DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
FACILITY IDENTIFICATION

Type or print and submit. Attach appropriate source description forms.

SITE INFORMATION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
ABB INSTALLATION PRODUCTS INC. #000909235

2. Site name (if different from legal name)

3. Is a construction permit application fee being submitted? Yes ☐ No ☑
(see instructions for appropriate fee to submit)

4. Site address (St./Rd./Hwy.)		County name
260 DENNIS STREET		MCMINN
City	Zip code	**5.** NAICS or SIC code
ATHENS	37303	335932

6. Site location (in lat. /long.)	Latitude	Longitude
	35.457389	84.604261

CONTACT INFORMATION (RESPONSIBLE PERSON)

7. Responsible person/Authorized contact			Phone number with area code
SHANE SPARKS			423-745-6588
Mailing address (St./Rd./Hwy.)			Fax number with area code
260 DENNIS STREET			423-745-9545
City	State	Zip code	Email address
ATHENS	TN	37303	SHANE.SPARKS@US.ABB.COM

CONTACT INFORMATION (TECHNICAL)

8. Principal technical contact			Phone number with area code
LISA NEISLER			423-745-6588
Mailing address (St./Rd./Hwy.)			Fax number with area code
260 DENNIS STREET			423-745-9545
City	State	Zip code	Email address
ATHENS	TN	37303	LISA.NEISLER@US.ABB.COM

CONTACT INFORMATION (BILLING)

9. Billing contact			Phone number with area code
ACCOUNTS PAYABLE			423-745-6588
Mailing address (St./Rd./Hwy.)			Fax number with area code
260 DENNIS STREET			423-745-9545
City	State	Zip code	Email address
ATHENS	TN	37303	

AIR CONTAMINANT SOURCE(S) INFORMATION

10. Description of air contaminant source(s) and Unique Source ID(s). List, identify, and briefly describe process emission sources, fuel burning installations, and incinerators that are contained in this application and include a Unique Source ID for each source. The Unique Source ID is a name/number/letter, which uniquely identifies the air contaminant source(s), like Boiler #1, Paint Line #1, Engine #1, etc. (see instructions for more details)

THIS APPLICATION IS FOR AN ELECTROPLATING MACHINE THAT COATS STEEL STRUT WITH ZINC TO PREVENT CORROSION. THE ELECTROPLATING LINE IS MADE OF VARIOUS HOLDING TANKS WITH VARIOUS AQUEOUS SOLUTIONS OF CLEANERS, RINSE WATERS, NON-CYANIDE ALKALINE ZINC ELECTROPLATING SOLUTION, AND TRIVALENT CHROMIUM CONVERSION COATINGS.

11. Is the air contaminant source(s) in a nonattainment area? If "Yes", then minor source BACT must be addressed. Yes ☐ No ☑

12. Normal operation:	Hours/Day 24	Days/Week 7	Weeks/Year 52	Days/Year 365
13. Percent annual throughput	Dec. – Feb. 25	March – May 25	June – August 25	Sept. – Nov. 25

TYPE OF PERMIT REQUESTED (check appropriate box)

14. Operating permit ☑	Date construction started 4-1-2019	Date completed 3-1-2019	Date of ownership change (if applicable)
	Last permit number(s) 973271	Emission Source Reference Number(s) 54-0047-14	
Construction permit ☐	Last permit number(s)	Emission Source Reference Number(s)	

If you chose Construction permit above, then choose either New Construction, Modification, or Location Transfer

New Construction ☐	Starting date	Completion date
Modification ☐	Date modification started or will start	Date completed or will complete
Location Transfer ☐	Transfer date	Address of last location

15. Describe changes that have been made to this equipment or operation(s) since the last construction or operating permit application:

N/A

16. Comments

N/A

SIGNATURE

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

17. Signature (application must be signed before it will be processed)		**Date** 3/20/2019
Signer's name (type or print) SHANE SPARKS	**Title** PLANT MANAGER	**Phone number with area code** 423-745-6588

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
EMISSION POINT DESCRIPTION

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
ABB INSTALLATION PRODUCTS INC. #000909235

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)
#17161

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)
#1

4. Brief description of air contaminant source (Attach a diagram if appropriate):
JESSUP PLATER ELECTROPLATING MACHINE-ALKALINE NON-CYANIDE ZINC PLATING WITH TRIVALENT CHROMIUM CONVERSION COATING

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	35.457389	84.604261	125

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	39	4.67	AMBIENT		UP

	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture ($Grains/Ft.^3$)	Moisture (Percent)
Data at exit conditions: →	51460	52.63	6.2	80
Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.) 51460	Velocity (Ft. /Sec.) 52.63	Moisture ($Grains/Ft.^3$) 3.9	Moisture (Percent) 50

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_x monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☑	☐

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).
WET-BED PACKED FUME SCRUBBER WITH FLOW RATE MONITORING

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)		0.00336	**	0.00703		3	001	99
Sulfur dioxide (SO_2)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO_X)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

SIGNATURE

If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required.

