MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product identifier	**ZRC and Galvilite Cold Galvanizing Compounds - Aerosol**
Version #	01
Issue date	05-February-2014
Revision date	-
Supersedes date	-
CAS #	Mixture
Product code	10000, 20010
Product use	Corrosion protection of iron and steel.
Manufacturer	
Supplier/Manufacturer	ZRC Worldwide
Address	145 Enterprise Drive, Marshfield, MA 02050
Telephone	781-319-0400
Emergency telephone (CHEMTREC)	703-527-3887 CCN15781

2. Hazards Identification

Emergency overview

DANGER

Flammable aerosol. Contents under pressure. Will be easily ignited by heat, spark or flames. Heat may cause the containers to explode.

Causes eye irritation. Vapors may cause drowsiness and dizziness.

Potential health effects

Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Avoid contact with eyes. Causes eye irritation.
Skin	Avoid contact with the skin. May cause skin irritation upon prolonged contact.
Inhalation	Avoid breathing dust/fume/gas/mist/vapors/spray. Vapors may cause drowsiness and dizziness.
Ingestion	May cause discomfort if swallowed. Do not ingest.
Target organs	Eyes. Skin. Gastrointestinal tract. Central nervous system.
Signs and symptoms	Causes serious eye irritation. Exposed individuals may experience eye tearing, redness, and discomfort. Prolonged or repeated contact may dry skin and cause irritation. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Swallowing may cause gastrointestinal irritation.
Potential environmental effects	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Zinc	7440-66-6	30 - 60
Acetone	67-64-1	15 - 40
Propane	74-98-6	5 - 15
Methyl Ethyl Ketone	78-93-3	5 - 10
Stoddard solvent	8052-41-3	5 - 10
N-Butane	106-97-8	3 - 8
Zinc oxide	1314-13-2	0.5 - 1.5
Other components below reportable levels		1 - 5

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Continue rinsing. Get medical attention immediately.
Skin contact	Remove and isolate contaminated clothing and shoes. Immediately flush skin with plenty of water. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
Inhalation	Move to fresh air. Get medical attention if any discomfort continues.
Ingestion	Rinse mouth. Get medical attention if any discomfort continues.
Notes to physician	Provide general supportive measures and treat symptomatically.
General advice	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

5. Fire Fighting Measures

Flammable properties	Flammable by WHMIS criteria. Heat may cause the containers to explode. Ruptured cylinders may rocket.
Extinguishing media	
Suitable extinguishing media	Dry chemicals. Foam. Class B fire extinguisher.
Unsuitable extinguishing media	Water. Do not use water jet as an extinguisher, as this will spread the fire.
Protection of firefighters	
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may explode when exposed to heat or flame. Fire may produce irritating, corrosive and/or toxic gases.
Protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Water runoff can cause environmental damage.
Explosion data	
Sensitivity to static discharge	Yes.
Sensitivity to mechanical impact	Not sensitive.
Hazardous combustion products	Carbon oxides. Various hydrocarbons.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Ventilate closed spaces before entering them. For personal protection, see section 8 of the MSDS.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Methods for containment	Local authorities should be advised if significant spillages cannot be contained. Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop leak if possible without any risk. For waste disposal, see section 13 of the MSDS.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Avoid prolonged exposure. Do not use in areas without adequate ventilation. Wash thoroughly after handling. Avoid release to the environment.
Storage	The pressure in sealed containers can increase under the influence of heat. Do not handle or store near an open flame, heat or other sources of ignition. Keep at temperature not exceeding 49 °C. Store in a closed container away from incompatible materials. Store in a well-ventilated place.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH Biological Exposure Indices

Components	Type	Value
Acetone (CAS 67-64-1)	BEI	50 mg/l
Methyl Ethyl Ketone (CAS 78-93-3)	BEI	2 mg/l

