition at time of (M)SDS preparation, Transport Canada;
 Hazardous Products Act and Regulations, current revision at time of (M)SDS preparation, Health Canada;
 Domestic Substances List, current revision at time of (M)SDS preparation, Environment Canada;
 29 CFR Part 1910, current revision at time of SDS preparation, U.S. Occupational Safety and Health Administration;
 40 CFR Parts 1-799, current revision at time of SDS preparation, U.S. Environmental Protection Agency;
 49 CFR Parts 1-199, current revision at time of SDS preparation, U.S. Department of Transport;
 Threshold Limit Values for Chemical Substances, current edition at time of SDS preparation, American Conference of Governmental Industrial Hygienists;
 NFPA 400, National Fire Codes, National Fire Protection Association, current edition at time of SDS preparation;
 NFPA 704, National Fire Codes, National Fire Protection Association, current edition at time of SDS preparation;
 Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers;
 ERG 2012, Emergency Response Guidebook, U.S. Department of Transport, Transport Canada, and the Secretariat of Transportation and Communications of Mexico
 Hazardous Substances Data Bank, current revision at time of SDS preparation, National Library of Medicine, Bethesda, Maryland
 Integrated Risk Information System, current revision at time of SDS preparation, U.S. Environmental Protection Agency, Washington, D.C.
 Pocket Guide to Chemical Hazards, current revision at time of SDS preparation, National Institute for Occupational Safety and Health, Cincinnati, Ohio ;
 Agency for Toxic Substances and Disease Registry Databank, current revision at time of SDS preparation, U.S. Department of Health and Human Services, Atlanta, Georgia
 National Toxicology Program, Report on Carcinogens, Division of the National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina.
 Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio
 The Fertilizer Institute, Product Toxicology Testing Program Results, TFI, Washington , D.C., 2003

Notice to reader

Section 16. Other information

DISCLAIMER AND LIMITATION OF LIABILITY

The information and recommendations contained in this Safety Data Sheet ("SDS") relate only to the specific material referred to herein (the "Material") and do not relate to the use of such Material in combination with any other material or process. The information and recommendations contained herein are believed to be current and correct as of the date of this SDS. HOWEVER, THE INFORMATION AND RECOMMENDATIONS ARE PRESENTED WITHOUT WARRANTY, REPRESENTATION OR LICENSE OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THEIR ACCURACY, CORRECTNESS OR COMPLETENESS, AND THE SELLER, SUPPLIER AND MANUFACTURER OF THE MATERIAL AND THEIR RESPECTIVE AFFILIATES (COLLECTIVELY, THE "SUPPLIER") DISCLAIM ALL LIABILITY FOR RELIANCE ON SUCH INFORMATION AND RECOMMENDATIONS. This SDS is not a guarantee of safety. A buyer or user of the Material (a "Recipient") is responsible for ensuring that it has all current information necessary to safely use the Material for its specific purpose.

FURTHERMORE, THE RECIPIENT ASSUMES ALL RISK IN CONNECTION WITH THE USE OF THE MATERIAL. THE RECIPIENT ASSUMES ALL RESPONSIBILITY FOR ENSURING THE MATERIAL IS USED IN A SAFE MANNER IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL, HEALTH, SAFETY AND SECURITY LAWS, POLICIES AND GUIDELINES. THE SUPPLIER DOES NOT WARRANT THE MERCHANTABILITY OF THE MATERIAL OR THE FITNESS OF THE MATERIAL FOR ANY PARTICULAR USE AND ASSUMES NO RESPONSIBILITY FOR INJURY OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY OR RELATED TO THE USE OF THE MATERIAL.



SAFETY DATA SHEET

CLEAN R 235

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **CLEAN R 235**
PRODUCT CODE: CR235
CHEMICAL FAMILY NAME: Mixture
U.N. NUMBER: UN1814
U.N. DANGEROUS GOODS CLASS: Class 8, CORROSIVE, Potassium Hydroxide Solution, PGII
SUPPLIER/MANUFACTURER'S NAME: **PAVCO INC**
ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
EMERGENCY PHONE: **TOLL-FREE in USA/Canada** 1-800-424-9300 Chemtrec
BUSINESS PHONE: 1-704-496-6800 (Product Information)
BUSINESS FAX: 1-704-496-6810
WEB SITE: www.pavco.com
DATE OF CURRENT REVISION: March 19, 2015
DATE OF LAST REVISION: October 5, 2012

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a colorless to slight yellow liquid with a slight odor.

Health Hazards: Prolonged or repeated exposure to this product may cause skin and/or respiratory irritation. Contact with eyes may cause irritation and/or burns. Ingestion may cause nausea, diarrhea, and gastrointestinal discomfort.

Flammability Hazards: This product is Non-Flammable

Reactivity Hazards: None known.

Environmental Hazards: No data available on this product and its effects on aquatic life if released into the environment.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS



CANADA (WHMIS) SYMBOLS



EUROPEAN and (GHS) Hazard Symbols



Signal Word: **Danger!**

GHS LABELING AND CLASSIFICATION:

CLASSIFICATION OF SUBSTANCE OR MIXTURE IN ACCORDANCE WITH 29 CFR 1200 (OSHA HCS) AND THE EUROPEAN UNION DIRECTIVES:

This product does meet the definition of a hazardous substance or preparation as defined by 29 CFR 1910. 1200 and the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC and subsequent Directives.

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex VI

EC# 231-791-2 This substance is not classified in the Annex VI of Directive 67/548/EEC

EC# 215-181-3 Annex VI Index # 019-002-00-8

EC# 215-199-1 This substance is not classified in the Annex VI of Directive 67/548/EEC

EC# 230-785-7 This substance is not classified in the Annex VI of Directive 67/548/EEC

Proprietary Mixture is not classified in the Annex VI of Directive 67/548/EEC

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Acute Oral Toxicity Category 4

Skin Corrosive Category 1A



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Hazard Statement(s):

H302: Harmful if swallowed
H314: Causes severe skin burns and eye damage
H320: Causes eye irritation
H333: May be harmful if inhaled

Precautionary Statement(s):

P260: Do not breathe dust/fume/gas/mist/vapors/spray
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product
P280: Wear protective gloves/protective clothing/eye protection/face protection

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[C] Corrosive, [Xn] Harmful, [Xi] Irritant

Risk Phrases:

R22: Harmful if swallowed
R35: Causes severe burns
R36/37/38: Irritating to eyes, respiratory system and skin

Safety Phrases:

S24/25: Avoid contact with skin and eyes.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S46: If swallowed, seek medical advice immediately and show container or label.

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Eye exposure may produce irritation. Direct contact may cause possible eye damage.

SKIN CONTACT: Prolonged or repeated skin exposure may cause irritation and possible chemical burns.

INHALATION HAZARDS: Inhalation of mists may be irritating to the respiratory tract.

INGESTION HAZARDS: Corrosive: Irritating to mouth, throat and stomach. May cause gastrointestinal tract irritation.

CHRONIC: None Known

TARGET ORGANS:

ACUTE: Eye, respiratory System, Skin

CHRONIC: None Known

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Water	7732-18-5	231-791-2	Not Listed	55 - 65%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Potassium Hydroxide Liquid	1310-58-3	215-181-3	0357	15 - 20%	HAZARD CLASSIFICATION: [Xn] Harmful [C] Corrosive RISK PHRASES: R22, R35
Potassium Silicate	1312-76-1	215-199-1	Not Listed	10 - 15%	HAZARD CLASSIFICATION: SELF CLASSIFIED - [Xi] Irritant RISK PHRASES: R36/37/38
Tetrapotassium Pyrophosphate	7320-34-5	230-785-7	0183	5 - 10%	HAZARD CLASSIFICATION: SELF CLASSIFIED [C] Corrosive RISK PHRASES: R34
Proprietary Mixture	Proprietary	Proprietary	Not Listed	1 - 10%	HAZARD CLASSIFICATION: SELF CLASSIFIED - [Xi] Irritant RISK PHRASES: R36/37/38
Balance of other ingredients are non-hazardous or hazardous in less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

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INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or SDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:

AUTOIGNITION TEMPERATURE:

FLAMMABLE LIMITS (in air by volume, %):

FIRE EXTINGUISHING MATERIALS:

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Explosion Sensitivity to Mechanical Impact:

Explosion Sensitivity to Static Discharge:

SPECIAL FIRE-FIGHTING PROCEDURES:

Non-Flammable

Not Established

Lower (LEL): Not Established Upper (UEL): Not Established

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

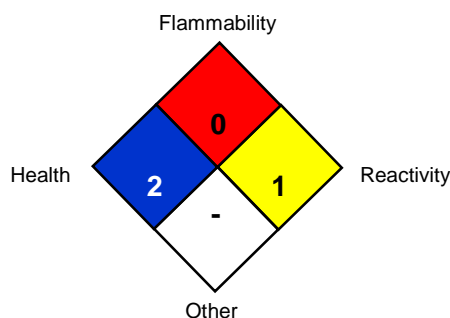
Containers can build up pressure if exposed to heat

Not Sensitive.



Not Sensitive

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			2
FLAMMABILITY HAZARD (RED)			0
PHYSICAL HAZARD (YELLOW)			0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: **SMALL SPILL:** Absorb material with rags, floor absorbent, vermiculite, or other absorbent material and transfer to an appropriate container. **LARGE SPILL:** Dike the area of the spill to prevent spreading. The material may then be taken up with vacuum or absorbent material and transferred to appropriate containers.

Notify proper authorities if required by local, state, or federal regulations.

Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).



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SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Store in a cool place in original container and protect from sunlight. Keep from freezing. If freezing occurs, warm and mix well before using. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Water	7732-18-5	Not Listed	Not Listed	Not Listed
Potassium Hydroxide Liquid	1310-58-3	2 mg/m ³	2 mg/m ³	2 mg/m ³
Potassium Silicate	1312-76-1	Not Listed	Not Listed	Not Listed
Tetrapotassium Pyrophosphate	7320-34-5	Not Listed	Not Listed	Not Listed
Proprietary Mixture	Proprietary	Not Listed	Not Listed	Not Listed

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:

Liquid

APPEARANCE & ODOR:

Colorless to slightly yellow liquid with a slight odor.

ODOR THRESHOLD (PPM):

Slight

VAPOR PRESSURE (mmHg):

Not Available

VAPOR DENSITY:

Heavier than air

EVAPORATION RATE (nBuAc = 1):

<1

BOILING POINT (C°):

95°C - 105°C (203°F - 221°F)

FREEZING POINT (C°):

0°C (32°F)

pH:

>11.0

SPECIFIC GRAVITY 20°C: (WATER =1)

1.13



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SOLUBILITY IN WATER (%)
% VOLATILE WEIGHT:

Complete
Not Available

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of carbon, phosphoric acid, oxides of phosphorus and oxides of potassium

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Reacts with acids, zinc and aluminum.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Incompatible materials

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is not available for this product

CAS# 1310-58-3 Oral LD50 273 ppm Rat

SUSPECTED CANCER AGENT: None of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore are not considered to be, nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin, eyes and respiratory system.

SENSITIZATION OF PRODUCT: This product is not considered a skin sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: No information concerning the effects of this product and its components on the human reproductive system.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No specific data is available for this product, however this product should be considered as having possible adverse effects to the environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No data available

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: Not Known

EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT; IATA; IMO; ADR:

THIS PRODUCT IS CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Potassium Hydroxide Solution

HAZARD CLASS NUMBER and DESCRIPTION: Class 8 Corrosive

UN IDENTIFICATION NUMBER: UN1814

PACKING GROUP: PGII

DOT LABEL(S) REQUIRED: Corrosive

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): 154



SAFETY DATA SHEET

CLEAN R 235

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is classified as Dangerous Goods, per regulations of Transport Canada

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD

(ADR):

This product is classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows: None

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes Chronic Health: No Fire: No Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): None

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): None of the ingredients are on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as a Class D Division 2B Materials causing other toxic effects and Class E Corrosive materials, as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.



