SAFETY DATA SHEET

CSM-3

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ACCORDING TO OSHA HCS (29 CFR 1910.1200)

SECTION 1: IDENTIFICATION

Product identifier

Product Name	CSM-3
Other Means of Identification	None known.

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

Identified Use(s)	Metal surface treatment products, including galvanic and electroplating products.
Uses Advised Against	None known.

Details of the supplier of the safety data sheet

Company Identification	VISHAY MEASUREMENTS GROUP, INC. Post Office Box 27777 Raleigh, NC 27611 USA
Telephone	919-365-3800
Fax	919-365-3945
E-Mail (competent person)	mm.us@vpgsensors.com

Emergency telephone number

Emergency Phone No.	+1 800-262-8200 (for spills and releases)
Languages spoken	English - CHEMTREC (24 hours)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the chemical in accordance with paragraph (d) of §1910.1200

Physical hazards	Aerosol, Category 1
Health hazards	Serious eye damage/irritation, Category 2 Acute toxicity, Inhalation, Category 4 Specific target organ toxicity (single exposure), Category 3 (narcotic effects)
Environmental hazards	Hazardous to the aquatic environment, Chronic, Category 3

Label elements

Product Name	CSM-3
Hazard Pictogram(s)	
Signal Word(s)	Danger
Contains:	Trans-Dichloroethylene
Hazard Statement(s)	Extremely flammable aerosol. Pressurised container: May burst if heated. Causes serious eye irritation. Harmful if inhaled. May cause drowsiness or dizziness. Harmful to aquatic life with long lasting effects.

Precautionary Statement(s)

Avoid breathing spray.
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 CENTER/doctor if you feel unwell.
Avoid release to the environment.
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.
Protect from sunlight. Do not expose to temperatures exceeding 50°C/ 122°F.

Other hazards

Percent of the mixture consists of ingredient(s) of unknown acute toxicity:

0 percent of the mixture consists of ingredient(s) of unknown acute inhalation toxicity
0 percent of the mixture consists of ingredient(s) of unknown acute oral toxicity
0 percent of the mixture consists of ingredient(s) of unknown acute dermal toxicity

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances.
Not applicable

Mixtures Substances in preparations / mixtures
Classification: OSHA HCS (29 CFR 1910.1200)

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
Trans-Dichloroethylene	> 90	156-60-5	205-860-2	Flammable Liquid, Category 2 Eye Irritant, Category 2 Acute toxicity, Inhalation, Category 4 STOT, Single Exposure, Category 3, Narcotic Effects Hazardous to the aquatic environment, Chronic, Category 3
Carbon Dioxide	1- 10	124-38-9	204-696-9	Pressurized Gas

For full text of H/P Statements see section 16.

SECTION 4: FIRST AID MEASURES

Description of first aid measures

Self-protection of the first aider: Avoid breathing mist/vapours/spray. Ensure adequate ventilation. Wear suitable protective clothing. Wear suitable respiratory protective equipment if exposure to high levels of material are likely. Avoid contact with skin, eyes or clothing.

Inhalation: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

Skin Contact: IF ON SKIN: Gently wash with plenty of soap and water. Remove contaminated clothing and wash clothing before reuse. If irritation (redness, rash, blistering) develops, get medical attention.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion	IF SWALLOWED: Rinse mouth. Do not give anything by mouth to an unconscious person. Do NOT induce vomiting. If symptoms occur obtain medical attention.
Most important symptoms and effects, both acute and delayed	Causes serious eye irritation. Harmful if inhaled. May cause drowsiness or dizziness. May cause cardiac arrhythmia. Ingestion may cause irritation of the gastrointestinal tract.
Indication of any immediate medical attention and special treatment needed	Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable Extinguishing media	As appropriate for surrounding fire. Extinguish preferably with foam, carbon dioxide or dry chemical.
Unsuitable extinguishing media	Do not use water jet. Direct water jet may spread the fire.
Special hazards arising from the substance or mixture	Extremely flammable aerosol.Contains gas under pressure; may explode if heated. Do not pierce or burn, even after use. Thermal decomposition will evolve toxic and corrosive vapours. Carbon dioxide, Carbon monoxide, Phosgene and Hydrogen chloride. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Sealed containers may rupture explosively if hot.
Advice for fire-fighters	Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Ensure adequate ventilation. Stop leak if safe to do so. Eliminate all ignition sources if safe to do so. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid breathing mist/vapours/spray. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. See Section: 8. The vapour is heavier than air; beware of pits and confined spaces.
Methods and material for containment and cleaning up	Ensure suitable personal protection during removal of spillages. Use non-sparking equipment when picking up flammable spill. Adsorb spillages onto sand, earth or any suitable adsorbent material. Do NOT absorb in saw-dust or other combustible absorbents. Transfer to a lidded container for disposal or recovery. Ventilate the area and wash spill site after material pick-up is complete. Dispose of this material and its container as hazardous waste. Allow small spillages to evaporate provided there is adequate ventilation.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling	Ensure adequate ventilation. Avoid breathing spray. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. See Section: 8. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Do not use sparking tools. Do not spray on an open flame or other ignition source. Pressurised container - Do not pierce or burn, even after use. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.
Conditions for safe storage, including any incompatibilities	Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from direct sunlight. Do not reuse empty containers. Opened containers should be carefully resealed and stored in an upright position.
Storage temperature	Keep cool. Do not expose to temperatures exceeding 50°C/ 122°F.