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

12. Signature		**Date** 3/20/2019
Signer's name (type or print) SHANE SPARKS	**Title** PLANT MANAGER	**Phone number with area code** 423-745-6588

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

XXIV. TANK SCHEDULE

CUSTOMER
THOMAS & BETTS

Jessup ENGINEERING

QUOTATION NO.
17Q180B

DATE
August 7, 2017

TANK No.	PROCESS	NO. CELLS	IMMER TIME MIN	TANK DOT "	TANK VOL GAL	TANK CONSTRUCT /LINING	OVERFLOW TYPE SIZE	OVERFLOW DRN SIZE	BTM DRN SIZE	C'FLW TO TNK#	TANK TEMP (F)	HEATING/ COOLING EQUIP	EXHAUST CFM/SYS	AIR AGT CFM	CHEM FEED PMP	WTR MGMT CNTL	LEVEL CNTL TYPE	FLTR RATE TPH	DC PWR SUPPLY AMP/VOLT	PROCESS	TANK No.
1A/B	LOAD/UNLOAD	2		120		MILD STL	--	--	--											LOAD/UNLOAD	1A/B
2	PRE-SOAK CLEAN	1		34	3,120	MILD STL	ET/12"	3"	3"		180	SS COIL	1		1		AUTO			PRE-SOAK CLEAN	2
3	SOAK CLEAN	2		46	4,220	MILD STL	ET/12"	3"	3"		180	SS COIL	1		1		AUTO			SOAK CLEAN	3
4	ELECTROCLEAN	2		62	5,690	MILD STL	ET/12"	3"	3"		170	SS COIL	1		1		AUTO		15,000/18	ELECTROCLEAN	4
5	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"					52						RINSE	5
6	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"	PC5				52		•				RINSE	6
7A	ACID (SULFURIC)	1		24	2,200	304SS/NP	EW/6"	3"	3"				1							ACID (SULFURIC)	7A
7B	ACID (SULFURIC)	1		24	2,200	304SS/NP	EW/6"	3"	3"				1							ACID (SULFURIC)	7B
8	RINSE	1		24	2,200	304SS/NP	EW/6"	3"	3"					52						RINSE	8
9	RINSE	1		24	2,200	304SS/NP	EW/6"	3"	3"	PC8				52		•				RINSE	9
10A	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	2		1			1.2	10,000/12	ALKALINE ZINC	10A
10B	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	2						10,000/12	ALKALINE ZINC	10B
10C	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	2		1			1.2	10,000/12	ALKALINE ZINC	10C
10D	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	2						10,000/12	ALKALINE ZINC	10D
10E	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	2						10,000/12	ALKALINE ZINC	10E
10F	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	2		1			0.8	10,000/12	ALKALINE ZINC	10F
10G	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	2						10,000/12	ALKALINE ZINC	10G
11	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"					52						RINSE	11
12	HIGH BAY RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"	PC11				52		•				HIGH BAY RINSE	12
13	SOUR DIP	1		24	2,200	316SS	--	--	3"					52						SOUR DIP	13
14A	BLUE BRIGHT	1		24	2,200	316SS	--	--	3"		85	SS COIL		52	2					BLUE BRIGHT	14A
15A	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"					52						RINSE	15A
16A	WARM RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"	PC15A	100	SS COIL		52		•				WARM RINSE	16A
14B	YELLOW CHROMATE	1		24	2,200	316SS	--	--	3"		110	SS COIL		52	2					YELLOW CHROMATE	14B
15B	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"					52						RINSE	15B
16B	WARM RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"	PC15B	100	SS COIL		52		•				WARM RINSE	16B
17	DRYER	2		51	4,680	ALUM STL	--	--	2"											DRYER	17