SAFETY DATA SHEET

CLEAN R 235

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

GHS MSDS Compliance PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

End of SDS Sheet

SAFETY DATA SHEET

HYPRO FE INH

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **HYPRO FE INH**
 PRODUCT CODE: FEINHR
 CHEMICAL FAMILY NAME: Mixture
 U.N. NUMBER: None
 U.N. DANGEROUS GOODS CLASS: Non-Regulated Material
 SUPPLIER/MANUFACTURER'S NAME: **PAVCO INC**
 ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
 EMERGENCY PHONE: **TOLL-FREE in USA/Canada** 1-800-424-9300 Chemtrec
 BUSINESS PHONE: 1-704-496-6800 (Product Information)
 BUSINESS FAX: 1-704-496-6810
 WEB SITE: www.pavco.com
 DATE OF PREPARATION: March 10, 2015
 DATE OF LAST REVISION: September 17, 2013

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a green to violet liquid with a slight odor.

Health Hazards: May be harmful if swallowed. Contains ingredients that can cause target organ damage. Suspected cancer hazard.

Flammability Hazards: This product is Non-Flammable with a flash point greater than 200°F

Reactivity Hazards: None known.

Environmental Hazards: No data available on this product and its effects on aquatic life if released into the environment. However, release of this product is not expected to have adverse long lasting environmental effects.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS

CANADA (WHMIS) SYMBOLS

EUROPEAN and (GHS) Hazard Symbols

Non-Regulated Material



Signal Word: **Danger!**

GHS LABELING AND CLASSIFICATION:

CLASSIFICATION OF SUBSTANCE OR MIXTURE IN ACCORDANCE WITH 29 CFR 1200 (OSHA HCS) AND THE EUROPEAN UNION DIRECTIVES:

This product does meet the definition of a hazardous substance or preparation as defined by 29 CFR 1910. 1200 and the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC and subsequent Directives

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex VI

EC# 231-791-2 This substance is not classified in the Annex I of Directive 67/548/EEC

EC# 202-506-9 Annex I Index# 613-039-00-9

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Reproductive Toxicity Category 1B

Acute Oral Toxicity Category 4

Hazard Statement(s):

H360: May damage fertility or the unborn child

H302: Harmful if swallowed

Precautionary Statement(s):

P264: Wash hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P280: Wear protective gloves/protective clothing/eye protection/face protection

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[Xi] Irritant

SAFETY DATA SHEET

HYPRO FE INH

Risk Phrases:

R61: May cause harm to the unborn child
R22: Harmful if swallowed

Safety Phrases:

S24/25: Avoid contact with skin and eyes.
S36/37/38: Wear suitable protective clothing, gloves and eye/face protection
S45: In case of accident or if you feel unwell, seek medical advice immediately

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Not expected to have adverse effects.

SKIN CONTACT: Not expected to have adverse effects

INHALATION HAZARDS: Inhalation of vapor or mist may cause respiratory irritation. Prolonged exposure may cause delayed effects.

INGESTION HAZARDS: Harmful if swallowed with possible damage to target organs.

CHRONIC: None known

TARGET ORGANS:

ACUTE: Respiratory system,
Reproductive system, Thyroid

CHRONIC: Respiratory system,
Reproductive system, Thyroid

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Water	7732-18-5	231-791-2	Not Listed	90 - 99%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Ethylene Thiourea	96-45-7	202-506-9	1148	<3%	HAZARD CLASSIFICATION: Repr. Cat 2, [Xn] Harmful RISK PHRASES: R61, R22
Balance of other ingredients are non-hazardous or hazardous in less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention if irritation or blurred vision occurs.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or SDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin problems may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:

Non-Flammable >200°F

AUTOIGNITION TEMPERATURE:

Not Applicable

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not Applicable Upper (UEL): Not Applicable

FIRE EXTINGUISHING MATERIALS:

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

SAFETY DATA SHEET

HYPRO FE INH

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Explosion Sensitivity to Mechanical Impact:

Explosion Sensitivity to Static Discharge:

SPECIAL FIRE-FIGHTING PROCEDURES:

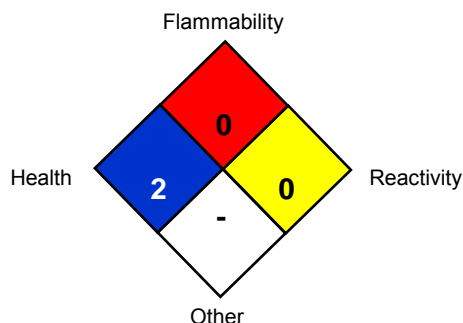
None known

Not Sensitive.



Not Sensitive

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)	2		
FLAMMABILITY HAZARD (RED)	0		
PHYSICAL HAZARD (YELLOW)	1		
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8

For Routine Industrial Use and Handling Applications

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: SMALL SPILL: Absorb material with rags, floor absorbent, vermiculite, or other absorbent material and transfer to an appropriate container. LARGE SPILL: Dike the area of the spill to prevent spreading. The material may then be taken up with vacuum or absorbent material and transferred to appropriate containers.

Notify proper authorities if required by local, state, or federal regulations.

Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU.

Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product.

Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Store in a cool well ventilated location in original container. Protect from physical damage. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Water	7732-18-5	Not Listed	Not Listed	Not Listed
Ethylene Thiourea	96-45-7	Not Listed	Not Listed	Not Listed

SAFETY DATA SHEET

HYPRO FE INH

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable.

If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE & ODOR:	Green to violet liquid with a slight odor.
ODOR THRESHOLD (PPM):	None
VAPOR PRESSURE (mmHg):	Not Available
VAPOR DENSITY:	Not Available
EVAPORATION RATE (nBuAc = 1):	Not Available
BOILING POINT (C°):	95°C - 105°C (203°F - 221°F)
FREEZING POINT (C°):	Not Available
pH:	<4.0
SPECIFIC GRAVITY 20°C: (WATER =1)	1.01
SOLUBILITY IN WATER (%)	Complete
% VOLATILE WEIGHT:	None

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of carbon.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: None known

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: None known

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is not available for this product

CAS# 96-45-7:

Draize test, rabbit, eye: 500 mg/24H Mild;

Oral, mouse: LD50 = 3 gm/kg;

Oral, rat: LD50 = 1832 mg/kg;

SUSPECTED CANCER AGENT: One of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore is considered to be, or suspected to be a cancer-causing agent by these agencies.

CAS# 96-45-7 IARC: Group 3, CAL/OSHA: Carcinogen

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin and eyes.

SAFETY DATA SHEET

HYPRO FE INH

SENSITIZATION OF PRODUCT: This product does not contain an ingredient that is considered a skin and respiratory sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: Ingredients contained in this product may cause reproductive harm.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No specific data is available for this product.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No data available

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: Not Known

EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT; IATA; IMO; ADR:

THIS PRODUCT IS NOT CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Non-Regulated Material

HAZARD CLASS NUMBER and DESCRIPTION: None

UN IDENTIFICATION NUMBER: None

PACKING GROUP: None

DOT LABEL(S) REQUIRED: None

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): None

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is not classified as Dangerous Goods, per regulations of Transport Canada

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is not classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is not classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

SARA 302 TPQ: None

SARA 304 RQ: None

SARA 313 Reporting: CAS# 96-45-7 <3%

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes

Chronic Health: No

Fire: No

Reactivity: No

SAFETY DATA SHEET

HYPRO FE INH

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): CAS# 96-45-7 10 Lbs RQ.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): One of the ingredients is on the California Proposition 65 lists.

WARNING! This product contains ingredients known to the State of California to cause cancer or reproductive harm.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as Class D2B Materials having other toxic effects, as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftlist List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

MSDS Authoring PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

End of SDS Sheet

SAFETY DATA SHEET

HYPRO YELLOW UVS

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: HYPRO YELLOW UVS
PRODUCT CODE: LD103
CHEMICAL FAMILY NAME: Mixture
U.N. NUMBER: None
U.N. DANGEROUS GOODS CLASS: Non-Regulated Material
SUPPLIER/MANUFACTURER'S NAME: PAVCO INC
ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
EMERGENCY PHONE: TOLL-FREE in USA/Canada 1-800-424-9300 Chemtrec
BUSINESS PHONE: 1-704-496-6800 (Product Information)
BUSINESS FAX: 1-704-496-6810
WEB SITE: www.pavco.com
DATE OF PREPARATION: December 10, 2013
DATE OF LAST REVISION: October 15, 2007

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a yellow orange liquid with no odor.

Health Hazards: Prolonged or repeated exposure to this product may cause skin irritation. Contact with eyes may cause severe irritation. Ingestion may cause gastrointestinal discomfort. Inhalation of vapor or mist may cause respiratory irritation.

Flammability Hazards: This product is Non-Flammable with a flash point greater than 200°F

Reactivity Hazards: None known.

Environmental Hazards: No data available on this product and its effects on aquatic life if released into the environment. However, release of this product is not expected to have adverse long lasting environmental effects.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS

CANADA (WHMIS) SYMBOLS

EUROPEAN and (GHS) Hazard Symbols

Non-Regulated Material



Signal Word: **Warning!**

EU LABELING AND CLASSIFICATION:

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex 1

EC# 231-791-2 This substance is not classified in the Annex I of Directive 67/548/EEC

CAS# 10102-40-6 is not listed in ESIS

EC# 215-239-8 Annex I Index# 023-001-00-8

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Mutagenicity Toxicity Category 2

Reproductive Toxicity Category 2

Skin Corrosive/Irritation Category 2

STOT RE Category 1

Serious Eye damage/Irritation Category 2B

Hazard Statement(s):

H302: Harmful if swallowed

H315: Causes skin irritation

H319: Causes serious eye irritation

H333: May be harmful if inhaled

H341: Suspected of causing genetic defects

H361: Suspected of damaging fertility or the unborn child

Precautionary Statement(s):

P264: Wash hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P280: Wear protective gloves/protective clothing/eye protection/face protection

SAFETY DATA SHEET

HYPRO YELLOW UVS

H372: Causes damage to organs through prolonged or repeated exposure

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[T] Toxic, [Xn] Harmful, [Xi] Irritant

Risk Phrases:

R48/23: Danger of serious damage to health by prolonged exposure through inhalation

R20: Harmful by inhalation

R22: Harmful if swallowed

R36/37/38: Irritating to eyes, respiratory system and skin

Safety Phrases:

S24/25: Avoid contact with skin and eyes.

S36/37/38: Wear suitable protective clothing, gloves and eye/face protection

S45: In case of accident or if you feel unwell, seek medical advice immediately

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Contact with eyes may cause severe irritation with redness and pain.

SKIN CONTACT: Prolonged or repeated contact may cause irritation.

INHALATION HAZARDS: Inhalation of vapor or mist may cause respiratory irritation.

INGESTION HAZARDS: May cause gastrointestinal irritation if swallowed.

CHRONIC: None known

TARGET ORGANS:

ACUTE: Eye, Skin

CHRONIC: None known

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Water	7732-18-5	231-791-2	Not Listed	80 - 90%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Sodium Molybdate Dihydrate	10102-40-6	Not Listed in ESIS	Not Listed	1 - 10%	HAZARD CLASSIFICATION: [Xi] Irritant RISK PHRASES: R36/38
Vanadium Pentoxide	1314-62-1	215-239-8	0596	<5%	HAZARD CLASSIFICATION: [T] Toxic, [Xn] Harmful, [Xi] Irritant RISK PHRASES: R48/23, R20/22, R37
Balance of other ingredients are non-hazardous or hazardous in less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250:2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention if irritation or blurred vision occurs.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or MSDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin or respiratory problems may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SAFETY DATA SHEET

HYPRO YELLOW UVS

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:

AUTOIGNITION TEMPERATURE:

FLAMMABLE LIMITS (in air by volume, %):

FIRE EXTINGUISHING MATERIALS:

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Explosion Sensitivity to Mechanical Impact:

Explosion Sensitivity to Static Discharge:

SPECIAL FIRE-FIGHTING PROCEDURES:

Non-Flammable >200°F

Not Applicable

Lower (LEL): Not Applicable Upper (UEL): Not Applicable

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

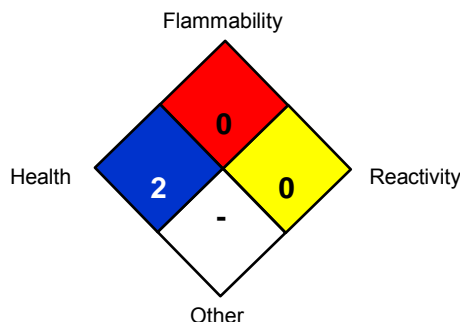
None known

Not Sensitive.

