Safety Data Sheet
acc. to OSHA HCS (HazCom 2012)

Printing date 02/24/2020 Reviewed on 02/24/2020

1 Identification

· **Product identifier**

· **Trade name: Total Hardness Reagent (°dH) GH-1**

· **Catalogue number:** 424841, 418563

· **Application of the substance / the mixture:** Reagent for water analysis

· **Manufacturer/Supplier:**
Tintometer Inc.
6456 Parkland Drive
Sarasota, FL 34243
USA
phone: (941) 756-6410
fax: (941) 727-9654
www.lovibond.us
Made in Germany

· **Emergency telephone number:** + 1 866 928 0789 (English, French, Spanish)

2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS05 Corrosion

Met. Corr.1 H290 May be corrosive to metals.

GHS07

Eye Irrit. 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Hazard Communication Standard (HCS).
· **Hazard pictograms**

GHS05

· **Signal word** Warning
· **Hazard statements**
H290 May be corrosive to metals.
H319 Causes serious eye irritation.
· **Precautionary statements**
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

· **Other hazards**
Vapours of the product are heavier than air and may accumulate on the ground, in mines, drains or cellars with higher concentration.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** aqueous solution

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· **Composition and Information on Ingredients:**
Percent ranges are used due to the confidential product information.

CAS: 110-97-4 EINECS: 203-820-9 Index number: 603-083-00-7 RTECS: UB 6600000	1,1'-iminodipropan-2-ol Eye Irrit. 2A, H319	25–35%
CAS: 102-71-6 EINECS: 203-049-8 RTECS: KL9275000	Triethanolamine	10–20%
CAS: 1336-21-6 EINECS: 215-647-6 Index number: 007-001-01-2 RTECS: BQ9625000	ammonia Met. Corr.1, H290; Skin Corr. 1B, H314; Aquatic Acute 1, H400; STOT SE 3, H335	0.25–<1%
CAS: 1310-73-2 EINECS: 215-185-5 Index number: 011-002-00-6 RTECS: WB4900000	sodium hydroxide Met. Corr.1, H290; Skin Corr. 1A, H314	0.1–<0.5%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

4 First-aid measures

· **Description of first aid measures**
· **General information:** Immediately remove any clothing soiled by the product.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:** Rinse opened eye for several minutes (at least 15 min) under running water. Then consult a doctor.
· **After swallowing:**
Rinse out mouth and then drink 1-2 glasses of water.
If symptoms persist consult doctor.
· **Most important symptoms and effects, both acute and delayed**
irritations
after inhalation:
mucosal irritations, cough, breathing difficulty
after swallowing:
sickness
vomiting
diarrhoea
pain
dizziness
fatigue
· **Indication of any immediate medical attention and special treatment needed:** No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Water, Carbon dioxide (CO_2), Foam, Fire-extinguishing powder
· **For safety reasons unsuitable extinguishing agents:**
For this substance / mixture no limitations of extinguishing agents are given.
· **Special hazards arising from the substance or mixture**
Can burn in fire.
Can form explosive gas-air mixtures.
Formation of toxic gases is possible during heating or in case of fire.
In case of fire, the following can be released:
nitrous gases
Nitrogen oxides (NOx)
Ammonia (NH_3)
Carbon monoxide (CO) and carbon dioxide (CO_2)
· **Advice for firefighters**
· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.

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· **Additional information**
Collect contaminated fire fighting water separately. It must not enter the sewage system.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Ambient fire may liberate hazardous vapours.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
· **Advice for non-emergency personnel:**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
· **Advice for emergency responders:** Protective equipment: see section 8
· **Environmental precautions:** Do not allow product to reach sewage system or any water course.
· **Methods and material for containment and cleaning up:**
Ensure adequate ventilation.
Absorb with liquid-binding material (sand, diatomite, universal binders).
Dispose contaminated material as waste according to item 13.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Precautions for safe handling**
· **Advice on safe handling:** Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).
· **Hygiene measures:**
Avoid contact with the eyes.
Take off immediately all contaminated clothing.
Wash hands before breaks and at the end of work.
Do not eat, drink or smoke when using this product.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
Store in a cool location.
Do not use light alloy receptacles.
· **Information about storage in one common storage facility:** Store away from metals.
· **Further information about storage conditions:**
Protect from heat and direct sunlight.
Protect from exposure to the light.
Protect from humidity and water.
· **Recommended storage temperature:** 20°C +/- 5°C (approx. 68°F)
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
At this time, the other constituents have no known exposure limits.