TANK WIDTH 312

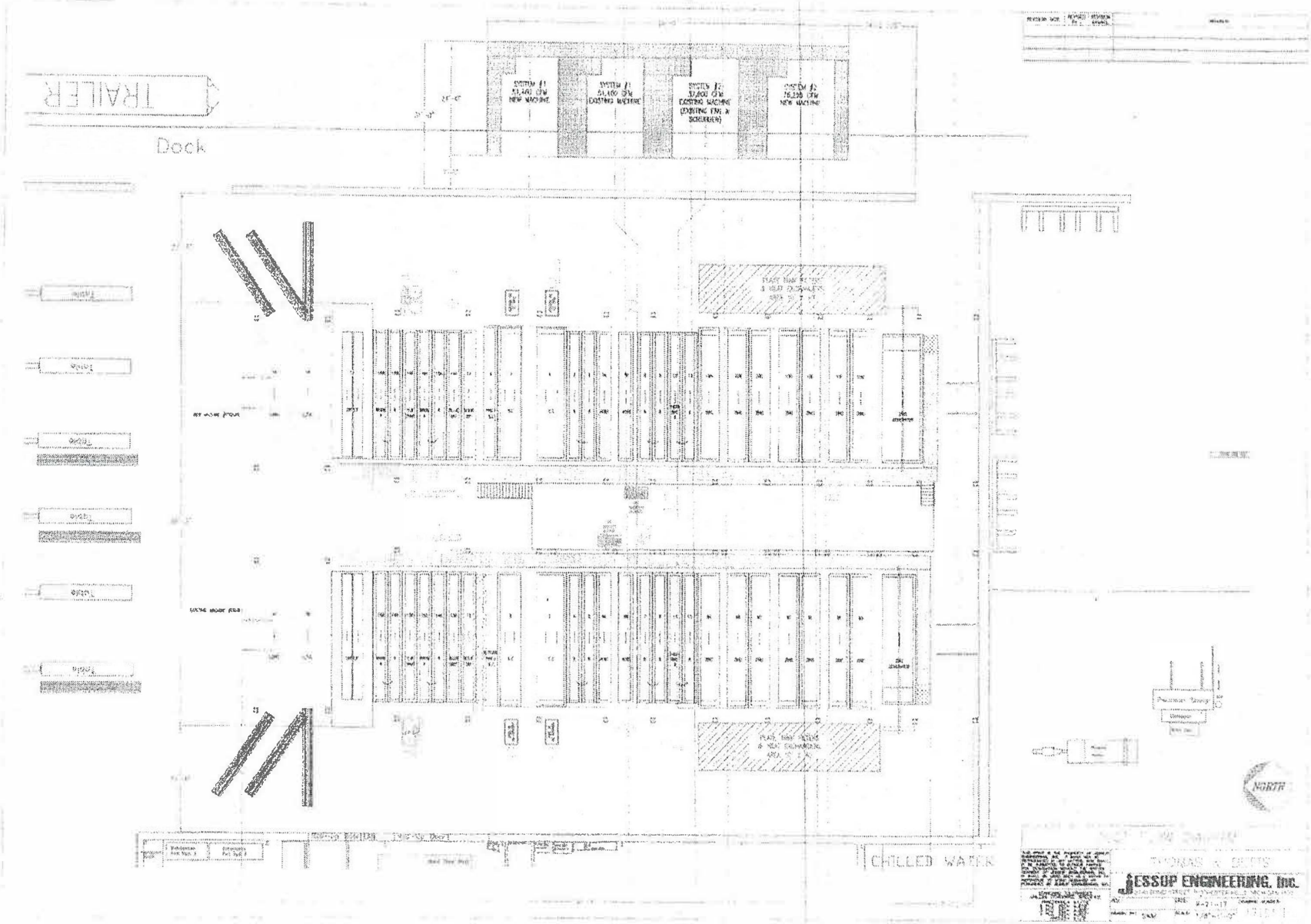
TANK DEPTH 72

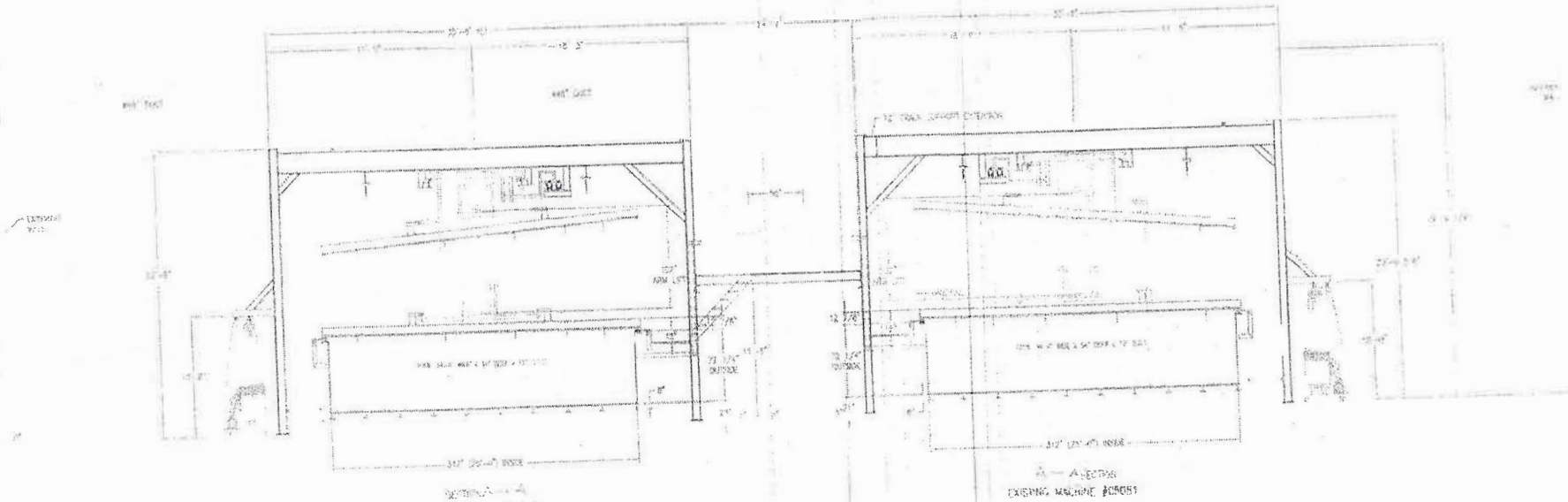
MS = MILD STEEL
SS = STAINLESS STEEL
PVC = POLYVINYL CHLORIDE
HTR = HIGH TEMP RUBBER
TI = TITANIUM
PB = POLYPRO BUMPER

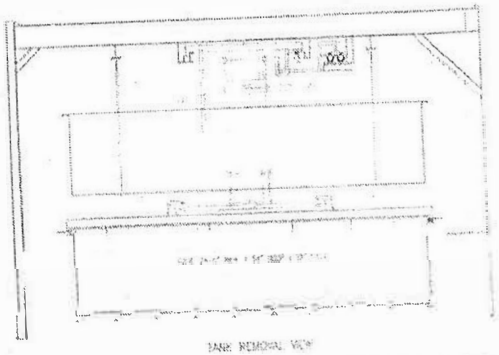
NP = NEOPRENE
DRN = DRAIN
DOT = DIRECTION OF TRAVEL
CFM = CUBIC FEET/ MINUTE
GPM = GALLONS/ MINUTE
AGT = AGITATION

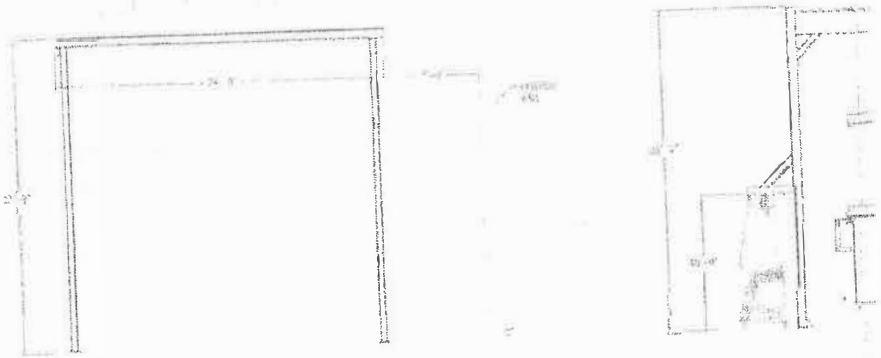
FLTR = FILTER
LVL = LEVEL CONTROL
COND = CONDUCTIVITY CONTROL
pH = pH CONTROL
TPH = TURNOVERS/ HOUR

C'FLW = COUNTERFLOW
BC = BAFFLE COUNTERFLOW
PC = PIPED COUNTERFLOW
M = PUMP COUNTERFLOW
W = SIDE WEIR OVERFLOW
EW = END WEIR OVERFLOW
T = SIDE TRAP OVERFLOW


TRAILER
Dock
CHILLED WATER
NORTH
ESSUP ENGINEERING, Inc.