Not Sensitive

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			2
FLAMMABILITY HAZARD (RED)			0
PHYSICAL HAZARD (YELLOW)			1
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: SMALL SPILL: Absorb material with rags, floor absorbent, vermiculite, or other absorbent material and transfer to an appropriate container. LARGE SPILL: Dike the area of the spill to prevent spreading. The material may then be taken up with vacuum or absorbent material and transferred to appropriate containers.

Notify proper authorities if required by local, state, or federal regulations.

Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Store in a cool well ventilated location in original container. Protect from physical damage. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis.

SAFETY DATA SHEET

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SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Water	7732-18-5	Not Listed	Not Listed	Not Listed
Sodium Molybdate Dihydrate	10102-40-6	0.5 mg/m ³ as Mo	5 mg/m ³ as Mo	5 mg/m ³ as Mo
Vanadium Pentoxide	1314-62-1	0.05 mg/m ³	0.1 mg/m ³	0.05 mg/m ³

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable.

If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE & ODOR:	Yellow orange liquid with no odor.
ODOR THRESHOLD (PPM):	None
VAPOR PRESSURE (mmHg):	Not Available
VAPOR DENSITY:	Not Available
EVAPORATION RATE (nBuAc = 1):	Not Available
BOILING POINT (C°):	95°C - 105°C (203°F - 221°F)
FREEZING POINT (C°):	Not Available
pH:	>8.5
SPECIFIC GRAVITY 20°C: (WATER =1)	1.08
SOLUBILITY IN WATER (%)	Complete
% VOLATILE WEIGHT:	None

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of carbon and other toxic fumes.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: None known

SAFETY DATA SHEET

HYPRO YELLOW UVS

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is not available for this product

Vanadium Pentoxide CAS# 1314-62-1:

Acute oral toxicity (LD50): 5 mg/kg [Mouse].

Acute dermal toxicity (LD50): 50 mg/kg [Rabbit].

Acute toxicity of the dust (LC50): 126 mg/m 6 hours [Rat]. 3

SUSPECTED CANCER AGENT: None of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore are not considered to be, nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin and eyes.

SENSITIZATION OF PRODUCT: This product does not contain an ingredient that is considered a skin and respiratory sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic)

NOTE: The major target for Vanadium Pentoxide toxicity is the respiratory tract. It is an irritant of the eyes, nose, throat, and respiratory tract at 0.1 mg/m³ or greater. Bronchitis, nasal discharge, sore throat, shortness of breath or dyspnea, rales, chest pain, and productive cough(phlegm) can occur following acute exposure, with effects sometimes being delayed by several days and lasting up to 2 weeks. Higher exposures can produce bronchopneumonia, and pulmonary edema. Vanadium pentoxide can be absorbed through the lungs. Acute inhalation may also cause liver damage and kidney damage, and affect behavior/central nervous system (ataxia). A green tongue may occur with high-level acute exposure of Vanadium compounds. Larger acute exposure by inhalation can produce effects on the nervous system, including paralysis, respiratory depression, and convulsions, but these generally occur only in fatal exposures.

Vanadium Pentoxide is a powerful vasoconstrictor and can cause renal hypertension. Ingestion: It is not anticipated to be a significant route of overexposure since it is poorly absorbed from the digestive tract. Ingestion of Vanadium Pentoxide can produce gastrointestinal disturbances such as abdominal cramps, nausea, vomiting, and diarrhea. It may also affect behavior/central and cause dizziness, headache, drowsiness, and unconsciousness.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No specific data is available for this product.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No data available

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: Not Known

EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT: IATA: IMO: ADR:

THIS PRODUCT IS NOT CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Non-Regulated Material

HAZARD CLASS NUMBER and DESCRIPTION: None

UN IDENTIFICATION NUMBER: None

PACKING GROUP: None

DOT LABEL(S) REQUIRED: None

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): None

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant

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(as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is not classified as Dangerous Goods, per regulations of Transport Canada

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is not classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is not classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

SARA 302 TPQ: Vanadium Pentoxide CAS# 1314-62-1: 100 Lbs

SARA 304 RQ: Vanadium Pentoxide CAS# 1314-62-1: 1,000 Lbs

SARA 313 Reporting: Vanadium Pentoxide CAS# 1314-62-1: <5%

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes Chronic Health: No Fire: No Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Vanadium Pentoxide CAS# 1314-62-1: 1,000 Lbs

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): One or more of the ingredients is on the California Proposition 65 lists.

WARNING! This product contains ingredients that are known to the State of California to cause cancer of reproductive harm.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as a class D – Division 2
Materials causing other toxic effects, as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

SAFETY DATA SHEET

HYPRO YELLOW UVS

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

MSDS Authoring PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

SAFETY DATA SHEET

LIQUICLEAN LECTRO NA

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: LIQUICLEAN LECTRO NA
PRODUCT CODE: CR340
CHEMICAL FAMILY NAME: Mixture
U.N. NUMBER: UN1824
U.N. DANGEROUS GOODS CLASS: Sodium Hydroxide Solution, Class 8, PGII
SUPPLIER/MANUFACTURER'S NAME: **PAVCO INC**
ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
EMERGENCY PHONE: **TOLL-FREE in USA/Canada** 1-800-424-9300 Chemtrec
BUSINESS PHONE: 1-704-496-6800 (Product Information)
BUSINESS FAX: 1-704-496-6810
WEB SITE: www.pavco.com
DATE OF PREPARATION: March 4, 2013
DATE OF LAST REVISION: October 8, 2008

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a colorless to pale yellow liquid with a slight odor.

Health Hazards: Prolonged or repeated exposure to this product may cause skin and/or respiratory irritation. Contact with eyes may cause irritation and/or burns. Ingestion may cause nausea, diarrhea, and gastrointestinal discomfort.

Flammability Hazards: This product is Non-Flammable

Reactivity Hazards: None known.

Environmental Hazards: No data available on this product and its effects on aquatic life if released into the environment.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS



CANADA (WHMIS) SYMBOLS



EUROPEAN and (GHS) Hazard Symbols



Signal Word: **Warning!**

EU LABELING AND CLASSIFICATION:

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex 1

EC# 215-185-5 Annex I Index# 011-002-00-6

EC# 231-791-2 This substance is not classified in the Annex I of Directive 67/548/EEC

CAS# 10213-79-3 is not listed in ESIS

Proprietary Mixture is not classified in the Annex I of Directive 67/548/EEC

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Acute Oral Toxicity Category 4

Eye Irritant Category 2

Skin Corrosive Category 1B

Hazard Statement(s):

H302: Harmful if swallowed

H314: Causes severe skin burns and eye damage

H320: Causes eye irritation

H333: May be harmful if inhaled

Precautionary Statement(s):

P260: Do not breathe dust/fume/gas/mist/vapors/spray

P264: Wash hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product

P280: Wear protective gloves/protective clothing/eye protection/face protection

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LIQUICLEAN LECTRO NA

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[C] Corrosive, [Xn] Harmful, [Xi] Irritant

Risk Phrases:

R22: Harmful if swallowed

R35: Causes severe burns

R36/37/38: Irritating to eyes, respiratory system and skin

Safety Phrases:

S24/25: Avoid contact with skin and eyes.

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S46: If swallowed, seek medical advice immediately and show container or label.

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Eye exposure may produce diffuse or localized blood vessel clots and accumulation of fluid in the eye. Softening, sloughing, and ulcerations of the cornea may occur. Ulcerations may continue to progress for many days. Severe injury may lead to clouding of the eye surface and blindness.

SKIN CONTACT: Corrosive: Prolonged or repeated skin exposure may cause irritation

INHALATION HAZARDS: May be irritating to the respiratory tract. Swelling or spasms of the layers leading to upper airway obstruction and asphyxia can occur after high-dose inhalation. Inflammation of the lungs and accumulation of fluid in the lungs may also occur.

INGESTION HAZARDS: Can cause spontaneous vomiting, chest and abdominal pain, and difficulty swallowing with drooling. Corrosive injury to the mouth, throat, esophagus, and stomach may result in perforation, hemorrhage, and narrowing of the gastrointestinal tract.

CHRONIC: None Known

TARGET ORGANS:

ACUTE: Eye, respiratory System, Skin

CHRONIC: None Known

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Sodium Hydroxide Liquid	1310-73-2	215-185-5	0360	50 - 60%	HAZARD CLASSIFICATION: [C] Corrosive, [Xn] Harmful RISK PHRASES: R22, R35
Water	7732-18-5	231-791-2	Not Listed	30 - 40%	HAZARD CLASSIFICATION: NONE RISK PHRASES: NONE
Sodium Metasilicate Pentahydrate	10213-79-3	Not Listed in ESIS	Not Listed	1 - 5%	HAZARD CLASSIFICATION: SELF CLASSIFIED [C] Corrosive RISK PHRASES: R34
Proprietary Mixture	Proprietary	Proprietary	Not Listed	1 - 5%	HAZARD CLASSIFICATION: SELF CLASSIFIED - [Xi] Irritant RISK PHRASES: R36/37/38
Balance of other ingredients are non-hazardous or hazardous in less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is

SAFETY DATA SHEET

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unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or MSDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:

AUTOIGNITION TEMPERATURE:

FLAMMABLE LIMITS (in air by volume, %):

FIRE EXTINGUISHING MATERIALS:

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Explosion Sensitivity to Mechanical Impact:

Explosion Sensitivity to Static Discharge:

SPECIAL FIRE-FIGHTING PROCEDURES:

Non-Flammable

Not Established

Lower (LEL): Not Established Upper (UEL): Not Established

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

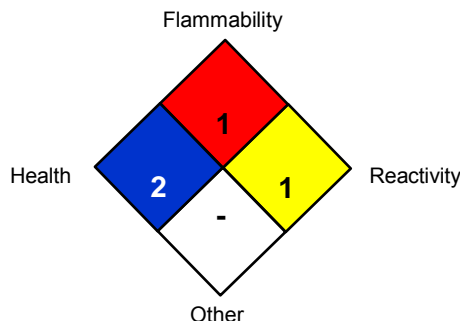
None known

Not Sensitive.



Not Sensitive

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)		2	
FLAMMABILITY HAZARD (RED)		1	
PHYSICAL HAZARD (YELLOW)		0	
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: SMALL SPILL: Absorb material with rags, floor absorbent, vermiculite, or other absorbent material and transfer to an appropriate container. LARGE SPILL: Dike the area of the spill to prevent spreading. The material may then be taken up with vacuum or absorbent material and transferred to appropriate containers.

Notify proper authorities if required by local, state, or federal regulations.

Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU.

Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product.

Use in a well-ventilated location. Remove contaminated clothing immediately.

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LIQUICLEAN LECTRO NA

STORAGE AND HANDLING PRACTICES: Store in a cool place in original container and protect from sunlight. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis. Pavco will not accept responsibility for any occurrence or mishap that is a direct result of product storage and/or usage after its designated shelf life..

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Sodium Hydroxide Liquid	1310-73-2	2 mg/m ³	2 mg/m ³	2 mg/m ³
Water	7732-18-5	Not Listed	Not Listed	Not Listed
Sodium Metasilicate Pentahydrate	10213-79-3	Not Listed	Not Listed	Not Listed
Proprietary Mixture	Proprietary	Not Listed	Not Listed	Not Listed

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable.

If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:

Liquid

APPEARANCE & ODOR:

Colorless to pale yellow liquid with a slight odor.

ODOR THRESHOLD (PPM):

Slight

VAPOR PRESSURE (mmHg):

Not Available

VAPOR DENSITY:

Heavier than air

EVAPORATION RATE (nBuAc = 1):

<1

BOILING POINT (C°):

95°C - 105°C (203°F - 221°F)

FREEZING POINT (C°):

0°C (32°F)

pH:

>10.0

SPECIFIC GRAVITY 20°C: (WATER=1)

1.355

SOLUBILITY IN WATER (%)

Complete

% VOLATILE WEIGHT:

Not Available

SAFETY DATA SHEET

LIQUICLEAN LECTRO NA

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of carbon and other toxic fumes.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Zinc, Aluminum or Strong Acids

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Incompatible materials

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is not available for this product

CAS# 1310-73-2 Oral LD50 500 ppm Rat

SUSPECTED CANCER AGENT: None of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore are not considered to be, nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin, eyes and respiratory system.

