World Headquarters
Hach Company
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MSDS No : M00379

SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Name: Alkaline Cyanide Reagent
Catalog Number: 2122326

HACH LANGE GmbH
Willstätterstrasse 11
40549 Düsseldorf, Germany
+49 -(0)211 -52880

Emergency Telephone Numbers:
(Poison Information Center Main)
(+49 (0) 6131 19240) 24 HR

SDS Number: M00379
Chemical Name: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Use of the substance/preparation: Determination of manganese
CAS No.: Not applicable
Hazard: Toxic. Causes burns.
Date of MSDS Preparation:
Day: 12
Month: 01
Year: 2006
Additional Emergency Response Numbers: Austria: +49 (0)6131 19240, Belgium: +32 -(0)70 -245245, France: +33 (0)1 -40370404, Italy: +39 -02-66101029, Netherlands: +31 -(0)30 -2748888, Switzerland: +41 -(0)1 -2515151

2. COMPOSITION / INFORMATION ON INGREDIENTS

Sodium Hydroxide
EEC Number: 2151855
CAS No.: 1310-73-2
Percent Range: 1,0 - 5,0
Percent Range Units: weight / volume
Ingredient EEC Symbol: C - CORROSIVE
Ingredient R phrase(s) (R phrase details given in Heading 16): R 34
TLV: 2 mg/m³
PEL: 2 mg/m³
EU Occupational Exposure Limits: 2 mg/m ^{3}

Demineralized Water
EEC Number: 2317912
CAS No.: 7732-18-5
Percent Range: 90,0 - 100,0
Percent Range Units: volume / volume
Ingredient EEC Symbol: Not applicable
Ingredient R phrase(s) (R phrase details given in Heading 16): Not applicable
TLV: Not established
PEL: Not established
EU Occupational Exposure Limits: Not established

Sodium Cyanide
EEC Number: 2055994
CAS No.: 143 -33 -9
Percent Range: 5,0 - 15,0

Percent Range Units: weight / volume
Ingredient EEC Symbol: T - TOXIC N - Dangerous for the Environment
Ingredient R phrase(s) (R phrase details given in Heading 16): R 23/24/25 R 32 R 51/53
TLV: 5 mg/m ^{3} (skin)
PEL: 5 mg/m ^{3} (skin)
EU Occupational Exposure Limits: None found. Cyanides are on the Priority List for OELs.

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: Clear, colorless liquid
Odor: None
EU Symbols: T - TOXIC N - DANGEROUS FOR THE ENVIRONMENT
R PHRASES: R 23/24/25: Toxic by inhalation, in contact with skin and if swallowed. R 32: Contact with acids liberates very toxic gas. R 34: Causes burns. R 51/53: Toxic to aquatic organisms, may cause long -term adverse effects in the aquatic environment.

Emergency response to cyanide exposure should be planned and practiced prior to work with cyanides. First responders should start treatment and get medical attention immediately. Antidote: break an amyl nitrite pearl in cloth and hold lightly under no se for 15 seconds. Repeat 5 times at 15 second intervals. Transport to hospital immediately. Note to Physician: Have a cyanide first aid kit available. If patient has not responded to amyl nitrite, inject intraveneously 10 ml of a 3% solution of sodiu m nitrite at a rate not greater than 2,5 - 5 ml/min. Follow directly with 50 ml of a 25 % solution of sodium thiosulfate at the same rate by the same route. Keep patient under observation. If signs of poisoning persist or reappear, repeat nitrite and th iosulfate injections 1 hour later in one -half the original doses.