MACHINE CROSS SECTION

THOMAS & BETTS

JESSUP ENGINEERING

ScrubAir Systems, Inc.

[illegible]

[illegible]

September 22, 2017

TO: Kevin Snyder
Jessup Engineering

email: ksnyder@jessupengineering.com

PH: (248) 853-5600

FM: Thomas L. O'Connor
President

ScrubAir Quote #17-TLO-182R3

RE: Push – Pull Ventilation System for Rack Zinc Line – Knoxville, TN

Per your request and specifications, we are pleased to quote a price to fabricate and install the following (2) push pull ventilation/scrubbing systems totaling 127,715 CFM designed to efficiently capture and remove the fumes and mist generated from the following process tanks requiring ventilation.

System #1: 51,460 CFM (Pre-Clean Tanks)

The total CFM required to efficiently capture and remove the fumes and mist generated from the following process tanks requiring ventilation is 51,460 CFM assisted by a push system.

TANK #	TANK SIZE	PROCESS	TEMPERATURE	FACTOR	CFM REQUIRED
2	34" x 312"	Pre-Soak Clean	180°F	(125)	9,210 CFM
3	46" x 312"	Soak Clean	180°F	(125)	12,460 CFM
4	62" x 312"	Electro Clean	170°F	(125)	16,790 CFM
7A	24" x 312"	Acid (Sulfuric)	AMB	(125)	6,500 CFM
7B	24" x 312"	Acid (Sulfuric)	AMB	(125)	6,500 CFM
					TOTAL: 51,460 CFM

The following will be included:

- Two (2) Model SSLD-2 ; 26' long double slot side lateral down draft style hoods (Removable)
- One (1) Model SSLD-1 ; 26' long single slot side lateral down draft style hood (Removable)
  - Fabricated from 3/8" thick high impact PVC
  - Slot velocities designed for 2,000 – 2,500 ft per min along the entire 26' length
  - Heat formed corners for additional strength
  - Gussets along the opposite side of the slot to support the hood on the adjacent tank (Pre Soak Tank)
  - Access doors on each end for observation and cleaning
  - Lifting lugs
  - Drain

- All duct and fittings required to connect the above (3) hoods to the inlet of the scrubber to be located up on the mezzanine along the outside wall
  - Fabricated from 3/16" and 1/4" thick PVC (All duct outside will be white PVC)
  - Designed per SMACNA recommendations for most efficient air flow
  - Includes rinse down nozzles on the riser on the (2) Acid tanks

- One (1) Model SHS 52,000 CFM horizontal cross flow wet packed bed fume scrubber
  - Fabricated from ½" thick white high impact PVC
  - Inlet and outlet transition
  - 3' of "Lantec Products" 3.5"Ø Q-Pac polypropylene random dump pack

- Removable spray headers
- Chevron blade style mist eliminator designed to remove mist particles as small as 20 microns in diameter at 99% efficiency
- (2) Magnehelic gauges designed to monitor the pressure drop across the mist eliminator as well as the overall scrubber
- Clear hinged and bolt on access doors with convenient spin off knobs to allow access to all components of the unit
- Drain
- Mounting base
- Remote Recirculation tank with:
  - Electronic level control
  - 185 gpm vertical "Serfilco" recirculation pump with a 7.5 hp motor
  - Flow meter
  - Pressure gauge
  - PH control metering system using acid as PH adjustment
  - Hinged access cover
  - Overflow and drain

- One (1) Model #60 fiberglass "New York Blower Co" or equivalent backwards curved centrifugal fans (Sized for 51,460 CFM at 6" SP)
  - 75 hp TEFC motor, 230/460 ; 3 Phase
  - Belt driven
  - All fiberglass wheel
  - Access door
  - Flexible inlet connection
  - Drain
  - Mounting base with isolators
  - Rectangular to round transition on the discharge end of the fan including a high velocity discharge stack (56" diameter)

- Push System
  - (3) 2"Ø Sch 80 PVC push hoods with balancing valves (Acid tanks are not required)
  - All pipe and fittings required to connect the above (3) push hoods to the outlet of the push blower
  - (1) Model #08 "New York Blower Co" or equivalent medium pressure push blower (Sized for 2,250 CFM at 15" SP) The same push blower will provide push air to both systems
    - 15 hp TEFC motor, 230/460 ; 3-Phase
    - Belt driven
    - Inlet filter with housing

- Owner's Manual with drawing and spare parts list

System #2: 76,255 CFM (Alkaline Zinc Tanks)

The total CFM required to efficiently capture and remove the fumes and mist generated from the following process tanks requiring ventilation is 76,255 CFM assisted by a push system.