SENSITIZATION OF PRODUCT: This product is not considered a skinsensitizer.

REPRODUCTIVE TOXICITY INFORMATION: No information concerning the effects of this product and its components on the human reproductive system.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No specific data is available for this product, however this product should be considered as having possible adverse effects to the environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No data available

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: Not Known

EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT: IATA: IMO: ADR:

THIS PRODUCT IS CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Sodium Hydroxide Solution

HAZARD CLASS NUMBER and DESCRIPTION: Class 8 Corrosive

UN IDENTIFICATION NUMBER: UN1824

PACKING GROUP: PGII

DOT LABEL(S) REQUIRED: Corrosive

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): 154

SAFETY DATA SHEET

LIQUICLEAN LECTRO NA

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is classified as Dangerous Goods, per regulations of Transport Canada

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows: None

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes Chronic Health: No Fire: No Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Sodium Hydroxide CAS# 1310-73-2 1,000 Lbs RQ.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): None of the ingredients are on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as a Class D Division 2B Materials causing other toxic effects and Class E Corrosive materials, as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

SAFETY DATA SHEET

LIQUICLEAN LECTRO NA

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

MSDS Authoring PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

SAFETY DATA SHEET

MERLIN BRIGHTENER

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MERLIN BRIGHTENER
PRODUCT CODE: ZB1534R
CHEMICAL FAMILY NAME: Mixture
U.N. NUMBER: None
U.N. DANGEROUS GOODS CLASS: Non-Regulated Material
SUPPLIER/MANUFACTURER'S NAME: PAVCO INC
ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
EMERGENCY PHONE: TOLL-FREE in USA/Canada 1-800-424-9300 Chemtrec
BUSINESS PHONE: 1-704-496-6800 (Product Information)
BUSINESS FAX: 1-704-496-6810
WEB SITE: www.pavco.com
DATE OF PREPARATION: March 9, 2012
DATE OF LAST REVISION: April 28, 2008

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a colorless/pale yellow liquid with a slight odor.

Health Hazards: Prolonged or repeated exposure to this product may cause skin and/or respiratory irritation. Contact with eyes may cause severe irritation. Ingestion may cause nausea, diarrhea, and gastrointestinal discomfort.

Flammability Hazards: This product is Non-Flammable

Reactivity Hazards: None known.

Environmental Hazards: No data available on this product and its effects on aquatic life if released into the environment.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS

Non-Regulated

CANADA (WHMIS) SYMBOLS



EUROPEAN and (GHS) Hazard Symbols



Signal Word: **Warning!**

EU LABELING AND CLASSIFICATION:

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex 1

EC# 231-791-2 This substance is not classified in the Annex I of Directive 67/548/EEC

Proprietary Reacted Mixture is not listed in ESIS

EC# 200-543-5 Annex I Index# 612-082-00-0

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Carcinogenicity Category 2

Reproductive Toxicity Category 2

Acute Oral Toxicity Category 4

Chronic Aquatic Toxicity Category 2

Hazard Statement(s):

H302: Harmful if swallowed

H351: Suspected of causing cancer

H361: Suspected of damaging fertility or the unborn child

H315: Causes skin irritation

H411: Toxic to aquatic life with long lasting effects

Precautionary Statement(s):

P260: Do not breathe dust/fume/gas/mist/vapors/spray

P264: Wash hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product

P273: Avoid release to the environment

P280: Wear protective gloves/protective clothing/eye protection/face protection

SAFETY DATA SHEET

MERLIN BRIGHTENER

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[Xn] Harmful, [Xi] Irritant

Risk Phrases:

R22: Harmful if swallowed
R40: Limited evidence of carcinogenic effects
R41: Risk of serious damage to eyes.
R63: Possible risk of harm to the unborn child

Safety Phrases:

S24/25: Avoid contact with skin and eyes.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S46: If swallowed, seek medical advice immediately and show container or label.

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Eye exposure may produce severe irritation

SKIN CONTACT: Prolonged or repeated skin exposure may cause irritation

INHALATION HAZARDS: Inhalation of mists may be irritating to the respiratory tract.

INGESTION HAZARDS: Irritating to mouth, throat and stomach. Ingestion of large quantities may cause corrosion of G.I. tract, vomiting, diarrhea, circulatory collapse and even death.

CHRONIC: Prolonged or repeated contact may cause hepatic tumors and/or bone marrow depression. Contains a suspected carcinogen.

TARGET ORGANS:

ACUTE: Eye, respiratory System, Skin

CHRONIC: None Known

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Water	7732-18-5	231-791-2	Not Listed	85 - 95%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Proprietary Reacted Mixture	Not Listed	Not Found in ESIS	Not Listed	1 - 10%	HAZARD CLASSIFICATION: SELF CLASSIFIED - [Xn] Harmful, [Xi] Irritant RISK PHRASES: R22, R41
Thiourea	62-56-6	200-543-5	0680	<0.3%	HAZARD CLASSIFICATION: Carc. Cat 3, Repr. Cat 3, [Xn] Harmful RISK PHRASES: R40, R63, R22, R51/53
Balance of other ingredients are non-hazardous or less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or MSDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

SAFETY DATA SHEET

MERLIN BRIGHTENER

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:

AUTOIGNITION TEMPERATURE:

FLAMMABLE LIMITS (in air by volume, %):

FIRE EXTINGUISHING MATERIALS:

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Explosion Sensitivity to Mechanical Impact:

Explosion Sensitivity to Static Discharge:

SPECIAL FIRE-FIGHTING PROCEDURES:

Non-Flammable

Not Applicable

Lower (LEL): Not Applicable Upper (UEL): Not Applicable

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

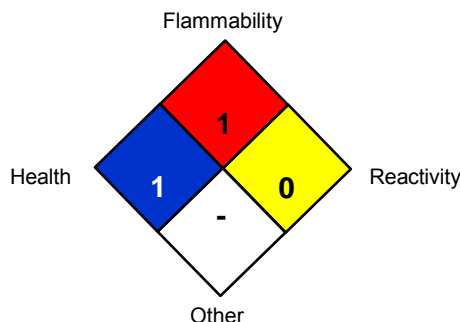
None known

Not Sensitive.

Not Sensitive

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			1
FLAMMABILITY HAZARD (RED)			1
PHYSICAL HAZARD (YELLOW)			0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: SMALL SPILL: Absorb material with rags, floor absorbent, vermiculite, or other absorbent material and transfer to an appropriate container. LARGE SPILL: Dike the area of the spill to prevent spreading. The material may then be taken up with vacuum or absorbent material and transferred to appropriate containers.

Notify proper authorities if required by local, state, or federal regulations.

Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU.

Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product.

Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Store in a cool place in original container and protect from sunlight. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis.

SAFETY DATA SHEET

MERLIN BRIGHTENER

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Water	7732-18-5	Not Listed	Not Listed	Not Listed
Proprietary Reacted Mixture	Not Listed	Not Listed	Not Listed	Not Listed
Thiourea	62-56-6	Not Listed	Not Listed	Not Listed

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE & ODOR:	Colorless/pale yellow liquid with a slight odor.
ODOR THRESHOLD (PPM):	Slight
VAPOR PRESSURE (mmHg):	Not Available
VAPOR DENSITY:	Heavier than air
EVAPORATION RATE (nBuAc = 1):	<1
BOILING POINT (C°):	95°C - 105°C (203°F - 221°F)
FREEZING POINT (C°):	Not Available
pH:	<8.0
SPECIFIC GRAVITY 20°C: (WATER =1)	1.025
SOLUBILITY IN WATER (%)	Complete
% VOLATILE WEIGHT:	Not Available

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

SAFETY DATA SHEET

MERLIN BRIGHTENER

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of sulfur and nitrogen.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Acrolein, aluminum and acids.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Incompatible materials

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is available for this product

Thiocarbamide CAS# 62-56-6

Oral LD50	125 ppm	Rat
Dermal LD50	2800 ppm	Rabbit

SUSPECTED CANCER AGENT: One or more of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore is considered to be, nor suspected to be a cancer-causing agent by these agencies.

IARC and NTP Thiocarbamide CAS# 62-56-6 as a possible carcinogen

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin, eyes and respiratory system.

SENSITIZATION OF PRODUCT: This product is not considered a skin sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: No information concerning the effects of this product and its components on the human reproductive system.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No specific data is available for this product, however this product should be considered as having possible adverse effects to the environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No data available

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: U219

EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT: IATA: IMO: ADR:

THIS PRODUCT IS NOT CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Non-Regulated Material

HAZARD CLASS NUMBER and DESCRIPTION: None

UN IDENTIFICATION NUMBER: None

PACKING GROUP: None

DOT LABEL(S) REQUIRED: None

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): None

SAFETY DATA SHEET

MERLIN BRIGHTENER

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is not classified as Dangerous Goods, per regulations of Transport Canada

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is not classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is not classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

SARA 313: Thiocarbamide CAS# 62-56-6 <0.5%

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute	Yes	Chronic Health:	Yes	Fire:	No	Reactivity:	No
Health:							

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Thiocarbamide CAS# 62-56-6 10 Lb. RQ.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): One or more of the ingredients are on the California Proposition 65 lists.

WARNING! This product contains an ingredient that is known to the State of California to cause cancer or reproductive harm.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as a Class D Division 2B Materials causing other toxic effects as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

SAFETY DATA SHEET

MERLIN BRIGHTENER

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

MSDS Authoring PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.



SAFETY DATA SHEET

MERLIN STARTER

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **MERLIN STARTER**
PRODUCT CODE: ZB1533
CHEMICAL FAMILY NAME: Mixture
U.N. NUMBER: None
U.N. DANGEROUS GOODS CLASS: Non-Regulated Material
SUPPLIER/MANUFACTURER'S NAME: **PAVCO INC**
ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
EMERGENCY PHONE: **TOLL-FREE in USA/Canada** 1-800-424-9300 Chemtrec
BUSINESS PHONE: 1-704-496-6800 (Product Information)
BUSINESS FAX: 1-704-496-6810
WEB SITE: www.pavco.com
DATE OF CURRENT REVISION: March 12, 2015
DATE OF LAST REVISION: February 29, 2012

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a pale yellow liquid with a slight organic odor.

Health Hazards: Prolonged or repeated exposure to this product may cause skin, eye and respiratory irritation. Ingestion may cause nausea, diarrhea, and gastrointestinal discomfort.

Flammability Hazards: This product is Non-Flammable

Reactivity Hazards: None known.

Environmental Hazards: No data available on this product and its effects on aquatic life if released into the environment.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS

Non-Regulated

CANADA (WHMIS) SYMBOLS



EUROPEAN and (GHS) Hazard Symbols



Signal Word: **Warning!**

GHS LABELING AND CLASSIFICATION:

CLASSIFICATION OF SUBSTANCE OR MIXTURE IN ACCORDANCE WITH 29 CFR 1200 (OSHA HCS) AND THE EUROPEAN UNION DIRECTIVES:

This product does meet the definition of a hazardous substance or preparation as defined by 29 CFR 1910. 1200 and the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC and subsequent Directives.

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex VI

EC# 231-791-2 This substance is not classified in the Annex VI of Directive 67/548/EEC

Proprietary Reacted Mixture is not listed in ESIS

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Acute Oral Toxicity Category 4

Serious Eye Damage Category 2A

Hazard Statement(s):

H302: Harmful if swallowed

H315: Causes skin irritation

H319: Causes serious eye irritation

Precautionary Statement(s):

P260: Do not breath dust/fume/gas/mist/vapors/spray

P264: Wash hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product

P280: Wear protective gloves/protective clothing/eye protection/face protection



SAFETY DATA SHEET

MERLIN STARTER

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[Xn] Harmful, [Xi] Irritant

Risk Phrases:

R22: Harmful if swallowed

R41: Risk of serious damage to eyes.

