

SAFETY DATA SHEET

1. Identification

| | | |
|---|---|--|
| Product identifier | ZRC and Galviline Cold Galvanizing Compounds - Aerosol | |
| Other means of identification | | |
| Product code | 10000, 20010 | |
| Recommended use | Corrosion protection of iron and steel. | |
| Recommended restrictions | None known. | |
| Manufacturer/Importer/Supplier/Distributor information | | |
| Supplier/Manufacturer | ZRC Worldwide | |
| Address | 145 Enterprise Drive, Marshfield, MA 02050 | |
| Telephone | 781-319-0400 | |
| Emergency telephone (CHEMTREC) | 703-527-3887 CCN15781 | |
| Email | info@zrcworldwide.com | |

2. Hazard(s) identification

| | | |
|------------------------------|--|-----------------------------|
| Physical hazards | Flammable aerosols | Category 1 |
| Health hazards | Serious eye damage/eye irritation | Category 2A |
| | Specific target organ toxicity following single exposure | Category 3 narcotic effects |
| Environmental hazards | Hazardous to the aquatic environment, acute hazard | Category 1 |
| | Hazardous to the aquatic environment, long-term hazard | Category 1 |

Label elements



Signal word Danger

Hazard statement Extremely flammable aerosol. Causes serious eye irritation. May cause drowsiness or dizziness. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Precautionary statements

| | |
|-------------------|---|
| Prevention | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. Avoid breathing gas. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear eye protection/face protection. |
| Response | IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTRE/doctor if you feel unwell. If eye irritation persists: Get medical advice/attention. Collect spillage. |
| Storage | Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122°F. |
| Disposal | Dispose of contents/container in accordance with local/regional/national/international regulations. |

Other hazards None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

| Chemical name | CAS number | % |
|---------------|------------|---------|
| Zinc | 7440-66-6 | 40 - 50 |

| | | |
|---------------------|-----------|---------|
| Acetone | 67-64-1 | 15 - 25 |
| Propane | 74-98-6 | 5 - 15 |
| Methyl ethyl ketone | 78-93-3 | 5 - 10 |
| N-Butane | 106-97-8 | 3 - 8 |
| Zinc oxide | 1314-13-2 | ≤ 2 |

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation Move to fresh air. Get medical attention if any discomfort continues.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion Not likely, due to the form of the product. Rinse mouth. Get medical attention if any discomfort continues.

Most important symptoms/effects, acute and delayed Causes serious eye irritation. Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically.

General information In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

5. Fire-fighting measures

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.

Specific hazards arising from the chemical Contents under pressure. Pressurised container may explode when exposed to heat or flame. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions 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 vapour 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.

Specific methods Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out. In the event of fire and/or explosion do not breathe fumes. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

General fire hazards Extremely flammable aerosol.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and 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 the flow of material, if this is without risk. Collect spillage. Use water spray to reduce vapours or divert vapour cloud drift. Scoop up used absorbent into drums or other appropriate container. Prevent product from entering drains. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Pressurised container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Keep away from open flames, hot surfaces and sources of ignition. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Do not taste or swallow. Avoid breathing gas. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C. Do not puncture, incinerate or crush. Keep away from heat, sparks and open flame.

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

| Components | Type | Value | Form |
|-----------------------------------|------|----------|----------------------|
| Acetone (CAS 67-64-1) | STEL | 500 ppm | |
| | TWA | 250 ppm | |
| Methyl ethyl ketone (CAS 78-93-3) | STEL | 300 ppm | |
| | TWA | 200 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 | |
| | TWA | 300 ppm 590 mg/m3 200 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 | |
| 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 | 500 ppm | |
| | TWA | 250 ppm | |
| Methyl ethyl ketone (CAS 78-93-3) | STEL | 300 ppm | |
| | TWA | 200 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 | |
| Zinc oxide (CAS 1314-13-2) | STEL | 10 mg/m3 | Respirable fraction. |
| | TWA | 2 mg/m3 | Respirable fraction. |