TANK #	TANK SIZE	PROCESS	TEMPERATURE	FACTOR	CFM REQUIRED
10A	40" x 312"	Alkaline Zinc	110°F	(100)	8,665 CFM
10B	40" x 312"	Alkaline Zinc	110°F	(100)	8,665 CFM
10C	40" x 312"	Alkaline Zinc	110°F	(100)	8,665 CFM
10D	40" x312"	Alkaline Zinc	110°F	(100)	8,665 CFM
10E	40" x312"	Alkaline Zinc	110°F	(100)	8,665 CFM
10F	40" x 312"	Alkaline Zinc	110°F	(100)	8,665 CFM
10G	40" x 312"	Alkaline Zinc	110°F	(100)	8,665 CFM
–	6' x 312"	Zinc Regen Tank	110°F	(100)	15,600 CFM
					TOTAL: 76,255 CFM

The following will be included:

- Four (4) Model SSLD-2 ; 26' long double slot side lateral down draft style hoods (Removable)
  - Fabricated from 3/8" thick high impact PVC
  - Slot velocities designed for 2,000 – 2,500 ft per min along the entire 26' length
  - Heat formed corners for additional strength
  - Rinse down spray nozzles with connecting pipe (Removable for cleaning)
  - Access doors on each end for observation and cleaning
  - Lifting lugs
  - Drain

- All duct and fittings required to connect the above (4) hoods to the inlet of the scrubber to be located up on the mezzanine along the outside wall
  - Fabricated from 3/16" and 1/4" thick PVC (All duct outside will be white PVC)
  - Designed per SMACNA recommendations for most efficient air flow
  - Includes rinse down nozzles in the vertical duct risers

- One (1) Model SHS 76,000 CFM horizontal cross flow wet packed bed fume scrubber
  - Fabricated from ½" thick white high impact PVC
  - Inlet and outlet transition
  - 3' of "Lantec Products" 3.5"Ø Q-Pac polypropylene random dump pack
  - Removable spray headers
  - Chevron blade style mist eliminator designed to remove mist particles as small as 20 microns in diameter at 99% efficiency
  - (2) Magnehelic gauges designed to monitor the pressure drop across the mist eliminator as well as the overall scrubber
  - Clear hinged and bolt on access doors with convenient spin off knobs to allow access to all components of the unit
  - Drain
  - Mounting base

- Remote recirculation tank with:
  - Electronic level control
  - 250 gpm vertical "Serfilco" recirculation pump with a 10 hp motor
  - Flow meter
  - Pressure gauge
  - PH control metering system using acid as PH adjustment
  - Hinged access cover
  - Overflow and drain

- One (1) Model #73 fiberglass "Verantis" backwards curved centrifugal fans (Sized for 76,255 CFM at 6" SP)
  - 100 hp TEFC motor, 230/460 ; 3 Phase
  - Belt driven
  - All fiberglass wheel
  - Access door
  - Flexible inlet connection
  - Drain
  - Mounting base with isolators
  - Rectangular to round transition on the discharge end of the fan including a high velocity discharge stack (68" diameter)

- Push System
  - (8) 2"Ø Sch 80 PVC push hoods with balancing valves
  - All pipe and fittings required to connect the above (8) push hoods to the outlet of the push blower described in System #1

- Owner's Manual with drawing and spare parts list

Installation of the above (2) systems by *ScrubAir* personnel

- All joints will be heat fusion welded
- All hanger rods and fasteners will be SS
- All rigging equipment required to assemble (Max crane distance from the center of the crane to the center of the set point is 70')
- Plumbing (Jessup to bring water supply and drain to our remote tanks)
- Balancing of the system
- Start up and training

- ALL WORKMANSHIP AND MATERIALS ARE FULLY GUARANTEED FOR ONE (1) YEAR AFTER START UP

Jessup Plater #17161

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)
Efm=(Emission Factor for metal m in gr/dscf)=0.028 x Efcr x Cm

Where:
Efcr=Emission factor for controlled hard chromium electroplating emissions
=2.10E-05
Efcr (PM)=Emission factor for controlled hard chromium electroplating emissions
=4.40E-05
Cm=Bath concentration of Metal M
=2 oz/gal

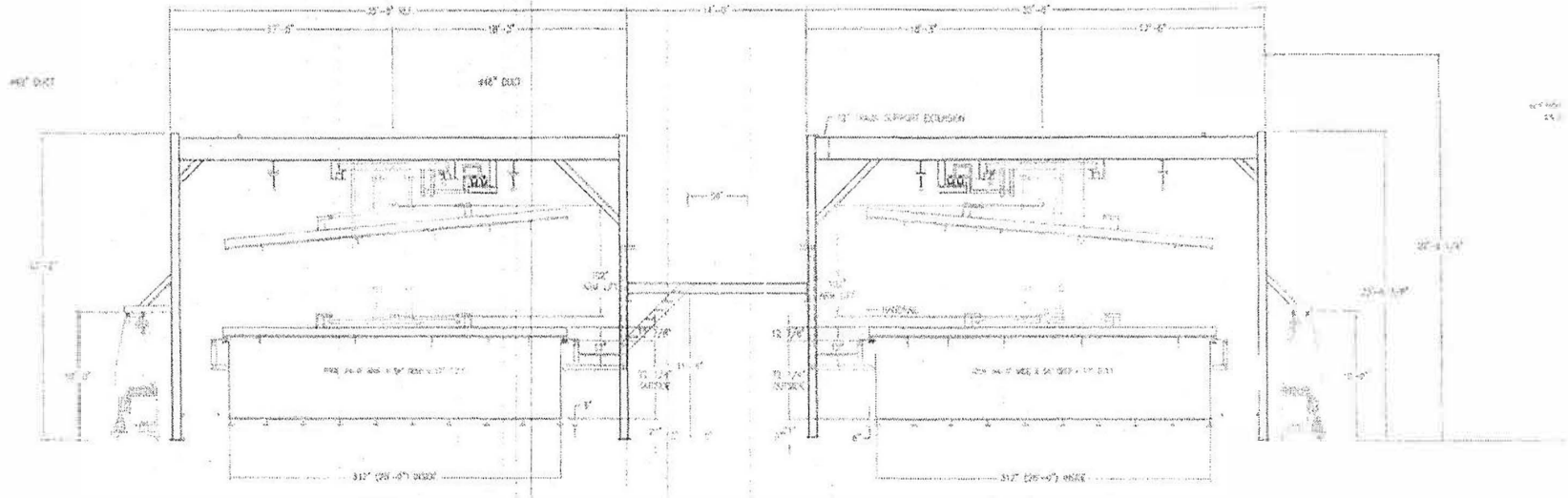
Efm (Emission factor for Zinc)=0.028xEFcrXCm=1.18E-06
Efm (Emission factor for Particulate Matter)=0.028xEfcr(PM)XCm=2.46E-06