Safety Phrases:

S24/25: Avoid contact with skin and eyes.

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S46: If swallowed, seek medical advice immediately and show container or label.

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Eye exposure may produce severe irritation

SKIN CONTACT: Prolonged or repeated skin exposure may cause irritation

INHALATION HAZARDS: Moderately irritating to the respiratory tract.

INGESTION HAZARDS: Irritating to mouth, throat and stomach.

CHRONIC: None known

TARGET ORGANS:

ACUTE: Eye, respiratory System, Skin

CHRONIC: None Known

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Water	7732-18-5	231-791-2	Not Listed	84 - 96%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Proprietary Reacted Mixture	Not Listed	Not Found in ESIS	Not Listed	1 - 10%	HAZARD CLASSIFICATION: SELF CLASSIFIED - [Xn] Harmful, [Xi] Irritant RISK PHRASES: R22, R41
Balance of other ingredients are non-hazardous or less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2004 format. This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or SDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

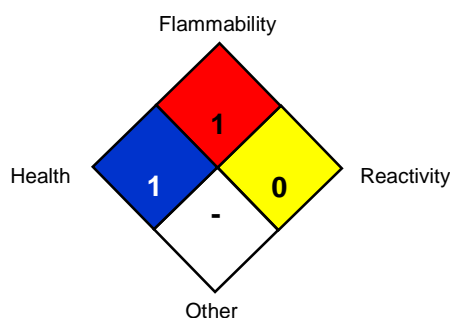
SAFETY DATA SHEET

MERLIN STARTER

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:	Non-Flammable
AUTOIGNITION TEMPERATURE:	Not Applicable
FLAMMABLE LIMITS (in air by volume, %):	<u>Lower (LEL):</u> Not Applicable <u>Upper (UEL):</u> Not Applicable
FIRE EXTINGUISHING MATERIALS:	Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None known
<u>Explosion Sensitivity to Mechanical Impact:</u>	Not Sensitive.
<u>Explosion Sensitivity to Static Discharge:</u>	Not Sensitive
SPECIAL FIRE-FIGHTING PROCEDURES:	Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			1
FLAMMABILITY HAZARD (RED)			1
PHYSICAL HAZARD (YELLOW)			0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: SMALL SPILL: Absorb material with rags, floor absorbent, vermiculite, or other absorbent material and transfer to an appropriate container. LARGE SPILL: Dike the area of the spill to prevent spreading. The material may then be taken up with vacuum or absorbent material and transferred to appropriate containers.

Notify proper authorities if required by local, state, or federal regulations.

Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Store in a cool place in original container and protect from sunlight. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis. Store above 35°F and below 130°F away from direct sunlight. Freezing will destroy the material.



SAFETY DATA SHEET

MERLIN STARTER

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Water	7732-18-5	Not Listed	Not Listed	Not Listed
Proprietary Reacted Mixture	Not Listed	Not Listed	Not Listed	Not Listed

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable.

If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE & ODOR:	Pale yellow liquid with a slight organic odor.
ODOR THRESHOLD (PPM):	Slight
VAPOR PRESSURE (mmHg):	Not Available
VAPOR DENSITY:	Heavier than air
EVAPORATION RATE (nBuAc = 1):	<1
BOILING POINT (C°):	95°C - 105°C (203°F - 221°F)
FREEZING POINT (C°):	Not Available
pH:	8.5 – 10.5
SPECIFIC GRAVITY 20°C: (WATER =1)	1.015
SOLUBILITY IN WATER (%)	Complete
% VOLATILE WEIGHT:	93%

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of sulfur and nitrogen.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Oxidizers, strong acids and bases

HAZARDOUS POLYMERIZATION: Will not occur.



SAFETY DATA SHEET

MERLIN STARTER

CONDITIONS TO AVOID: Incompatible materials

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is available for this product

No LD50 Data Available

SUSPECTED CANCER AGENT: None of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore is not considered to be, nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin, eyes and respiratory system.

SENSITIZATION OF PRODUCT: This product is not considered a skin sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: No information concerning the effects of this product and its components on the human reproductive system.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No specific data is available for this product, however this product should be considered as having possible adverse effects to the environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No data available

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: Not known – Dependent on use and contamination

EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT; IATA; IMO; ADR:

THIS PRODUCT IS NOT CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Non-Regulated Material

HAZARD CLASS NUMBER and DESCRIPTION: None

UN IDENTIFICATION NUMBER: None

PACKING GROUP: None

DOT LABEL(S) REQUIRED: None

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): None

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is not classified as Dangerous Goods, per regulations of Transport Canada



SAFETY DATA SHEET

MERLIN STARTER

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is not classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is not classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows: None

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes Chronic Health: No Fire: No Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): None

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): None of the ingredients are on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as a Class D Division 2B Materials causing other toxic effects as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.



SAFETY DATA SHEET

MERLIN STARTER

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

GHS MSDS Compliance PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

End of SDS Sheet

MATERIAL SAFETY DATA SHEET

ZINC DIP PART A

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ZINC DIP PART A
PRODUCT CODE: NC200
CHEMICAL FAMILY NAME: Dry Blend
U.N. NUMBER: UN1498
U.N. DANGEROUS GOODS CLASS: Class 5.1, Oxidizer, Sodium Nitrate Mixture
SUPPLIER/MANUFACTURER'S NAME: PAVCO INC
ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
EMERGENCY PHONE: TOLL-FREE in USA/Canada 1-800-424-9300 Chemtrec
BUSINESS PHONE: 1-704-496-6800 (Product Information)
BUSINESS FAX: 1-704-496-6810
WEB SITE: www.pavco.com
DATE OF PREPARATION: June 13, 2014
DATE OF LAST REVISION: October 11, 2007

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a white to off-white granular powder with no odor.

Health Hazards: May cause severe eye and skin irritation. May cause respiratory and digestive tract irritation. May be harmful if swallowed.

Flammability Hazards: This product is Non-Flammable. Strong oxidizer. Contact with combustible materials may cause a fire.

Reactivity Hazards: None known

Environmental Hazards: The Environmental effects of this product have not been investigated. This product contains ingredients that are not expected to cause adverse long term effects to the aquatic environment.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS



CANADA (WHMIS) SYMBOLS



EUROPEAN and (GHS) Hazard Symbols



Signal Word: **Danger!**

EU LABELING AND CLASSIFICATION:

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex 1

EC# 231-554-3 This substance is not classified in the Annex I of Directive 67/548/EEC

EC# 215-608-3 Annex I Index# 009-007-00-3

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Skin Corrosive Category 1B

Skin Irritant Category 2

Eye Irritation Category 2

Hazard Statement(s):

H314: Causes severe skin burns and eye damage

H315: Causes skin irritation

H319: Causes severe eye irritation

Precautionary Statement(s):

P264: Wash hands thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[Xn] Harmful, [C] Corrosive, [Xi] Irritant

Risk Phrases:

R22: Harmful if swallowed

R34: Causes burns

R36/37/38: Irritating to eyes, respiratory system and skin

Safety Phrases:

S24/25: Avoid contact with skin and eyes.

S37/39: Wear suitable gloves and eye/face protection

MATERIAL SAFETY DATA SHEET

ZINC DIP PART A

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Eye exposure may produce diffuse or localized blood vessel clots and accumulation of fluid in the eye. Softening, sloughing, and ulcerations of the cornea may occur. Ulcerations may continue to progress for many days. Severe injury may lead to clouding of the eye surface and blindness.

SKIN CONTACT: May cause irritation with redness. Contact with molten mixture may cause thermal burns and methemoglobinemia. Symptoms may include headache, weakness, dizziness, confusion, vomiting, and possible death.

INHALATION HAZARDS: May be irritating to the respiratory tract. Swelling or spasms of the layers leading to upper airway obstruction and asphyxia can occur after high-dose inhalation. Inflammation of the lungs and accumulation of fluid in the lungs may also occur.

INGESTION HAZARDS: Can cause spontaneous vomiting, chest and abdominal pain, and difficulty swallowing with drooling. Corrosive injury to the mouth, throat, esophagus, and stomach may result in perforation, hemorrhage, and narrowing of the gastrointestinal tract. Material may cause death if ingested in moderate amounts and left untreated. □

CHRONIC: Prolonged exposure may cause anemia and methemoglobinemia, characterized by dizziness, drowsiness, headache, breath shortness, cyanosis (bluish skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown colored blood.

TARGET ORGANS: ACUTE: Eye, Respiratory System, Skin CHRONIC: Respiratory System

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Sodium Nitrate	7631-99-4	231-554-3	0185	90 - 99%	HAZARD CLASSIFICATION: [Xi] Irritant RISK PHRASES: R36/37/38
Sodium Bifluoride	1333-83-1	215-608-3	Not Listed	<10%	HAZARD CLASSIFICATION: [Xn] Harmful, [C] Corrosive, [Xi] Irritant RISK PHRASES: R22, R34, R36/38
Balance of other ingredients are non-hazardous or hazardous in less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or MSDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:

Non-Flammable

AUTOIGNITION TEMPERATURE:

Not Applicable

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not Applicable Upper (UEL): Not Applicable

FIRE EXTINGUISHING MATERIALS:

Use media suitable for surrounding area. Carbon dioxide, foam,

MATERIAL SAFETY DATA SHEET

ZINC DIP PART A

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Explosion Sensitivity to Mechanical Impact:

Explosion Sensitivity to Static Discharge:

SPECIAL FIRE-FIGHTING PROCEDURES:

dry chemical, halon, water spray.

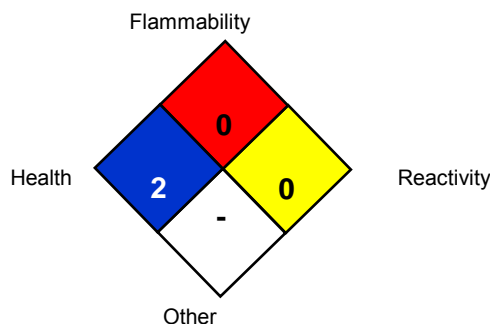
Oxidizers decompose, especially when heated, to yield oxygen or other gases which will increase the burning rate of combustible materials. Contact with easily oxidizable, organic, or other combustible materials may result in ignition, violent combustion or explosion. ☐

Not Sensitive.



Not Sensitive

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			2
FLAMMABILITY HAZARD (RED)			0
PHYSICAL HAZARD (YELLOW)			1
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8

For Routine Industrial Use and Handling Applications

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Notify proper authorities if required by local, state, or federal regulations.

Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Store in a cool place in original container. Keep containers sealed to avoid contamination and spillage. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Sodium Nitrate	7631-99-4	2.0 mg/m ³	Not Listed	2.0 mg/m ³

MATERIAL SAFETY DATA SHEET

ZINC DIP PART A

Sodium Bifluoride	1333-83-1	2.5 mg/m ³	2.5 mg/m ³	2.5 mg/m ³
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Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:	Granular Solid
APPEARANCE & ODOR:	This product is a white to off-white granular powder with no odor.
ODOR THRESHOLD (PPM):	None
VAPOR PRESSURE (mmHg):	Not Applicable
VAPOR DENSITY:	Not Applicable
EVAPORATION RATE (nBuAc = 1):	Not Applicable
BOILING POINT (C°):	Not Applicable
MELTING POINT (C°):	Not Applicable
pH:	Not Applicable
SPECIFIC GRAVITY 20°C: (WATER =1)	Not Applicable
SOLUBILITY IN WATER (%)	Soluble
% VOLATILE WEIGHT:	Not Applicable

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of nitrogen.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids and bases

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Incompatible materials

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA:

CAS# 7631-99-4:

Oral, rabbit: LD50 = 2680 mg/kg;

Oral, rat: LD50 = 1267 mg/kg;

SUSPECTED CANCER AGENT: None of the ingredients in concentration greater than 0.1% are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore are not considered to be, nor suspected to be a cancer-causing agent by these agencies.

MATERIAL SAFETY DATA SHEET

ZINC DIP PART A

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin and eyes

SENSITIZATION OF PRODUCT: This product does not contain an ingredient that is considered a skin and respiratory sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: No data available.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No data is currently available for this product.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants and animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on this product's effects on aquatic life.