Canada. Quebec OELs. (Ministry of Labour - 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 | |
| Methyl ethyl ketone (CAS 78-93-3) | STEL | 500 ppm | |
| | | 300 mg/m3 | |
| | TWA | 100 ppm | |
| Zinc oxide (CAS 1314-13-2) | STEL | 150 mg/m3 | Fume. |
| | | 50 ppm | |
| | TWA | 10 mg/m3 | Fume. |
| | | 5 mg/m3 | Fume. |
| | | 10 mg/m3 | Total dust. |

Biological limit values**ACGIH Biological Exposure Indices**

| Components | Value | Determinant | Specimen | Sampling time |
|-----------------------------------|---------|-------------|----------|---------------|
| Acetone (CAS 67-64-1) | 25 mg/l | Acetone | Urine | * |
| Methyl ethyl ketone (CAS 78-93-3) | 2 mg/l | MEK | Urine | * |

* - For sampling details, please see the source document.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide easy access to water supply and eye wash facilities.

Individual protection measures, such as 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**Hand protection**

For prolonged or repeated skin contact use suitable protective gloves. Neoprene gloves are recommended.

Other

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.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using do not smoke. When using, do not eat, drink or smoke. Do not get this material on clothing. Wash hands after handling. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

| | |
|-----------------------|------------------------------|
| Appearance | Grey liquid. |
| Physical state | Gas. |
| Form | Aerosol- Pressurized Liquid. |
| Colour | Grey. |

| | |
|---|------------------------------------|
| Odour | Hydrocarbon. |
| Odour threshold | Not available. |
| pH | Not available. |
| Melting point/freezing point | Not available. |
| Initial boiling point and boiling range | 202 °C (395.6 °F) |
| Flash point | < -7.0 °C (< 19.4 °F) Tag Open Cup |
| Evaporation rate | > 1 BuAc (n-Butyl acetate=1) |
| Flammability (solid, gas) | Flammable gas. |
| Upper/lower flammability or explosive limits | |
| Flammability limit - lower (%) | 1.1 |
| Flammability limit - upper (%) | 12.8 |
| Explosive limit - lower (%) | Not available. |
| Explosive limit – upper (%) | Not available. |
| Vapour pressure | 50 mm Hg (21°C / 70°F) |
| Vapour density | > 1 (24°C / 77°F) |
| Relative density | 1.2 |
| Solubility(ies) | |
| Solubility (water) | Slightly soluble in water. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Not available. |
| Other information | |
| Bulk density | 10.01 lb/gal |
| Explosive properties | Not explosive. |
| Oxidising properties | Not oxidising. |
| VOC | < 30 % |

10. Stability and reactivity

| | |
|---|---|
| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| Chemical stability | Risk of ignition. Material is stable under normal conditions. |
| Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use. |
| Conditions to avoid | Heat, flames and sparks. Avoid temperatures exceeding the flash point. Contact with incompatible materials. |
| Incompatible materials | Avoid contact with acids and alkalies. Strong oxidising agents. Water. |
| Hazardous decomposition products | Zinc oxides. CO, CO ₂ , Various hydrocarbon gases. Contact with acids will release flammable hydrogen gas. |

11. Toxicological information

Information on likely routes of exposure

| | |
|---------------------|--|
| Inhalation | Vapours may cause drowsiness and dizziness. |
| Skin contact | Prolonged or repeated contact may dry skin and cause irritation. |
| Eye contact | Causes serious eye irritation. |
| Ingestion | May cause discomfort if swallowed. |

| | |
|---|---|
| Symptoms related to the physical, chemical and toxicological characteristics | Causes serious eye irritation. Symptoms include itching, burning, redness, and tearing of eyes. Vapours may cause drowsiness and dizziness. |
|---|---|