Emissions are calculated using these emission factors and formula:
Emissions=Efm (gr/dscf) x flow rate (cfm) x operating time (min/yr)/7000 gr/lb

	Where:				
Scrubber #1	Flow rate	51460 cfm			
	Operating Time	8760 hours/year x 60 minutes/hour=525,600 min/year			
	PM Emissions (Controlled)=2.46E-06 (gr/dscf) x 51460(cfm) x 525,600 (min/yr) / 7,000 (gr/lb)=			9.51 lbs/year	1.09E-03 lbs/hr.
	Zinc Emissions (Controlled)=1.18E-06 x 51,460 (cfm) x 525,600 (min/yr) / 7000 (gr/lb)			4.56 lbs/year	2.28E-03 lbs/hr.
	Where:		Scrubber #1	14.06 lbs/year	3.36E-03 lbs/hr.
Scrubber #2	Flow rate	76,255 cfm			
	Operating Time	525,600 min/year			
	PM Emissions (Controlled)=2.46E-06 (gr/dscf) x 76,255 (cfm) x 525,600 (min/yr) / 7,000 (gr/lb)=			14.09 lbs/year	1.61E-03 lbs/hr.
	Zinc Emission. (Controlled)Zinc=1.18E-06 (gr/dscf) x76,255 (cfm) x 525,600 (min/yr) / 7,000 (gr/lb)=			6.76 lbs/year	3.38E-03 lbs/hr.
	***Assume Zinc Emissions are PM emissions and are less than 10 microns in size		Scrubber #2	20.84 lbs/year	4.99E-03 lbs/hr.

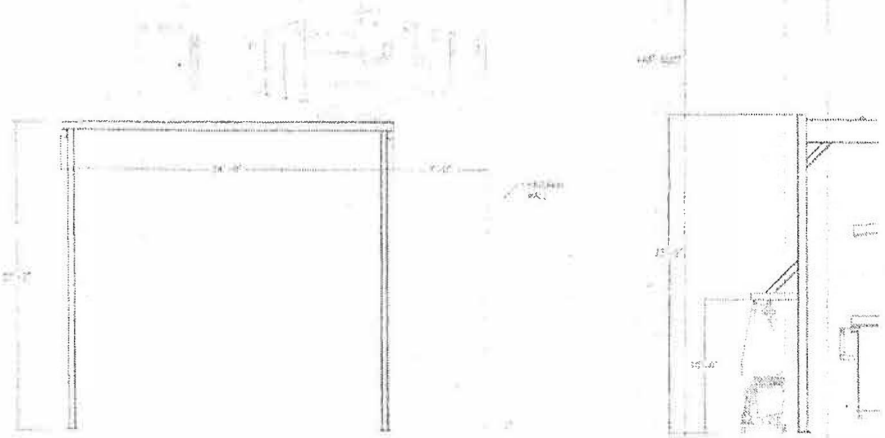
Zinc Emissions + PM Emissions= Total PM Emissions (assuming particle size is less than 10 microns for Zinc)
Total PM Emissions= 8.35E-03 lbs/hr= 7.32E+01 lbs/year 3.66E-02 **tons/year**

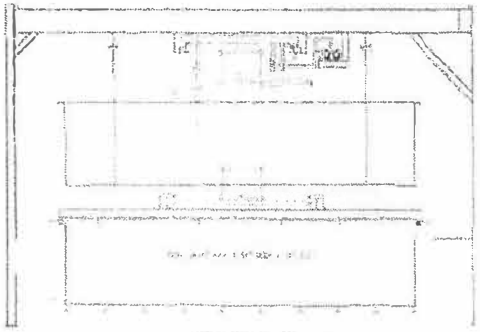
Total PM plater Emissions= 3.66E-02 tons/year



NEW MACHINE #170180

EXISTING MACHINE #050851





MACHINE CROSS SECTION

THOMAS & BETTS

JESSUP ENGINEERING

9-21-17

1716

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
SURFACE COATING DESCRIPTION

Type or print. Submit for each spray booth, dip tank, or other surface coating equipment. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. **Organization's legal name and SOS control number** [as registered with the Tennessee Secretary of State (SOS)]	2. **Emission Source Reference Number**
ABB INSTALLATION PRODUCTS INC. #000909235	54-0047-14

3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☑ No ☐
If Yes, list rule citation, including Part, Subpart, and applicable Sections:
SUBPART WWWWWW

COATING OPERATION DATA

4. Unique Source ID (name/number/letter that uniquely identifies this air contaminant source, like Paint Line 1)
#17161

5. **Type of coating operation**	Spray booth	Dip tank	Other (describe)
	☐	☑	

6. **Spray booth dimensions**	Width (ft.)	Height (ft.)	Depth (ft.)	Number of open sides

7. **Method of spray:**	Airless	Air atomized	Electrostatic			Overspray (Percent)	Date purchased *
			Airless	Disc	Air atomized		
	☐	☐	☐	☐	☐		

8. **Exhaust data:**	Number of fans	Total horsepower	Total volume (CFM)
	2		127,715

9. **Exhaust control:**	None	Waterwash	Exhaust filters	Baffle plates	Adsorption **	Other (Describe)
	☐	☐	☐	☐	☐	WET-BED PACKED FUME SCRUBBER

10. **Exhaust stack data** **	Diameter (Ft.)	Height (Ft.) Above Grade	Flow (CFM)	Specify serial numbers that share this vent
	4/4	22/22	51,460/76,255	17161

11. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).
FLOW RATE

* The actual surface coating equipment (spray gun, spray heads, etc.) and not the spray booth per se determines the status of the source (new or existing).