Incompatible materials	Isolate from reducers and flammable/ combustible materials etc in storage. Keep away from: Strong oxidising agents, Acids and Alkalis.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note	Source
Carbon dioxide	124-38-9	5000	9000	-	-		OSHA (Z-1)
		5000	-	30000	-	A4	ACGIH
		5000	9000	30000	54000		NIOSH
Trans-Dichloroethylene	156-60-5	200	-	-	-		ACGIH

Note: OSHA PELs 1910.1000 TABLE Z-1/ ACGIH TLVs
Source:
OSHA: Occupational Health and Safety Act - Permissible Exposure Limit (PEL), 1910.1000 TABLE Z-1
NIOSH: National Institute for Occupational Safety & Health (NIOSH) Suppliers recommended exposure limit (RELs)
ACGIH: American Conference of Governmental Industrial Hygienists - Threshold Limit Value (TLV) 2019

Notes:
A4 - Not Classifiable as a Human Carcinogen

Biological limit value	Not established.
Exposure controls	
Appropriate engineering controls	Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Local exhaust recommended. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Eyewash facilities should be stationed close to workplace where possible.
Individual protection measures, such as personal protective equipment (PPE)	General hygiene measures for the handling of chemicals are applicable. Avoid contact with skin, eyes or clothing. Avoid breathing mist/vapours/spray. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/face protection 	Wear eye protection with side protection (EN166).
Skin protection 	**Hand protection**: Not normally required. Wear suitable gloves if prolonged skin contact is likely. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. **Body protection**: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Recommended: Wear work clothes with long sleeves.
Respiratory protection	Use only in well-ventilated areas. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid inhalation of high concentrations of vapours.

High concentrations: Wear suitable respiratory equipment. Recommended: Self-contained breathing apparatus (DIN EN 137)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Colourless liquid
Odour	Sharp, Harsh
Odour threshold	17 ppm
pH	Not established.
Melting point/freezing point	- 50 °C
Initial boiling point and boiling range	48 °C
Flash point	2 – 4 °C
Evaporation rate	2.80
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	9.7 – 12.8 %
Vapour pressure	Not determined.
Vapour density	Not determined.
Relative density	1.28 g/ml @ 20 °C
Solubility(ies)	Soluble in water. 6.3 mg/ml @ 25 °C
Partition coefficient: n-octanol/water	Not established.
Auto-ignition temperature	Not established.
Decomposition Temperature	Not established.
Viscosity	Not established.

Other information

Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
Volatile Organic Compound Content (%):	96

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	Extremely flammable aerosol. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep from direct sunlight. Do not expose to temperatures exceeding 50°C/ 122°F. Do not spray on an open flame or other ignition source. Take precautionary measures against static discharge.
Incompatible materials	Isolate from reducers and flammable/ combustible materials etc in storage. Keep away from: Strong oxidising agents, Acids and Alkalis.
Hazardous decomposition product(s)	Thermal decomposition will evolve toxic and corrosive vapours. Carbon dioxide, Carbon monoxide, Phosgene and Hydrogen chloride.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects (Substances in preparations / mixtures)

Acute toxicity

Ingestion	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Inhalation	Acute toxicity, Inhalation, Category 4; Harmful if inhaled. Acute Toxicity Estimate Mixture Calculation: Estimated LC50: >10 – ≤20 mg/l

	Trans-dichloroethylene	Acute toxicity, Inhalation, Category 4. EU Harmonised Classification. LC50 11 mg/l (Acute Toxicity Estimate)
Skin Contact		Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Skin corrosion/irritation		Based upon the available data, the classification criteria are not met.
Serious eye damage/irritation		Serious eye damage/irritation, Category 2; Causes serious eye irritation.
	Trans-dichloroethylene	Serious eye damage/irritation, Category 2 Irritating to eyes. (rabbit) – OECD 405
Respiratory or skin sensitization		Based upon the available data, the classification criteria are not met.
Germ cell mutagenicity		Based upon the available data, the classification criteria are not met.
Carcinogenicity		Based upon the available data, the classification criteria are not met.
Reproductive toxicity		Based upon the available data, the classification criteria are not met.
STOT - single exposure		Specific target organ toxicity (single exposure), Category 3 (narcotic effects); May cause drowsiness or dizziness.
	Trans-dichloroethylene	Specific target organ toxicity (single exposure), Category 3 (narcotic effects). No information available.
STOT - repeated exposure		Based upon the available data, the classification criteria are not met.
Aspiration hazard		Based upon the available data, the classification criteria are not met.