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Acetone (CAS 67-64-1)	STEL	750 ppm	
	TWA	500 ppm	
Methyl Ethyl Ketone (CAS 78-93-3)	STEL	300 ppm	
	TWA	200 ppm	
N-Butane (CAS 106-97-8)	STEL	1000 ppm	
Stoddard solvent (CAS 8052-41-3)	TWA	100 ppm	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction.
	TWA	2 mg/m3	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Acetone (CAS 67-64-1)	STEL	1800 mg/m3	
		750 ppm	
	TWA	1200 mg/m3	
		500 ppm	
Methyl Ethyl Ketone (CAS 78-93-3)	STEL	885 mg/m3	
		300 ppm	
	TWA	590 mg/m3	
		200 ppm	
N-Butane (CAS 106-97-8)	TWA	1000 ppm	
Propane (CAS 74-98-6)	TWA	1000 ppm	
Stoddard solvent (CAS 8052-41-3)	TWA	572 mg/m3	
		100 ppm	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable.
	TWA	2 mg/m3	Respirable.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Acetone (CAS 67-64-1)	STEL	500 ppm	
	TWA	250 ppm	
Methyl Ethyl Ketone (CAS 78-93-3)	STEL	100 ppm	
	TWA	50 ppm	
N-Butane (CAS 106-97-8)	STEL	750 ppm	
	TWA	1000 ppm	
Propane (CAS 74-98-6)	TWA	1000 ppm	
Stoddard solvent (CAS 8052-41-3)	STEL	580 mg/m3	
	TWA	290 mg/m3	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable.
	TWA	2 mg/m3	Respirable.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Acetone (CAS 67-64-1)	STEL	750 ppm	
	TWA	500 ppm	
Methyl Ethyl Ketone (CAS 78-93-3)	STEL	300 ppm	
	TWA	200 ppm	
N-Butane (CAS 106-97-8)	STEL	1000 ppm	
Stoddard solvent (CAS 8052-41-3)	TWA	100 ppm	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction.
	TWA	2 mg/m3	Respirable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Acetone (CAS 67-64-1)	STEL	750 ppm	
	TWA	500 ppm	
Methyl Ethyl Ketone (CAS 78-93-3)	STEL	300 ppm	
	TWA	200 ppm	
N-Butane (CAS 106-97-8)	TWA	800 ppm	
Propane (CAS 74-98-6)	TWA	1000 ppm	
Stoddard solvent (CAS 8052-41-3)	TWA	100 ppm	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction.
	TWA	2 mg/m3	Respirable fraction.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
Acetone (CAS 67-64-1)	STEL	2380 mg/m3	
		1000 ppm	
	TWA	1190 mg/m3	
		500 ppm	
Methyl Ethyl Ketone (CAS 78-93-3)	STEL	300 mg/m3	
		100 ppm	
	TWA	150 mg/m3	
		50 ppm	
N-Butane (CAS 106-97-8)	TWA	1900 mg/m3	
		800 ppm	
Propane (CAS 74-98-6)	TWA	1800 mg/m3	
		1000 ppm	
Stoddard solvent (CAS 8052-41-3)	TWA	525 mg/m3	
		100 ppm	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Fume.
	TWA	5 mg/m3	Fume.
		10 mg/m3	Total dust.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Acetone (CAS 67-64-1)	PEL	2400 mg/m3	
		1000 ppm	
Methyl Ethyl Ketone (CAS 78-93-3)	PEL	590 mg/m3	
		200 ppm	
Propane (CAS 74-98-6)	PEL	1800 mg/m3	
		1000 ppm	
Stoddard solvent (CAS 8052-41-3)	PEL	2900 mg/m3	

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
		500 ppm	
Zinc oxide (CAS 1314-13-2)	PEL	5 mg/m3	Respirable fraction.
		5 mg/m3	Fume.
		15 mg/m3	Total dust.

Engineering controls Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye / face protection Avoid contact with eyes. Wear safety glasses with side shields (or goggles). Eye wash fountain and emergency showers are recommended.

Skin protection Wear appropriate chemical resistant clothing.

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

9. Physical & Chemical Properties

Appearance Gray liquid.

Physical state Gas.

Form Aerosol- Pressurized Liquid.

Color Gray.

Odor Hydrocarbon.

Odor threshold Not available.

pH Not available.

Vapor pressure 50 mm Hg (21°C / 70°F)

Vapor density > 1 (24°C / 77°F)

Boiling point 395.6 °F (202 °C)

Melting point/Freezing point Not available.

Solubility (water) Slightly soluble in water.

Specific gravity Not available.

Flash point < 19.4 °F (< -7.0 °C) Tag Open Cup

Flammability limits in air, upper, % by volume 12.8

Flammability limits in air, lower, % by volume 1.1

Auto-ignition temperature Not available.

VOC < 30 %

Evaporation rate > 1 BuAc (n-Butyl acetate=1)

Bulk density 10.01 lb/gal

Other data

Flammability (solid, gas) Flammable gas.

10. Chemical Stability & Reactivity Information

Chemical stability Material is stable under normal conditions.

Conditions to avoid Avoid temperatures exceeding the flash point.

Incompatible materials Avoid contact with acids and alkalies. Strong oxidizing agents. Water.