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

| 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 |
| Zinc (CAS 7440-66-6) | | |
| Acute | | |
| Oral | | |
| LD50 | Rat | 630 mg/kg |
| Skin corrosion/irritation | Not classified. | |
| Serious eye damage/eye irritation | Causes serious eye irritation. | |
| Respiratory or skin sensitisation | | |
| Respiratory sensitisation | Not classified. | |
| Skin sensitisation | Not classified. | |
| Germ cell mutagenicity | No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic. | |
| 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. | |
| Canada - Manitoba OELs: carcinogenicity | | |
| Acetone (CAS 67-64-1) | Not classifiable as a human carcinogen. | |
| Reproductive toxicity | Not classified. | |
| Specific target organ toxicity - single exposure | Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea. | |
| Specific target organ toxicity - repeated exposure | Not classified. | |
| Aspiration hazard | Not classified. | |
| Chronic effects | Prolonged inhalation may be harmful. | |
| Further information | No other specific acute or chronic health impact noted. | |

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

| Components | Species | Test results |
|--------------------------------------|--|--|
| Acetone (CAS 67-64-1) | | |
| Aquatic | | |
| Fish | LC50 | Fathead minnow (<i>Pimephales promelas</i>) > 100 mg/l, 96 hours |
| Zinc (CAS 7440-66-6) | | |
| Aquatic | | |
| Crustacea | LC50 | Daphnia magna 0.068 mg/l, 48 hours |
| Zinc oxide (CAS 1314-13-2) | | |
| Aquatic | | |
| Crustacea | LC50 | Water flea (<i>Daphnia magna</i>) 0.098 mg/l, 48 Hours |
| Persistence and degradability | No data is available on the degradability of this product. | |
| Bioaccumulative potential | No data available for this product. | |

Partition coefficient n-octanol / water (log Kow)

| | |
|-----------------------------------|-------|
| Acetone (CAS 67-64-1) | -0.24 |
| Methyl ethyl ketone (CAS 78-93-3) | 0.29 |

Mobility in soil The product is slightly soluble in water.

Other adverse effects The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F
D003: Waste Reactive material

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

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 available. |
| Environmental hazards | Yes |
| Special precautions for user | Not available. |

IATA

| | |
|-------------------------------------|---|
| UN number | UN1950 |
| UN proper shipping name | Aerosols, flammable |
| Transport hazard class(es) | |
| Class | 2.1 |
| Subsidiary risk | - |
| Label(s) | 2.1 |
| Packing group | Not available. |
| Environmental hazards | Yes |
| ERG Code | 10L |
| Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

IMDG

| | |
|-------------------------------------|---|
| UN number | UN1950 |
| UN proper shipping name | AEROSOLS, flammable |
| Transport hazard class(es) | |
| Class | 2.1 |
| Subsidiary risk | - |
| Packing group | Not available. |
| Environmental hazards | |
| Marine pollutant | Yes |
| EmS | F-D, S-U |
| Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

General information Limited Quantity exemption may apply.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Canada. Excluded VOCs. Guidelines for Volatile Organic Compounds in Consumer Products. CEPA 1999. Environment Canada, as amended

Acetone (CAS 67-64-1)

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Ontario. Toxic Substances. Toxic Reduction Act, 2009. Regulation 455/09 (July 1, 2011)

Acetone (CAS 67-64-1)

Zinc (CAS 7440-66-6)

Zinc oxide (CAS 1314-13-2)

Precursor Control Regulations

Acetone (CAS 67-64-1)

Class B

Methyl ethyl ketone (CAS 78-93-3)

Class B

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Zinc (CAS 7440-66-6)

International Inventories

| 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

Issue date 31-May-2017

Revision date -

Version No. 01

List of abbreviations
LC50: Lethal Concentration, 50%.
LD50: Lethal Dose, 50%.
STEL: Short term exposure limit.
TWA: Time weighted average.

References

ESIS (European chemical Substances Information System)
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits
GOST 30333-2007 - Chemical production safety passport. General requirements
JIS Z 7252:2009 Classification of chemicals based on "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)"
JIS Z 7253:2012 Hazard communication of chemicals based on GHS – Labelling and Safety Data Sheet (SDS)
Japan Chemical Industry Association (JCIA) GHS Guideline, June 2012

Disclaimer

This safety data sheet was prepared in accordance with JIS Z 7253:2012. Additional information is given in the Material Safety Data Sheet. The information in the sheet was written based on the best knowledge and experience currently available.