Protective Equipment:
Potential Health Effects:
Eye Contact (EC): Causes burns
Skin Contact (EC): Causes burns
Skin Absorption (EC): Toxic Will be absorbed through the skin. Effects similar to those of ingestion
Target Organs (SA E): Central nervous system
Ingestion (EC): Toxic May be rapidly fatal. Causes: cyanosis (a reduction of the blood's ability to carry oxygen, giving a bluish discoloration) burns of the mo uth and esophagus May cause: anxiety headache confusion irregular heartbeat convulsions coma death
Target Organs (Ing E): Central nervous system Brain
Inhalation: Toxic Effects similar to those of ingestion.
Target Organs (Inh E): Cen tral nervous system Brain
Medical Conditions Aggravated: Pre -existing: Skin conditions
Chronic Effects: Chronic overexposure may cause central nervous system effects
Cancer / Reproductive Toxicity Information:
This product does NOT contain any IARC listed chemicals.

Additional Cancer / Reproductive Toxicity Information: Contains: an experimental mutagen.
Toxicologically Synergistic Products: None reported

4. FIRST AID MEASURES

Eye Conta ct: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.
Ingestion (First Aid): Break an amyl nitrite pearl in cloth and hold lightly under nose for 15 seconds. Repeat every five minutes. Administer artificial respiration with 100% oxygen. Transport to hospital immediately.
Inhalation: Break an amyl nitrite pearl in cloth and hold lightly under nose for 15 seconds. Repeat 5 times at 15 second intervals. Transport to hospital immediately.

5. FIRE FIGHTING MEASURES

Flammable Properties: During a fire, irritating and highly toxic ga ses may be generated by thermal decomposition.
Hazardous Combustion Products: Toxic fumes of: cyanide compounds sodium monoxide
Fire / Explosion Hazards: May react violently with: strong acids
Static Discharge: None reported.
Mechanical Impa ct: None reported

Extinguishing Media: Use media appropriate to surrounding fire conditions
Extinguishing Media NOT To Be Used: Not applicable
Fire Fighting Instruction: As in any fire, wear self -contained breathing apparatus pressure -demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chem icals. See Section 13, Special Instructions for disposal assistance.
Containment Technique: Releases of this material may contaminate the environment. Stop spilled material from being released to the environment. Absorb spilled liquid with non -react ive sorbent material.
Clean -up Technique: Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Carefully mist spill with bleach until saturated. Scoop up slurry into a large beaker. Oxidize spilled material with a 50% exces s of bleach containing at least 5% sodium hypochlorite. Allow to react for 24 hours in a fume hood. Flush reacted material to the drain with a large excess of water. Decontaminate area with bleach solution.
Evacuation Procedure: Evacuate general are a (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. Deny access to unnecessary and unprotected personnel. If conditions warrant, increase the size of the evacuation.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.
Storage: Keep away from: acids / acid fumes. Protect from: heat freezing
Special Packaging Instructions: Not applicable
Use of the substance/preparation: Determination of manganese

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Have a safety shower nearby. Have an eyewash station nearby. Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this pr oduct.
Personal Protective Equipment:
Eye Protection: chemical splash goggles
Skin / Hand Protection: neoprene latex gloves lab coat
Inhalation Protection: laboratory fume hood
Precautionary Measures: Avoid contact with: eyes skin clot hing Do not breathe: mist/vapor Wash thoroughly after handling. Keep away from: acids/acid fumes Protect from: heat freezing
TLV: Cyanide 5 mg/m ^{3} (skin)
PEL: Cyanide 5 mg/m ^{3} (skin)
EU Occupational Exposure Limits: Not established

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid
Physical State: Liquid
Odor: None
pH: 12,3
Vapor Pressure: Not available
Vapor Density (air = 1): Not available
Boiling Point: 92 C
Meltin g Point: Not available
Flash Point: Not applicable
Method: Not applicable
Autoignition Temperature: Not available
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Specific Gravity (water = 1): 1,112
Evaporation Rate (water = 1): 0,57

Volatile Organic Compounds Content: Not applicable
Partition Coefficient (n -octanol / water): Not applicable
Solubility:
Water: Miscible
Acid: Produces HCN
Other: Not determined
Metal Corrosivity:
Steel: Not determined
Aluminum: Not determined