** Complete one line for each stack or vent. Attach additional sheets if necessary

NOTE: This application will not be processed unless all of the following information is provided.

MATERIAL DATA

12. Coatings, Thinners, and Clean-up Solvents used:

List all types of coatings, thinners, and clean-up solvents used and attach a statement of the chemical composition of each (i.e. Safety Data Sheet). This statement usually may be obtained from the coating, thinner, or clean-up solvent supplier. The minimum information required is the percent of solids by weight, the percent volatile by weight, the hydrocarbon composition and/or description of the volatile component, and the density of the coating, thinner, or clean-up solvent in pounds per gallon.

Coating name	Base [Water, Powder or Solvent*]	%Solids by Weight	%Volatile by Weight	Density (Lbs. /Gal.)	Quantity used		
					Gallons/Day		Gal./Mo.
					Average	Maximum **	Average
MERLIN STARTER	AQ		0	8.47	19	25	390
MERLIN BRIGHTENER	AQ		0	8.55	86	90	1788
ZINC DIP PART A	POWDER		0	N/A	62LB	70LB	1292LB
ZINC DIP PART B	POWDER		0	N/A	60LB	70LB	1250LB
HYPRO YELLOW UVS	AQ		0	9.01	22	30	450
HYPROTEC (TRI-CHROME)	AQ		0	11.76	22	30	458
CLEAN R 235	AQ		0	9.42	12	15	252
LIQUICLEAN LECTRO NA	AQ		0	11.30	14	18	298
**TRI-CHROME ONLY USED IN							
CONVERSION COATING NOT							
ELECTROPLATED							
Thinner name							
Clean – up solvent name							

* Name Solvent Base type

** For new construction, this quantity will be used as a permit limitation on capacity.

13. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Tons/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)		0.00336		0.00703		3	001	99
Sulfur dioxide (SO_2)								
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO_X)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								

* Refer to the tables in the instructions for estimation method and control device codes.

EQUIPMENT DESCRIPTION

14. Equipment manufacturer	Model number	Serial number (or plant ID)
JESSUP ENGINEERING		17161
Construction date 2-1-2018		Modification date
Describe any modifications*		

15. Describe articles coated

BLACK STEEL IS COATED WITH ALKALINE ZINC AND A TRIVALENT CHROMIUM CONVERSION COATING

16. Comments

SIGNATURE

If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required.

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

17. Signature		Date
		3/20/2019
Signer's name (type or print) SHANE SPARKS	**Title** PLANT MANAGER	**Phone number with area code** 423-745-6588

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

HYPROTEC

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 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

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] Harmfu; 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.

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

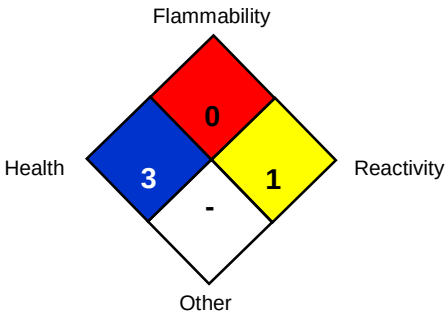
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

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

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:	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:	Material may splatter when water is first applied. Material will heat up with the addition of water.
Explosion Sensitivity to Mechanical Impact:	Not Sensitive.
Explosion Sensitivity to Static Discharge:	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)	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/m³	0.1 mg/m³	0.02 mg/m³
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

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, 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

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 Biflouride)
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/NDSL 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

SAFETY DATA SHEET

HYPROTEC

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 if 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

End of SDS Sheet

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

SAFETY DATA SHEET

CLEAN R 235

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 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

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.

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

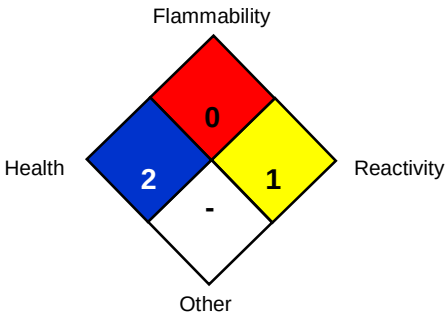
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or respiratory system problems may be aggravated by exposure to this product.

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

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT:	Non-Flammable
AUTOIGNITION TEMPERATURE:	Not Established
FLAMMABLE LIMITS (in air by volume, %):	Lower (LEL): Not Established Upper (UEL): Not Established
FIRE EXTINGUISHING MATERIALS:	Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Containers can build up pressure if exposed to heat
Explosion Sensitivity to Mechanical Impact:	Not Sensitive.
Explosion Sensitivity to Static Discharge:	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)	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).

SAFETY DATA SHEET

CLEAN R 235

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/m³	2 mg/m³	2 mg/m³
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

SOLUBILITY IN WATER (%) Complete
% VOLATILE WEIGHT: 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

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/NDSL 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.

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 if 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.

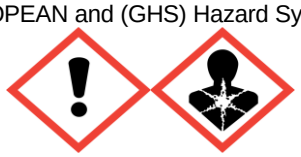
Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

US DOT SYMBOLS

Non-Regulated Material

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 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 dificulty 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.

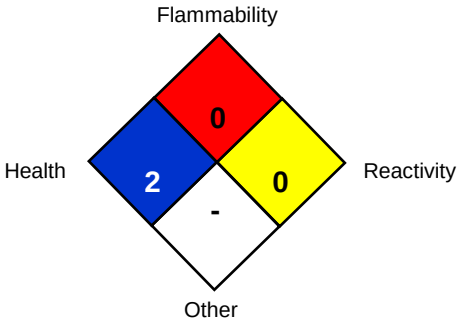
RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

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.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known
Explosion Sensitivity to Mechanical Impact: Not Sensitive.
Explosion Sensitivity to Static Discharge: 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)	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

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.