CAS: 102-71-6 Triethanolamine	
TLV (USA)	Long-term value: 5 mg/m³
EL (Canada)	Long-term value: 5 mg/m³
EV (Canada)	Long-term value: 3.1 mg/m³, 0.5 ppm

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Engineering measures:**
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.
See item 7.

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· **Personal protective equipment:**
Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled.
· **Breathing equipment:** Use respiratory protective device against the effects of fume/dust/aerosol.
· **Recommended filter device for short term use:** Filter A
· **Protection of hands:**
Preventive skin protection by use of skin-protecting agents is recommended.
After use of gloves apply skin-cleaning agents and skin cosmetics.
· **Material of gloves**
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.11 mm
· **Penetration time of glove material**
Value for the permeation: Level ≤ 1 (10 min)
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:** Safety glasses
· **Body protection:** Protective work clothing

· **Limitation and supervision of exposure into the environment:**
Do not allow product to reach sewage system or any water course.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **Appearance:**	
Form / Physical state:	Solution
Color:	Dark green
· **Odor:**	Like ammoniac
· **Odor threshold:**	CAS 1336-21-6: 0.02 - 71 ppm NH_3
· **pH-value at 20°C (68°F):**	~11
· **Melting point/freezing point:**	Not determined.
· **Initial boiling point and boiling range:**	Not determined.
· **Flash point:**	135°C (275°F) (CAS: 110-97-4 1,1'-iminodipropan-2-ol)
· **Flammability (solid, gas):**	Not applicable.
· **Decomposition temperature:**	Not determined.
· **Auto-ignition temperature:**	Product is not self-igniting.
· **Danger of explosion:**	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
· **Flammability or explosive limits:**	
Lower:	1.6 Vol % (CAS: 110-97-4 1,1'-iminodipropan-2-ol)
Upper:	8 Vol % (CAS: 110-97-4 1,1'-iminodipropan-2-ol)
· **Oxidizing properties:**	none
· **Vapor Pressure:**	Not determined.
· **Density at 20°C (68°F):**	1.05 g/cm³ (8.76 lbs/gal)
· **Relative density:**	Not determined.
· **Vapor density:**	Not determined.
· **Evaporation rate:**	Not determined.
· **Solubility(ies)**	
Water:	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	Not determined.
· **Solvent content:**	
Organic solvents:	< 20 %
Water:	40-50 %
Solids content:	< 40 %

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· **Other information** No further relevant information available.

10 Stability and reactivity

· **Reactivity** Fumes can combine with air to form an explosive mixture.
· **Chemical stability** Stable at ambient temperature (room temperature).
· **Possibility of hazardous reactions**
Corrosive action on metals.
In contact with nitrites, nitrates or nitrous acid possible release of nitrosamines (carcinogenic)!
Corrodes aluminium and zinc.
Reacts with oxidizing agents.
Exothermic reaction with acids.
· **Conditions to avoid** Strong heating (decomposition)
· **Incompatible materials:**
light metals
aluminum
zinc
non-ferrous metal
· **Hazardous decomposition products:** see section 5

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:** Based on available data, the classification criteria are not met.