Information on likely routes of exposure	
Inhalation	Possible route of exposure.
Ingestion	Unlikely route of exposure.
Skin Contact	Possible route of exposure.
Eye Contact	Unlikely route of exposure.
Early onset symptoms related to exposure	Causes serious eye irritation. Harmful if inhaled. May cause drowsiness or dizziness. May cause cardiac arrhythmia. Ingestion may cause irritation of the gastrointestinal tract.
Delayed health effects from exposure	None Known
Exposure levels and health effects	See Section: 8
Interactive effects	
Other information	
NTP Report on Carcinogens	No components of the mixture are listed
IARC Monographs	No components of the mixture are listed

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity		Hazardous to the aquatic environment, Chronic, Category 3; Harmful to aquatic life with long lasting effects. Estimated Mixture LC50 >10 ≤ 100 mg/l (Fish)
	Trans-dichloroethylene	Hazardous to the aquatic environment, Chronic, Category 3. LC50= 135 mg/L (Fish, 96h) EU Harmonised Classification.
Persistence and degradability		No data for the mixture as a whole.
Bioaccumulative potential		No data for the mixture as a whole.
Mobility in soil		No data for the mixture as a whole. The product is predicted to have high mobility in soil (Highly volatile. May evaporate quickly.)
Other adverse effects		None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	This material and its container must be disposed of as hazardous waste. Dispose of contents in accordance with local, state or national legislation. Containers of

this material may be hazardous when empty since they retain product residue. Dispose of wastes in an approved waste disposal facility. Do not reuse empty containers. Do not pierce or burn container, even after use.

SECTION 14: TRANSPORT INFORMATION

	Road/Rail (ADR/RID)	Sea transport (IMDG)	Air (ICAO/IATA)
UN number	UN 1950	UN 1950	UN 1950
UN proper shipping name	AEROSOLS, flammable	AEROSOLS, flammable	AEROSOLS, flammable
Transport hazard class(es)	2 .1	2.1	2.1
Packing group	None assigned.	None assigned.	None assigned.
Environmental hazards	Not classified as a Marine Pollutant. / Environmentally hazardous substance		
Special precautions for user	See Section: 2		
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.		
Additional Information	Recommended: Road/Rail/Sea transport only.		

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

US Federal Regulations

TSCA Chemical Data Reporting (CDR) Rule	Carbon dioxide- 202 TSCA Chemical Data Reporting (CDR) Rule Trans-dichloroethylene- 202 TSCA Chemical Data Reporting (CDR) Rule
NIOSH Occupational Carcinogen List	All chemicals are not listed
EPCRA Section 313	All chemicals are not listed
CWA 307- Toxic	All chemicals are not listed
CERCLA - Hazardous Substances	All chemicals are not listed
CWA 311 - Hazardous Substances	All chemicals are not listed

US State Regulations

Proposition 65 (California)	All chemicals are not listed
Pennsylvania (PA) State Right to Know Lists	Carbon dioxide and Trans-dichloroethylene- Pennsylvenia Hazardous Substance List
New York -State Right to Know Lists	Carbon dioxide- Threshold Reporting Quantity= 500 lb Trans-dichloroethylene- Threshold Reporting Quantity= 10 lb
Minnesota (MN) State Right to Know Lists	All chemicals are not listed
Massachusetts (MA) – Toxic Use reduction act	All chemicals are not listed

Non-Regional

IARC Monographs	All chemicals are not listed

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1-16.

Version	3.0
Revision date	17 February 2022
Date of preparation	29 September 2015

Safety Data Sheet according to US OSHA Hazard Communication Standard (29 CFR 1910.1200)

References: Existing Safety Data Sheet (SDS), EU Harmonised Classification(s) for Trans-Dichloroethylene (CAS# 156-60-5), and the Classification and Labelling Inventory for Carbon dioxide (CAS# 124-38-9).

Classification of the chemical in accordance with paragraph (d) of §1910.1200	Classification Procedure

Flam. Aerosol 1	according to US OSHA Hazard Communication Standard (29 CFR 1910.1200)
Eye Irrit. 2	Threshold Calculation
Acute Tox. 4	Acute Toxicity Estimate Mixture Calculation
STOT SE 3	Threshold Calculation
Aquatic Chronic 3	Summation Calculation

LEGEND

ACGIH	American Conference of Governmental Industrial Hygienists
ADR/RID	European Agreement concerning the International Carriage of Dangerous Goods by Road/ Regulations concerning the International Carriage of Dangerous Goods by Rail
CAS	Chemical Abstracts Service
EC	European Community
EU	European Union
ICAO/IATA	International Civil Aviation Organization / International Air Transport Association
IMDG	International Maritime Dangerous Goods
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety & Health
NTP	National Toxicology Program
OSHA	Occupational Safety & Health Administration
PEL	Permissible Exposure Limit
REL	Recommended exposure limit
STEL	Short-term Exposure Limit
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
UN	United Nations

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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