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Conditions to Avoid: Extreme temperatures
Reactivity / Incompatibility: Incompatible with: acids
Hazardous Decomposition: Contact with acids/acid fumes releases toxic cyanide gas.
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFOR MATION

Product Toxicological Data:
LD50: Oral rat LD50 = 69 mg/kg
LC50: None reported
Dermal Toxicity Data: None reported
Skin and Eye Irritation Data: None reported
Mutation Data: None reported
Reproductive Effects Data: Sodium Cyanide: oral rat TCLo = 2148 mg/kg male 13 week pre -mating --
Ingredient Toxicological Data: Sodium Cyanide:Oral rat LD50 = 6440 µg/kg; Oral human LDLo = 2857 µg/kg Sodium Hydroxide: Oral rabbit LDLo = 500 mg/kg

This product does NOT co ntain any IARC listed chemicals.

12. ECOLOGICAL INFORMATION

Product Ecological Information: --
No ecological data available for this product.
Ingredient Ecological Information: --
No ecological data ava ilable for the ingredients of this product.

13. DISPOSAL CONSIDERATIONS

NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requi rements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country -specific regulations or must be passed to a packaging return system.

14. TRANSPORT INFORMATION

I.C.A.O.:
I.C.A.O. Proper Shipping Name: Corrosive Liquid, Toxic, N.O.S. (Sodium Hydroxide/Sodi um Cyanide Solution)
ICAO Hazard Class: 8
ICAO Subsidiary Risk: 6,1
ICAO UN/ID Number: UN2922
ICAO Packing Group: II
I.M.O.:
I.M.O. Proper Shipping Name: Corrosive Liquid, Toxic, N.O.S. (Sodium Hydroxide/Sodium Cyanide Solution)

I.M.O. Hazard Class: 8
I.M.O. Subsidiary Risk: 6,1
I.M.O. UN Number: UN2922
I.M.O. Packing Group: II
A.D.R.:
A.D.R. Proper Shipping Name: Corrosive Liquid, Toxic, N.O.S.
(Sodium Hydroxide/Sodium Cyanide Solution)
A.D.R Hazard Class: 8
A.D .R. Subsidiary Risk: 6,1
A.D.R. UN -Number:: 2922
A.D.R. Packing Group: II
Additional Information: This product may be shipped as part of a chemical kit composed of various compatible dangerous goods for analytical or testing purposes. This kit w ould have the following classification: Proper Shipping Name: Chemical Kit Hazard Class: 9 UN Number 3316

15. REGULATORY INFORMATION

National Inventories:
EEC Inventory Status: All ingredients us ed to make this product are listed on EINECS / ELINCS.
EEC Number: Not applicable
EEC LABEL COPY:
EU Symbols: T - TOXIC N - DANGEROUS FOR THE ENVIRONMENT
R PHRASES: R 23/24/25: Toxic by inhalation, in contact with skin and if swallowed. R 32: Contact with acids liberates very toxic gas. R 34: Causes burns. R 51/53: Toxic to aquatic organisms, may cause long -term adverse effects in the aquatic environment.
S PHRASES: S 7: Keep container tightly closed. S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 28a: After contact with skin, wash immediately with plenty of water. S 35: This material and its container must be disposed of in a safe way. S 36/39: Wear suitable protective clothing and eye/face protection. S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

16. OTHER INFORMATION

References: 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332 -2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992 -1993. American Conference of Governmental Industrial Hygienists, 1992. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Outside Testing. In -house information. Technical Judgment. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Lab eling of Dangerous Substances, Amended July 1992.
R PHRASES: R 23/24/25: Toxic by inhalation, in contact with skin and if swallowed. R 32: Contact with acids liberates very toxic gas. R 34: Causes burns. R 51/53: Toxic to aquatic organisms, may cause long -term adverse effects in the aquatic environment.
Use of the substance/preparation: Determination of manganese
Revision Summary: Updates in Section(s) 14,

Legend:

NA - Not Applicable	w/w - weigh t/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.