Hazardous decomposition products Zinc oxides. CO, CO2, Various hydrocarbon gases. Contact with acids will release flammable hydrogen gas.

11. Toxicological Information

Toxicological data

Components	Species	Test Results
Acetone (CAS 67-64-1)		
Acute		
Dermal		
LD50	Rabbit	20 ml/kg
Inhalation		
LC50	Rat	50 mg/l, 8 Hours
Oral		
LD50	Rat	5800 mg/kg
Methyl Ethyl Ketone (CAS 78-93-3)		
Acute		
Dermal		
LD50	Rabbit	> 8000 mg/kg
Inhalation		
LC50	Rat	11700 mg/l, 4 Hours
Oral		
LD50	Rat	2300 - 3500 mg/kg
N-Butane (CAS 106-97-8)		
Acute		
Inhalation		
LC50	Mouse	680 mg/l, 2 Hours
	Rat	658 mg/l, 4 Hours
Propane (CAS 74-98-6)		
Acute		
Inhalation		
LC50	Rat	> 1442 mg/l, 15 Minutes
Stoddard solvent (CAS 8052-41-3)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
LC50	Rat	> 5.2 mg/l, 4 hours
Oral		
LD50	Rat	> 5000 mg/kg

Acute effects May cause discomfort if swallowed.

Sensitization Not classified.

Local effects Irritating to eyes. May cause discomfort if swallowed. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Chronic effects Prolonged inhalation may be harmful. Not expected to be hazardous by WHMIS criteria.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. Not classifiable as to carcinogenicity to humans.

ACGIH Carcinogens

Acetone (CAS 67-64-1) A4 Not classifiable as a human carcinogen.

Mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Reproductive effects Not classified.

Symptoms and target organs Causes serious eye irritation. Symptoms include itching, burning, redness, and tearing of eyes. Vapors may cause drowsiness and dizziness.

12. Ecological Information

Ecotoxicological data

Components		Species	Test Results
Acetone (CAS 67-64-1)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	> 100 mg/l, 96 hours
		Rainbow trout,donaldson trout (Oncorhynchus mykiss)	4740 - 6330 mg/l, 96 hours
Methyl Ethyl Ketone (CAS 78-93-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	4025 - 6440 mg/l, 48 hours
Fish	LC50	Sheepshead minnow (Cyprinodon variegatus)	> 400 mg/l, 96 hours
Zinc (CAS 7440-66-6)			
Aquatic			
Crustacea	LC50	Daphnia magna	0.068 mg/l, 48 hours
Fish	LC50	Bony fish superclass (Osteichthyes)	0.52 - 3.59 mg/l, 96 hours
Zinc oxide (CAS 1314-13-2)			
Aquatic			
Crustacea	LC50	Water flea (Daphnia magna)	0.098 mg/l, 48 Hours

Ecotoxicity Components of this product are hazardous to aquatic life.

Environmental effects Very toxic to aquatic life with long lasting effects.

Persistence and degradability Not available.

Partition coefficient

Acetone (CAS 67-64-1)	-0.24
Methyl Ethyl Ketone (CAS 78-93-3)	0.29
N-Butane (CAS 106-97-8)	2.89
Propane (CAS 74-98-6)	2.36
Stoddard solvent (CAS 8052-41-3)	3.16 - 7.15

13. Disposal Considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

TDG

UN number UN1950
UN proper shipping name Aerosols, flammable
Transport hazard class(es)
Class 2.2
Subsidiary risk -
Packing group Not applicable.
Environmental hazards Yes
Special precautions for user Not available.

IATA

UN number UN1950
UN proper shipping name Aerosols, flammable
Transport hazard class(es)
Class 2.2
Subsidiary risk -
Packing group Not applicable.
Environmental hazards Yes
ERG Code 10L
Special precautions for user Read safety instructions, MSDS and emergency procedures before handling.

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS, flammable
Transport hazard class(es)	
Class	2.2
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	Yes
EmS	Not available.
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.

15. Regulatory Information

Canadian regulations 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.

WHMIS status Controlled

WHMIS classification B1 - Flammable Gases
D1A - Immediate/Serious-VERY TOXIC
D2A - Other Toxic Effects-VERY TOXIC
D2B - Other Toxic Effects-TOXIC

WHMIS labeling

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

HMIS® ratings Health: 3*
Flammability: 4
Physical hazard: 0

NFPA ratings Health: 2
Flammability: 4
Instability: 0

Disclaimer The information in the sheet was written based on the best knowledge and experience currently available.