· **LD/LC50 values that are relevant for classification:**		
CAS: 110-97-4 1,1'-iminodipropan-2-ol		
Oral	LD50	4765 mg/kg (rat) (RTECS)
Dermal	LD50	8000 mg/kg (rabbit) (IUCLID)
CAS: 102-71-6 Triethanolamine		
Oral	LD50	7200 mg/kg (rat) (BASF-Test)
Dermal	LD50	22500 mg/kg (rabbit) (GESTIS)
CAS: 1336-21-6 ammonia		
Oral	LDo	43 mg/kg (human) (29% solution, RTECS)
CAS: 1310-73-2 sodium hydroxide		
Oral	LDLo	500 mg/kg (rabbit) (IUCLID)

· **Primary irritant effect:**
· **on the skin:** Based on available data, the classification criteria are not met.
· **on the eye:** Causes serious eye irritation.
· **Information on components:**
CAS 110-97-4, 1310-73-2: chronic: dermatitis

CAS: 110-97-4 1,1'-iminodipropan-2-ol		
Irritation of skin	OECD 404	(rabbit: no irritation)
Irritation of eyes	OECD 405	(rabbit: irritation)

· **Sensitization:** Based on available data, the classification criteria are not met.
· **Information on components:**
CAS 110-97-4: Sensitizing effect by skin contact is possible with prolonged exposure.

CAS: 102-71-6 Triethanolamine		
Sensitization	OECD 406	(guinea pig: negative)

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Trade name: Total Hardness Reagent (°dH) GH-1

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CAS: 1310-73-2 sodium hydroxide		
Sensitization	Patch test (human)	(negative)

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
CAS: 102-71-6	Triethanolamine	3

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

· **Other information:** see section 8 / 15

· **Synergistic Products:** None

· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):** The following statements refer to the mixture:
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.

· **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.
· **STOT (specific target organ toxicity) -repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

· **Information on components:**	
CAS: 110-97-4 1,1'-iminodipropan-2-ol	
OECD 471	(negative) (Bacterial Reverse Mutation Test - Ames test) (NTP)

· **Additional toxicological information:**
Under given conditions, contact with nitrites or nitric acid can lead to the formation of nitrosamines, which have shown themselves to be carcinogenic in animal experiments.
CAS 110-97-4, 102-71-6 is skin-resorbing.
· **Experience with humans:**
CAS 102-71-6: Can cause liver damage.
CAS 102-71-6: Can cause kidney damages.

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**	
CAS: 110-97-4 1,1'-iminodipropan-2-ol	
EC50	277.7 mg/l/48h (Daphnia magna) (IUCLID)
IC50	266 mg/l/72h (Desmodesmus subspicatus)
LC50	>1000–2200 mg/l/96h (zebrafish) (OECD 203)
CAS: 102-71-6 Triethanolamine	
EC50	2038 mg/l/24h (Daphnia magna)
NOEC	16 mg/l (Daphnia magna) 21d
EC50	512 mg/l/72 h (Scenedesmus subspicatus) (BASF)
LC50	450–1000 mg/l/96h (bluegill)
	11800 mg/l/96h (fathhead minnow) (BASF)
CAS: 1336-21-6 ammonia	
EC50	24 mg/l/48h (Daphnia magna)
	1.16 mg/l/48h (Daphnia pulex)
LC50	0.53 mg/l/96h (rainbow trout)

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CAS: 1310-73-2 sodium hydroxide	
LC50	40.4 mg/l/48h (Ceriodaphnia sp.) (ECHA)

· **Bacterial toxicity:**

CAS: 102-71-6 Triethanolamine	
EC5	>10000 mg/l (Pseudomonas putida) (16h) (IUCLID)

CAS: 1310-73-2 sodium hydroxide	
EC50	22 mg/l (Photobacterium phosphoreum) (15 min)

· **Persistence and degradability**

CAS: 110-97-4 1,1'-iminodipropan-2-ol	
OECD 302 B	99 % / 11 d (readily eliminated from water)

CAS: 102-71-6 Triethanolamine	
OECD 301 E	96 % (readily biodegradable) (Modified OECD Screening Test)
OECD 302 B	82 % / 8 d (readily eliminated from water) (Zahn-Wellens / EMPA Test)

· **Bioaccumulative potential**
Pow = n-octanol/wasser partition coefficient
log Pow < 1 = Does not accumulate in organisms.