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: Not Known

EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT; IATA; IMO; ADR:

THIS PRODUCT IS NOT CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Sodium Nitrate Mixture

HAZARD CLASS NUMBER and DESCRIPTION: Class 5.1 Oxidizer

UN IDENTIFICATION NUMBER: UN1498

PACKING GROUP: PGIII

DOT LABEL(S) REQUIRED: Class 5.1 Oxidizer

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2012): 140

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is classified as Dangerous Goods, per regulations of Transport Canada

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

SARA 302 TPQ: None

SARA 304 RQ: None

SARA 313 Reporting: None

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes

Chronic Health: Yes

Fire: No

Reactivity: No

MATERIAL SAFETY DATA SHEET

ZINC DIP PART A

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): None

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Does not contain ingredients that are on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as Class C Oxidizer, Class D Division 2B Materials with other toxic effects, as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftlist List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

MSDS Authoring PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

MATERIAL SAFETY DATA SHEET

ZINC DIP PART B

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ZINC DIP PART B
PRODUCT CODE: NC201
CHEMICAL FAMILY NAME: Sulfamic Acid
U.N. NUMBER: UN2967
U.N. DANGEROUS GOODS CLASS: Class 8, Corrosive, Sulphamic Acid
SUPPLIER/MANUFACTURER'S NAME: PAVCO INC
ADDRESS: 1935 John Crosland Jr. Dr, Charlotte, NC 28208 USA
EMERGENCY PHONE: TOLL-FREE in USA/Canada 1-800-424-9300 Chemtrec
BUSINESS PHONE: 1-704-496-6800 (Product Information)
BUSINESS FAX: 1-704-496-6810
WEB SITE: www.pavco.com
DATE OF PREPARATION: June 13, 2014
DATE OF LAST REVISION: October 11, 2007

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Product Description: This product is a white to off-white granular powder with no odor.

Health Hazards: Corrosive: May cause severe eye and skin irritation. May cause respiratory and digestive tract irritation. May be harmful if swallowed.

Flammability Hazards: This product is Non-Flammable.

Reactivity Hazards: None known

Environmental Hazards: The Environmental effects of this product have not been investigated. This product contains ingredients that may cause adverse long term effects to the aquatic environment.

Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS



CANADA (WHMIS) SYMBOLS



EUROPEAN and (GHS) Hazard Symbols



Signal Word: **Warning!**

EU LABELING AND CLASSIFICATION:

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex 1

EC# 226-218-8 Annex I Index# 016-026-00-0

Substances not listed either individually or in group entries must be self classified.

GHS Hazard Classification(s):

Skin Irritant Category 2

Eye Irritation Category 2

Chronic Aquatic Toxicity Category 3

Hazard Statement(s):

H315: Causes skin irritation

H319: Causes severe eye irritation

H412: Harmful to aquatic life with long lasting effects

Precautionary Statement(s):

P264: Wash hands thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection

EU HAZARD CLASSIFICATION PER DIRECTIVE 1999/45/EC:

[Xi] Irritant

Risk Phrases:

R34: Causes burns

R36/38: Irritating to eyes and skin

R52/53: harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Safety Phrases:

S24/25: Avoid contact with skin and eyes.

S37/39: Wear suitable gloves and eye/face protection

S61: Avoid release to the environment

MATERIAL SAFETY DATA SHEET

ZINC DIP PART B

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE:

EYE CONTACT: Eye exposure may produce diffuse or localized blood vessel clots and accumulation of fluid in the eye. Softening, sloughing, and ulcerations of the cornea may occur. Ulcerations may continue to progress for many days. Severe injury may lead to clouding of the eye surface and blindness.

SKIN CONTACT: Can be moderately corrosive. Contact may not cause symptoms for several hours.

INHALATION HAZARDS: Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. May cause pulmonary edema, a medical emergency. Pulmonary edema may be delayed up to 48 hours.

INGESTION HAZARDS: Can cause spontaneous vomiting, chest and abdominal pain, and difficulty swallowing with drooling. Corrosive injury to the mouth, throat, esophagus, and stomach may result in perforation, hemorrhage, and narrowing of the gastrointestinal tract. □□

CHRONIC: Material may destroy or damage any organ it comes in contact with.

TARGET ORGANS: ACUTE: Eye, Respiratory System, Skin CHRONIC: Respiratory System

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Sulfamic Acid	5329-14-6	226-218-8	0328	90 - 100%	HAZARD CLASSIFICATION: [Xi] Irritant RISK PHRASES: R36/38, R52/53
Balance of other ingredients are non-hazardous or hazardous in less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder contaminated clothing before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or MSDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:

Non-Flammable

AUTOIGNITION TEMPERATURE:

Not Applicable

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not Applicable Upper (UEL): Not Applicable

FIRE EXTINGUISHING MATERIALS:

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Booms or other methods should be used to prevent material from reaching waterways.

Explosion Sensitivity to Mechanical Impact:

Not Sensitive.

Explosion Sensitivity to Static Discharge:

Not Sensitive

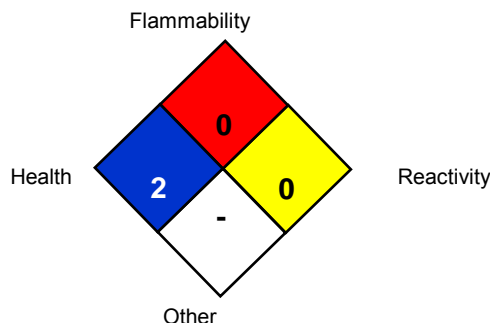
MATERIAL SAFETY DATA SHEET

ZINC DIP PART B

SPECIAL FIRE-FIGHTING PROCEDURES:

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			2
FLAMMABILITY HAZARD (RED)			0
PHYSICAL HAZARD (YELLOW)			1
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.

SPILLS: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Notify proper authorities if required by local, state, or federal regulations. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Store in a cool place in original container. Keep containers sealed to avoid contamination and spillage. For storage & usage, it is important to take special notice of the shelf life of this product which is provided on the Cert. of Analysis.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	WEEL
Sulfamic Acid	5329-14-6	Not Listed	Not Listed	Not Listed

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above. Use local exhaust ventilation to control airborne vapor. Ensure eyewash/safety shower stations are available near areas where this product is used.

MATERIAL SAFETY DATA SHEET

ZINC DIP PART B

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:	Granular Solid
APPEARANCE & ODOR:	This product is a white to off-white granular powder with no odor.
ODOR THRESHOLD (PPM):	None
VAPOR PRESSURE (mmHg):	Not Applicable
VAPOR DENSITY:	Not Applicable
EVAPORATION RATE (nBuAc = 1):	Not Applicable
BOILING POINT (C°):	Not Applicable
MELTING POINT (C°):	Not Applicable
pH:	Not Applicable
SPECIFIC GRAVITY 20°C: (WATER =1)	Not Applicable
SOLUBILITY IN WATER (%):	Soluble
% VOLATILE WEIGHT:	Not Applicable

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of sulfur.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Reacts with bases, and metals, such as iron, and zinc.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Incompatible materials

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA:

CAS# 5329-14-6:

Oral, rat: LD50 = 3160 mg/kg;

SUSPECTED CANCER AGENT: None of the ingredients in concentration greater than 0.1% are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore are not considered to be, nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin and eyes

SENSITIZATION OF PRODUCT: This product does not contain an ingredient that is considered a skin and respiratory sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: No data available.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No data is currently available for this product.

MATERIAL SAFETY DATA SHEET

ZINC DIP PART B

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants and animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on this product's effects on aquatic life.

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

RCRA WASTE CODE: Not Known

EU WASTE CODE: Not known – Dependent on use and contamination

SECTION 14 - TRANSPORTATION INFORMATION

US DOT; IATA; IMO; ADR:

THIS PRODUCT IS NOT CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Sulfamic Acid

HAZARD CLASS NUMBER and DESCRIPTION: Class 8, Corrosive

UN IDENTIFICATION NUMBER: UN2967

PACKING GROUP: PGIII

DOT LABEL(S) REQUIRED: Class 8, Corrosive

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2012): 154

MARINE POLLUTANT: This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is classified as Dangerous Goods, per regulations of Transport Canada

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

SARA 302 TPQ: None

SARA 304 RQ: None

SARA 313 Reporting: None

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes

Chronic Health: Yes

Fire: No

Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): None

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Does not contain ingredients that are on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of

MATERIAL SAFETY DATA SHEET

ZINC DIP PART B

this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as Class E Corrosive, as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett

MSDS Authoring PLUS

Disclaimer:

The suggestions and data provided herewith are based upon tests which Pavco Inc. believes to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained herein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.



SAFETY DATA SHEET

Based upon Regulation (EC) No. 1907/2006, as amended by Regulation (EC) No. 453/2010

sulfuric acid, conc=93-99.5%

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

1.1 Product identifier:

Product name	: sulfuric acid, conc=93-99.5%
Synonyms	: sulphuric acid; sulfuric acid ; sulfuric acid
Registration number REACH	: 01-2119458838-20-0102 (Nyrstar Belgium NV/SA) 01-2119458838-20-0086 (Nyrstar Budel BV) 01-2119458838-20-0103 (Nyrstar France SAS)
Product type REACH	: Substance/mono-constituent (Inorganic)
CAS number	: 7664-93-9
EC index number	: 016-020-00-8
EC number	: 231-639-5
RTECS number	: WS5600000
Molecular mass	: 98.08 g/mol
Formula	: H ₂ SO ₄

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

1.2.1 Relevant identified uses

- IU01: Production of sulphuric acid (ES1)
 - IU02: Use of sulphuric acid as an intermediate in manufacture of inorganic and organic chemicals incl. fertilizers (ES2)
 - IU03: Use of sulphuric acid as a processing aid, catalyst, dehydrating agent, pH regulator (ES3)
 - IU04: Use of sulphuric acid for extractions and processing of minerals, ores (ES4)
 - IU05: Use of sulphuric acid in the process of surface treatments, purification and etching (ES5)
 - IU06: Use of sulphuric acid in electrolytic processes (ES6)
 - IU07: Use of sulphuric acid in gas purification, scrubbing, flue gas scrubbing (ES7)
 - IU08: Use of sulphuric acid in production of sulphuric acid contained batteries (ES8)
 - IU09: Use of sulphuric acid in maintenance of sulphuric acid contained batteries (ES9)
 - IU10: Use of sulphuric acid in recycling of sulphuric acid contained batteries (ES10)
 - IU11: Use of sulphuric acid contained batteries (ES11)
 - IU12: Use of sulphuric acid as laboratory chemicals (ES12)
 - IU13: Use of sulphuric acid in industrial cleaning (ES13)
 - IU14: mixing, preparation and repackaging of sulphuric acid (ES14)
- For more detailed information regarding the Identified Uses and the associated Exposure Scenarios: see attached annex

1.2.2 Uses advised against

No uses advised against known

1.3 Details of the supplier of the safety data sheet:

Supplier of the safety data sheet

Nyrstar Belgium N.V. on behalf of Nyrstar Sales & Marketing A.G.
Zinkstraat 1
B-2490 Balen
Tel: +32 14 44 95 00
Fax: +32 14 81 05 31
infoSDS@nyrstar.com

Nyrstar Budel B.V. on behalf of Nyrstar Sales & Marketing A.G.
Hoofdstraat 1
6024 AA Budel-Dorplein
Tel: +32 14 44 96 80
Fax: +32 14 44 95 52
infoSDS@nyrstar.com

Nyrstar France S.A.S. on behalf of Nyrstar Sales & Marketing A.G.
Rue Jean Jacques Rousseau
F-59950 Aubry
Tel: +32 14 44 96 80
Fax: +33 3 27 88 39 48
infoSDS@nyrstar.com

Manufacturer of the product

Created by: Brandweerinformatiecentrum voor gevaarlijke stoffen vzw (BIG)
Technische Schoolstraat 43 A, B-2440 Geel
<http://www.big.be>
© BIG vzw
Reason for revision: 11
Revision number: 0001

Publication date: 2011-12-29
Date of revision: 2012-09-14

Product number: 51613

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sulfuric acid, conc=93-99.5%

NYRSTAR Sales & Marketing AG
Tessinerplatz 7
CH-8002 Zürich
Tel: +41 44 745 81 00
Fax: +41 44 745 81 10
infoSDS@nyrstar.com

1.4 Emergency telephone number:

24h/24h (Telephone advice: English, French, German, Dutch):
+32 14 58 45 45 (BIG)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation EC No 1272/2008

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statement code(s)
Skin Corr.	category 1A	H314: Causes severe skin burns and eye damage.