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

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/NDSL 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 if 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

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

Non-Regulated Material

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
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

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 dificulty 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

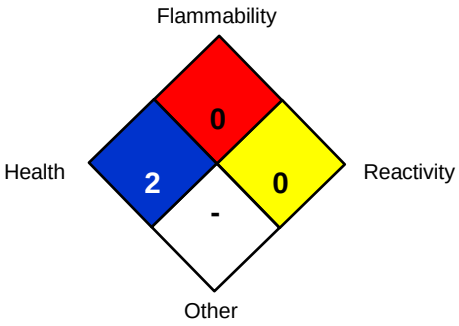
HYPRO YELLOW UVS

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT: 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.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known
Explosion Sensitivity to Mechanical Impact: Not Sensitive.
Explosion Sensitivity to Static Discharge: 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)	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
Sodium Molybdate Dihydrate	10102-40-6	0.5 mg/m³ as Mo	5 mg/m³ as Mo	5 mg/m³ as Mo
Vanadium Pentoxide	1314-62-1	0.05 mg/m³	0.1 mg/m³	0.05 mg/m³

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

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 ot 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

(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/NDSL 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.

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 if 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 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

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 classifiedin 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 dificulty 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.

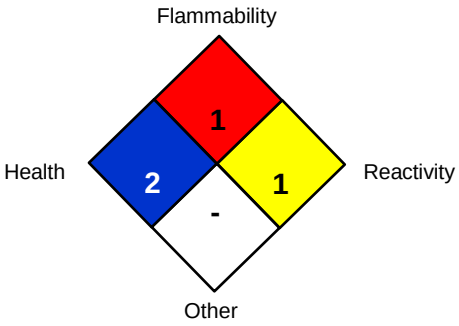
RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT: Non-Flammable
AUTOIGNITION TEMPERATURE: Not Established
FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not Established Upper (UEL): Not Established
FIRE EXTINGUISHING MATERIALS: Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known
Explosion Sensitivity to Mechanical Impact: Not Sensitive.
Explosion Sensitivity to Static Discharge: 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)	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.

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/m³	2 mg/m³	2 mg/m³
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

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 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: 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

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/NDSL 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.

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 if 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 breath 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 classifiedin 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 dificulty 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.

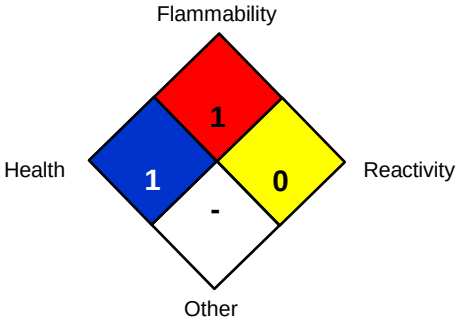
RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

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: None known
Explosion Sensitivity to Mechanical Impact: Not Sensitive.
Explosion Sensitivity to Static Discharge: 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.

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

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

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 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): 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/NDSL 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 if 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

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 dificulty 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

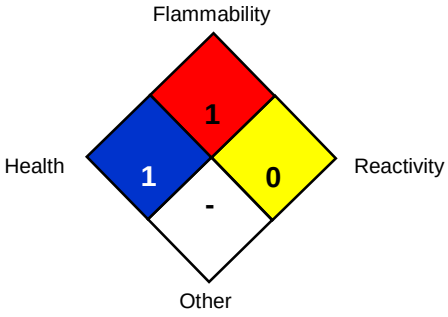
MERLIN STARTER

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT: Non-Flammable
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABLE LIMITS (in air by volume, %): 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: None known
Explosion Sensitivity to Mechanical Impact: Not Sensitive.
Explosion Sensitivity to Static Discharge: 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.

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.

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

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/NDSL 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.

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 if 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

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

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 Biflouride	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 dificulty 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.

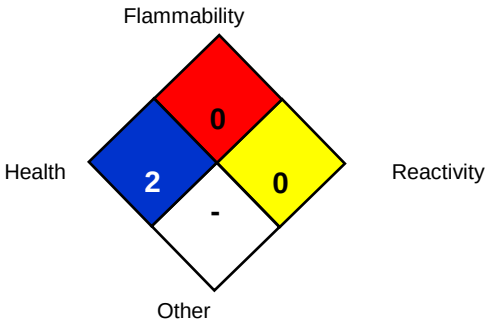
UNUSUAL FIRE AND EXPLOSION HAZARDS: Oxidizers decompose, especially when heated, to yield oxygen or other gases which will increase the burning rate of combustible materials. Contact with easily oxidizable, organic, or other combustible materials may result in ignition, violent combustion or explosion.

Explosion Sensitivity to Mechanical Impact: Not Sensitive.

Explosion Sensitivity to Static Discharge: 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)	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/m³	Not Listed	2.0 mg/m³

Sodium Biflouride	1333-83-1	2.5 mg/m³	2.5 mg/m³	2.5 mg/m³

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.

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

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/NDSL 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 if 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

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

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 dificulty 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

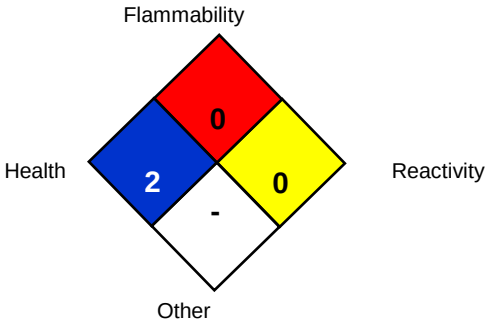
MATERIAL SAFETY DATA SHEET

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.

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.

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/NDSL 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 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 if 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