CAS: 110-97-4 1,1'-iminodipropan-2-ol	
log Pow	-0.79 (.) (OECD 107)

CAS: 102-71-6 Triethanolamine	
log Pow	-2.3 (.) (OECD 107, 25°C)

CAS: 1336-21-6 ammonia	
log Pow	-1.38 (.) (experimental)

· **Mobility in soil** No further relevant information available.
· **Other adverse effects**
Depending on the concentration, phosphorus and/or nitrogen compounds may contribute to the eutrophication of water supplies.
Avoid transfer into the environment.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Hand over to hazardous waste disposers.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**
· **DOT, IMDG, IATA** UN1719

· **UN proper shipping name**
· **DOT** Caustic alkali liquids, n.o.s. (Ammonia solution, Sodium hydroxide)
· **IMDG, IATA** CAUSTIC ALKALI LIQUID, N.O.S. (AMMONIA SOLUTION, SODIUM HYDROXIDE)

· **Transport hazard class(es)**

· **DOT**

· **Class** 8 Corrosive substances

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· **Label**	8
· **IMDG, IATA**	

· **Class**	8 Corrosive substances
· **Label**	8
· **Packing group**	
· **DOT, IMDG, IATA**	III
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Corrosive substances
· **Hazard identification number (Kemler code):**	80
· **EMS Number:**	F-A,S-B
· **Segregation groups**	Alkalis
· **Stowage Category**	A
· **Segregation Code**	SG22 Stow "away from" ammonium salts SG35 Stow "separated from" SGG1-acids
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 L
· **IMDG**	
· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml

15 Regulatory information

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

· **Section 355 (Extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

CAS: 1336-21-6	ammonia

· **TSCA (Toxic Substances Control Act):**
All components have the value ACTIVE.

· **Hazardous Air Pollutants**
None of the ingredients is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

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· **New Jersey Right-to-Know List:**

CAS: 102-71-6	Triethanolamine
CAS: 1336-21-6	ammonia
CAS: 12125-02-9	ammonium chloride
CAS: 1310-73-2	sodium hydroxide

· **New Jersey Special Hazardous Substance List:**

CAS: 1336-21-6	ammonia	CO
CAS: 1310-73-2	sodium hydroxide	CO, R1

· **Pennsylvania Right-to-Know List:**

CAS: 110-97-4	1,1'-iminodipropan-2-ol
CAS: 102-71-6	Triethanolamine
CAS: 1336-21-6	ammonia
CAS: 12125-02-9	ammonium chloride
CAS: 1310-73-2	sodium hydroxide

· **Pennsylvania Special Hazardous Substance List:**

CAS: 1336-21-6	ammonia	E
CAS: 12125-02-9	ammonium chloride	E
CAS: 1310-73-2	sodium hydroxide	E

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **Information about limitation of use:** Not required.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life.

· **Date of preparation / last revision** 02/24/2020 / -

· **Abbreviations and acronyms:**
OECD: Organisation for Economic Co-operation and Development
STOT: specific target organ toxicity
SE: single exposure
RE: repeated exposure
EC50: half maximal effective concentration
IC50: hallf maximal inhibitory concentration
NOEL or NOEC: No Observed Effect Level or Concentration
ACGIH® - American Conference of Governmental Industrial Hygienists
•A1 - Confirmed human carcinogen
•A2 - Suspected human carcinogen
•A3 - Confirmed animal carcinogen with unknown relevance to humans
•A4 - Not classifiable as a human carcinogen
•A5 - Not suspected as a human carcinogen
IARC - International Agency for Research on Cancer
•Group 1 - Carcinogenic to humans
•Group 2A - Probably carcinogenic to humans
•Group 2B - Possibly carcinogenic to humans
•Group 3 - Not classifiable as to carcinogenicity to humans
•Group 4 - Probably not carcinogenic to humans
NTP - National Toxicology Program, U.S. Department of Health and Human Services
•Group K - Known to be Human Carcinogens
•Group R - Reasonably Anticipated to be Human Carcinogens
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances

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CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Met. Corr.1: Corrosive to metals – Category 1
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

· **Sources**
Data arise from safety data sheets, reference works and literature.
ECHA: European CHemicals Agency http://echa.europa.eu
IUCLID (International Uniform Chemical Information Database)