2.1.2 Classification according to Directive 67/548/EEC-1999/45/EC

Classified as dangerous in accordance with the criteria of Directives 67/548/EEC and 1999/45/EC
C; R35 - Causes severe burns.

2.2 Label elements:

Labelling according to Regulation EC No 1272/2008 (CLP)



Signal word

Danger

H-statements

H314

Causes severe skin burns and eye damage.

P-statements

P280

Wear protective gloves, protective clothing and eye protection/face protection.

P260

Do not breathe dust/fume/gas/mist/vapours/spray.

P310

Immediately call a POISON CENTER or doctor/physician.

P304 + P340

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P301 + P330 + P331

IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

2.3 Other hazards:

CLP

Odour threshold is well above the exposure limit

Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans

Harmful to fishes

SECTION 3: Composition/information on ingredients

3.1 Substances:

Name (REACH Registration No)	CAS No EC No	Conc. (C)	Classification according to DSD/DPD	Classification according to CLP	Note	Remark
sulphuric acid (01-2119458838-20)	7664-93-9 231-639-5	93%≤C ≤99.5%	C; R35	Skin Corr. 1A; H314	(1)(2)(10)	Mono-constituent

(1) For R-phrases and H-statements in full: see heading 16

(2) Substance with a Community workplace exposure limit

(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006

3.2 Mixtures:

Not applicable

SECTION 4: First aid measures

Reason for revision: 11

Publication date: 2011-12-29

Date of revision: 2012-09-14

Revision number: 0001

Product number: 51613

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sulfuric acid, conc=93-99.5%

4.1 Description of first aid measures:

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Wash immediately with lots of water (15 minutes)/shower. Use neutralizing agent (Diphoterine or an equivalent neutralizing agent) and rinse with plenty of water. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

After eye contact:

Rinse immediately with plenty of water for 15 minutes. Use neutralizing agent (Diphoterine or an equivalent neutralizing agent) and rinse with plenty of water. Take victim to an ophthalmologist.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Do not give activated charcoal. Do not give chemical antidote. Immediately consult a doctor/medical service.

4.2 Most important symptoms and effects, both acute and delayed:

4.2.1 Acute symptoms

After inhalation:

Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. ON CONTINUOUS EXPOSURE/CONTACT: Corrosion of the upper respiratory tract. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible laryngeal spasm/oedema. Risk of pneumonia. Risk of lung oedema. Respiratory difficulties.

After skin contact:

Caustic burns/corrosion of the skin.

After eye contact:

Corrosion of the eye tissue. Permanent eye damage.

After ingestion:

Nausea. Abdominal pain. Blood in stool. Blood in vomit. Burns to the gastric/intestinal mucosa. AFTER ABSORPTION OF HIGH QUANTITIES: Shock.

4.2.2 Delayed symptoms

No effects known.

4.3 Indication of any immediate medical attention and special treatment needed:

If applicable and available it will be listed below.

SECTION 5: Firefighting measures

5.1 Extinguishing media:

5.1.1 Suitable extinguishing media:

Adapt extinguishing media to the environment.

5.1.2 Unsuitable extinguishing media:

Water.

5.2 Special hazards arising from the substance or mixture:

On burning: release of toxic and corrosive gases/vapours (sulphur oxides). Violent exothermic reaction with water (moisture): release of corrosive gases/vapours.

5.3 Advice for firefighters:

5.3.1 Instructions:

Cool tanks/drums with water spray/remove them into safety. When cooling/extinguishing: no water in the substance. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water.

5.3.2 Special protective equipment for fire-fighters:

Gloves. Face-shield. Corrosion-proof suit. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit. Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

No naked flames. Keep containers closed. Avoid ingress of water in the containers. Large spills/in confined spaces: consider evacuation.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Face-shield. Corrosion-proof suit. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit.

sulfuric acid, conc=93-99.5%

Suitable protective clothing

See heading 8.2

6.2 Environmental precautions:

Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Prevent soil and water pollution. Prevent spreading in sewers.

6.3 Methods and material for containment and cleaning up:

Neutralize spill with lime, sodium bicarbonate, soda (sodium carbonate) or soda ash. Neutralized substance: shovel into closing drums. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4 Reference to other sections:

See heading 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1 Precautions for safe handling:

Keep away from naked flames/heat. Gas/vapour heavier than air at 20°C. Observe very strict hygiene - avoid contact. Keep container tightly closed. Remove contaminated clothing immediately. Do not discharge the waste into the drain. Never add water to this product. Never dilute by pouring water to the acid. Always add the acid to the water.

7.2 Conditions for safe storage, including any incompatibilities:

7.2.1 Safe storage requirements:

Store in a dry area. Ventilation at floor level. Keep locked up. Protect against frost. Store at ambient temperature. Provide for a tub to collect spills. Unauthorized persons are not admitted. Under a shelter/in the open. Aboveground. Keep only in the original container. Store only in a limited quantity. Meet the legal requirements.

7.2.2 Keep away from:

Heat sources, combustible materials, reducing agents, (strong) bases, metals, cellulosic materials, organic materials, oxidizing agents, alcohols, amines, water/moisture.

7.2.3 Suitable packaging material:

Carbon steel, polyethylene, polypropylene, glass, stoneware/porcelain.

7.2.4 Non suitable packaging material:

Monel steel, lead, aluminium, iron, copper, zinc, nickel, bronze.

7.3 Specific end use(s):

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters:

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

Regulatory exposure limit (The Netherlands)

Zwavelzuur (nevel), gedefinieerd als de thorale fr	Time-weighted average exposure limit 8 h	0.05 mg/m ³	
	Time-weighted average exposure limit, calculated	0.012 ppm	

Indicative exposure limit EU

Sulphuric acid (mist)	Short time value	- ppm - mg/m ³	
	Time-weighted average exposure limit 8 h	- ppm 0.05 mg/m ³	

Limit Value (Belgium)

Acide sulfurique	Short time value	- ppm 3 mg/m ³	
	Time-weighted average exposure limit 8 h	- ppm 1 mg/m ³	

TLV (USA)

Sulfuric acid	Time-weighted average exposure limit 8 h	0.2 mg/m ³ (T)	(T): Thoracic fraction
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sulfuric acid, conc=93-99.5%

TRGS 900 (Germany)

Schwefelsäure	Time-weighted average exposure limit 8 h	0.1 mg/m ³	
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Limit Value (France)

Acide sulfurique, fraction thoracique	Short time value	- ppm 3 mg/m ³	
	Time-weighted average exposure limit 8 h	- ppm 0.05 mg/m ³	

b) National biological limit values

If limit values are applicable and available these will be listed below.

8.1.2 Sampling methods

Product name	Test	Number
Sulfuric Acid	NIOSH	7903
Sulfuric Acid	OSHA	ID 165SG
Sulfuric Acid	OSHA	ID 113
Sulfuric Acid (Acids, inorganic)	NIOSH	7903

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

Workers

sulfuric acid, conc=93-99.5%

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Acute local effects inhalation	0.1 mg/m ³	
	Long-term local effects inhalation	0.05	

PNEC

sulfuric acid, conc=93-99.5%

Compartments	Value	Remark
Fresh water	0.0025 mg/l	
Marine water	0.00025 mg/l	
Fresh water sediment	0.002 mg/kg ww	
Marine water sediment	0.002 mg/kg ww	
STP	8.8 mg/l	

8.1.5 Control banding

If applicable and available it will be listed below.

8.2 Exposure controls:

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

8.2.1 Appropriate engineering controls

Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

Observe very strict hygiene - avoid contact. Keep container tightly closed. Do not eat, drink or smoke during work.

a) Respiratory protection:

Gas mask with filter type E at conc. in air > exposure limit. Dust/aerosol mask with filter type P3.

b) Hand protection:

Gloves.

Materials	Breakthrough time	Thickness
butyl rubber	2 h	0.5 mm
viton	>=8 h	0.4 mm

- materials for protective clothing (poor resistance)

Natural rubber, nitrile rubber, chloroprene rubber, leather.

c) Eye protection:

Face shield. Protective goggles.

d) Skin protection:

Corrosion-proof clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

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sulfuric acid, conc=93-99.5%

9.1 Information on basic physical and chemical properties:

Physical form	Liquid
Odour	Odourless
Odour threshold	Not applicable
Colour	Colourless to brown
Particle size	Not applicable (liquid)
Explosion limits	Not applicable
Flammability	Non-flammable
Log Kow	Not relevant
Dynamic viscosity	0.0225 Pa.s ; 20 °C ; 95 %
Kinematic viscosity	Not determined
Melting point	10.4 - 10.9 °C ; 100 % -1.11 - 3.0 °C ; 98 % -13.89 - -10 °C ; 96 % 7.56 °C ; 83 %
Boiling point	290 °C ; 100 % 310 - 335 °C ; 98 % 330 °C ; 96 %
Flash point	Not applicable
Evaporation rate	No data available
Vapour pressure	0.06 hPa ; 20 °C ; 90 %
Relative vapour density	3.4
Solubility	water ; miscible
Relative density	1.8305 ; 20 °C ; 100 % 1.8361 ; 20 °C ; 98 % 1.8355 ; 20 °C ; 96 % 1.8144 ; 20 °C ; 90 %
Decomposition temperature	No data available
Auto-ignition temperature	Not applicable
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	No data available

Physical hazards

No physical hazard class

9.2 Other information:

Absolute density	1830.5 kg/m ³ ; 20 °C
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SECTION 10: Stability and reactivity

10.1 Reactivity:

Substance has acid reaction.

10.2 Chemical stability:

Unstable on exposure to moisture.

10.3 Possibility of hazardous reactions:

Violent exothermic reaction with water (moisture): release of corrosive gases/vapours. Reacts with many compounds: (increased) risk of fire/explosion.
Reacts exothermically with organic material: risk of spontaneous ignition. Reacts violently with combustible materials: (increased) risk of fire/explosion.
Reacts violently with (some) bases: heat release resulting in increased fire or explosion risk. Reacts with (strong) reducers: (increased) risk of fire/explosion.

10.4 Conditions to avoid:

Keep away from naked flames/heat.

10.5 Incompatible materials:

Combustible materials, reducing agents, (strong) bases, metals, cellulosic materials, organic materials, oxidizing agents, alcohols, amines, water/moisture, monel steel, lead, aluminium, iron, copper, zinc, nickel, bronze.

10.6 Hazardous decomposition products:

Aqueous solution reacts with (some) metals: release of highly flammable gases/vapours (hydrogen). On burning: release of toxic and corrosive gases/vapours (sulphur oxides).

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sulfuric acid, conc=93-99.5%

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

11.1.1 Test results

- Toxicokinetics: summary

Basic toxicokinetics: The effects of sulphuric acid are essentially the result of the hydrogen ion (local deposition of H⁺, pH change) rather than an effect of the sulphate ion. Sulphuric acid (as such) is not expected to be absorbed or distributed throughout the body as the acid will rapidly dissociate; the hydrogen ion will form water. The sulphate anion will enter the body electrolyte pool, its kinetics will be governed by sulphate homeostatic mechanisms, and is therefore not predicted play a specific toxicological role. This supposition is supported by experiments which have studied the active component in inorganic acids on various endpoints, using different acids or salts. The results of these studies lead to the conclusion that the observed effects are due to the hydrogen ion, while the anion appeared to have no effect.

In a study of the clearance of radiolabeled sulphuric acid aerosol in different species, the authors observed that the sulphur from sulphuric acid was rapidly cleared (from 2 -9 minutes) from the lungs of animals into the blood following inhalation exposure (Dahl, 1983). Sulphate is a normal constituent of the blood (present at 0.8 -1.2 mg/dl) and is a normal metabolite of sulphur-containing amino acids. The body has efficient sulphate homeostatic mechanisms and excess sulphate is excreted in the urine (capacity-limited proximal tubular absorption); urinary sulphate concentrations of up to 500 umol/dl/kg bw have been reported. The body pool of this anion is large, and it is therefore unlikely that occupational exposure will significantly add to the normal body burden.

Systemic absorption of the hydrogen ion following dermal or inhalation exposure to sulphuric acid is not predicted to be significant, and the low level of hydrogen ions absorbed will be effectively controlled by the homeostatic mechanisms governing pH including the action of the enzyme carbonic anhydrase and NA⁺/H⁺ exchange in the proximal renal tubule. Although acidaemia and metabolic acidosis have been noted following cases of ingestion exposure, similar effects are not predicted following occupational inhalation exposure (which will be much lower and effectively limited by respiratory tract irritation) or following dermal exposure (due to low dermal absorption and local dermal irritation).

The deposition of sulphuric particles in the human lung has been studied extensively. Deposition is influenced by subject age, particle size and breathing rate. Sulphuric acid particles are hygroscopic and therefore will absorb moisture present in the airways, thereby increasing particle size and potentially increasing particle retention. Respiratory mucus has a limited buffering capacity and may reduce tissue contact.

The absence of systemic effects in the large number of toxicity studies performed with sulphuric acid is consistent with this assessment of its toxicokinetics.

The following information is taken into account for any hazard / risk assessment: Primary information is limited to a study of the absorption and kinetics of radiolabelled sulphate following the inhalation of sulphuric acid aerosols. Sulphuric acid immediately dissociates to the hydrogen and sulphate ions, with the hydrogen ion being responsible for the local toxicity (irritation and corrosivity) of sulphuric acid.

Dermal absorption: No dermal absorption is predicted under normal conditions of use, based on the physicochemical properties of the substance. However dermal absorption may occur when the integrity of the skin is lost (i. e. in accidental exposures resulting in burns).

The following information is taken into account for any hazard / risk assessment: No studies are proposed for scientific reasons and (given the corrosive nature of the substance), also reasons of animal welfare. No dermal absorption is predicted under normal conditions of use, based on the physicochemical properties of the substance.

Acute toxicity

sulfuric acid, conc=93-99.5%

Route of exposure	Parameter	Method	Value	Exposure time	Species	Gender	Value determination
Oral	LD50	Equivalent to OECD 401	2140 mg/kg		Rat	Male/female	Experimental value
Dermal							Not relevant, expert judgement
Inhalation (aerosol)	LC50	Equivalent to OECD 403	375 mg/m ³ air		Rat	Male/female	Experimental value

Conclusion

Not classified for acute toxicity

Corrosion/irritation

sulfuric acid, conc=93-99.5%

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination
Eye	Highly corrosive					Literature
Skin	Highly corrosive					Literature

Conclusion

Causes severe skin burns and eye damage.

Respiratory or skin sensitisation

sulfuric acid, conc=93-99.5%

No (test)data available

Specific target organ toxicity

sulfuric acid, conc=93-99.5%

	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Gender	Value determination
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sulfuric acid, conc=93-99.5%

Inhalation (aerosol)	LOAEC	OECD 412	0.3 mg/m ³ air	Respiratory tract		4 weeks (6h/day, 5 days/week)	Rat	Female	Experimental value
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Mutagenicity (in vitro)

sulfuric acid, conc=93-99.5%

Result	Method	Test substrate	Effect	Value determination
Negative	Equivalent to OECD 471	Bacteria (S.typhimurium)		Weight of evidence
Positive	Equivalent to OECD 473	Chinese hamster ovary (CHO)		Weight of evidence

Mutagenicity (in vivo)

sulfuric acid, conc=93-99.5%

No (test)data available

Carcinogenicity

sulfuric acid, conc=93-99.5%

Route of exposure	Parameter	Method	Value	Exposure time	Species	Gender	Value determination	Organ	Effect
Inhalation (aerosol)	NOEC		100 mg/l air		Hamster	Male	Weight of evidence		No effect
Oral	NOAEL	Not further determined			Mouse	Male/female	Weight of evidence		

Reproductive toxicity

sulfuric acid, conc=93-99.5%

	Parameter	Method	Value	Exposure time	Species	Gender	Effect	Organ	Value determination
Developmental toxicity	NOAEC	Equivalent to OECD 414	19.3 mg/m ³ air	6 - 15 days (gestation, daily)	Mouse	Female	No effect		Experimental value

Conclusion CMR

Not classified for mutagenic or genotoxic toxicity

Not classified for carcinogenicity

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

sulfuric acid, conc=93-99.5%

No (test)data available

Chronic effects from short and long-term exposure

sulfuric acid, conc=93-99.5%

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Red skin. Dry skin. Itching. Skin rash/inflammation. Affection/discolouration of the teeth. Inflammation/damage of the eye tissue.

11.1.2 Other information

sulfuric acid, conc=93-99.5%

Listed in SZW - List of carcinogenic substances	yes (sulphuric acid mist)
TLV - Carcinogen	A2* (Classification refers to sulfuric acid contained in strong inorganic acid mists)
	A2* (Classification refers to sulfuric acid contained in strong inorganic acid mists)
IARC - classification	1
IARC - remark	containing sulfuric acid
Krebserzeugend Kategorie	4

SECTION 12: Ecological information

12.1 Toxicity:

sulfuric acid, conc=93-99.5%

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		>16 - <28 mg/l	96 h	Lepomis macrochirus	Static system	Fresh water	Experimental value
Acute toxicity invertebrates	EC50	OECD 202	> 100 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value

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sulfuric acid, conc=93-99.5%

Toxicity algae and other aquatic plants	EC50	OECD 201	> 100 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value
Long-term toxicity fish	NOEC		0.025 mg/l	65 day(s)	Jordanella floridae	Flow-through system	Fresh water	Experimental value
Long-term toxicity aquatic invertebrates	NOEC		0.15 mg/l		Tanytarsus dissimilis	Static system	Fresh water	Experimental value
Toxicity aquatic micro-organisms	NOEC		26 g/l	37 day(s)	Bacteria	Static system	Fresh water	Read-across

Conclusion

Harmful to fishes
Slightly harmful to invertebrates (Daphnia)
Slightly harmful to algae
pH shift
Not harmful to activated sludge

12.2 Persistence and degradability:

Biodegradability: not applicable
Hydrolysis in water

12.3 Bioaccumulative potential:

sulfuric acid, conc=93-99.5%

Log Kow

Method	Value	Temperature	Value determination
			Not relevant

Conclusion

Bioaccumulation: not applicable

12.4 Mobility in soil:

sulfuric acid, conc=93-99.5%

12.5 Results of PBT and vPvB assessment:

Substance does not meet the screening criteria for persistency nor bioaccumulation so is neither PBT nor vPvB.

12.6 Other adverse effects:

sulfuric acid, conc=93-99.5%

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No. 1272/2008 and 1005/2009)

Ground water

Ground water pollutant

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1 Waste treatment methods:

13.1.1 Provisions relating to waste

Waste material code (Directive 2008/98/EC, decision 2001/118/EC).
06 01 01* (sulphuric acid and sulphurous acid). Depending on branch of industry and production process, also other EURAL codes may be applicable.
Hazardous waste according to Directive 2008/98/EC.

13.1.2 Disposal methods

Recycle/reuse. Remove for physico-chemical/biological treatment. Remove to an authorized dump (Class I). Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Treat using the best available techniques before discharge into drains or the aquatic environment. Use appropriate containment to avoid environmental contamination.

13.1.3 Packaging/Container

Waste material code packaging (Directive 2008/98/EC).
15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR)

14.1 UN number:

Reason for revision: 11

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sulfuric acid, conc=93-99.5%

UN number	1830
14.2 UN proper shipping name:	
Proper shipping name	Sulphuric acid
14.3 Transport hazard class(es):	
Hazard identification number	80
Class	8
Classification code	C1
14.4 Packing group:	
Packing group	II
Labels	8
14.5 Environmental hazards:	
Environmentally hazardous substance mark	no
14.6 Special precautions for user:	
Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Rail (RID)

14.1 UN number:	
UN number	1830
14.2 UN proper shipping name:	
Proper shipping name	Sulphuric acid
14.3 Transport hazard class(es):	
Hazard identification number	80
Class	8
Classification code	C1
14.4 Packing group:	
Packing group	II
Labels	8
14.5 Environmental hazards:	
Environmentally hazardous substance mark	no
14.6 Special precautions for user:	
Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Inland waterways (ADN)

14.1 UN number:	
UN number	1830
14.2 UN proper shipping name:	
Proper shipping name	Sulphuric acid
14.3 Transport hazard class(es):	
Class	8
Classification code	C1
14.4 Packing group:	
Packing group	II
Labels	8
14.5 Environmental hazards:	
Environmentally hazardous substance mark	no
14.6 Special precautions for user:	
Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Sea (IMDG)

14.1 UN number:	
UN number	1830
14.2 UN proper shipping name:	
Proper shipping name	Sulphuric acid
14.3 Transport hazard class(es):	
Class	8
14.4 Packing group:	
Packing group	II

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sulfuric acid, conc=93-99.5%

Labels	8
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14.5 Environmental hazards:

Marine pollutant	-
Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

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

Annex II of MARPOL 73/78	Not applicable, based on available data
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Air (ICAO-TI/IATA-DGR)

14.1 UN number:

UN number	1830
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14.2 UN proper shipping name:

Proper shipping name	Sulphuric acid
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14.3 Transport hazard class(es):

Class	8
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14.4 Packing group:

Packing group	II
Labels	8

14.5 Environmental hazards:

Environmentally hazardous substance mark	no
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14.6 Special precautions for user:

Special provisions	
Passenger and cargo transport: limited quantities: maximum net quantity per packaging	0.5 L

SECTION 15: Regulatory information

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

European legislation:

European drinking water standards

Maximum concentration in drinking water: 250 mg/l (sulfate) (Directive 98/83/EC)

Volatile organic compounds (VOC)

Not applicable

REACH Annex XVII - Restriction

Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

	Designation of the substance, of the group of substances or of the mixture	Conditions of restriction
· sulphuric acid	Liquid substances or mixtures, which are regarded as dangerous according to the definitions in Council Directive 67/548/EEC and Directive 1999/54/EC.	1. Shall not be used in: — ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays, — tricks and jokes, — games for one or more participants, or any article intended to be used as such, even with ornamental aspects, 2. Articles not complying with paragraph 1 shall not be placed on the market. 3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they: — can be used as fuel in decorative oil lamps for supply to the general public, and, — present an aspiration hazard and are labelled with R65 or H304, 4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN). 5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met: a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: "Keep lamps filled with this liquid out of the reach of children"; and, by 1 December 2010, "Just a sip of lamp oil — or even sucking the wick of lamps — may lead to life-threatening lung damage"; b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: "Just a sip of grill lighter may lead to life threatening lung damage"; c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010. 6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled R65 or H304, intended for supply to the general public. 7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.'

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15.2 Chemical safety assessment:

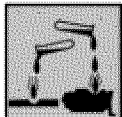
A chemical safety assessment has been performed.

SECTION 16: Other information

Labelling according to Directive 67/548/EEC-1999/45/EC (DSD/DPD)

Enumerated in substance list Annex I of directive 67/548/EEC et sequens

Labels



Corrosive

R-phrases

35 Causes severe burns

S-phrases

(01/02) (Keep locked up and out of the reach of children)
 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
 30 Never add water to this product
 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

Full text of any R-phrases referred to under headings 2 and 3:

R35 Causes severe burns

Full text of any H-statements referred to under headings 2 and 3:

H314 Causes severe skin burns and eye damage.

(*) = INTERNAL CLASSIFICATION BY BIG

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive

DPD Dangerous Preparation Directive

CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

Specific concentration limits CLP

sulphuric acid	C ≥ 15 %	Skin Corr. 1A; H314
	5 % ≤ C < 15 %	Skin Irrit. 2; H315
	5 % ≤ C < 15 %	Eye Irrit. 2; H319

Specific concentration limits DSD

sulphuric acid	C ≥ 15 %	C;R 35
	5 % ≤ C < 15 %	Xi;R 36/38

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult your BIG licence agreement for details.

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