SDS & Technical Data Sheet

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Food Grade Multi-Metal Descaler Technology

CHEMSOL CH 5

Food Grade Multi-Metal Descaler Liquid for Coffee Machines, Cooling Circuits, Heat Exchangers & Industrial Equipment

Product Name: CHEMSOL CH 5
Product Type: Food Grade Multi-Metal Descaler Liquid
Applications: Water jet machines, laser jet cooling systems, coffee machines, boilers, heat exchangers, food processing equipment, copper pipe systems

Copper Safe Descaler

Prepared by: Alkemist – Water & Chemicals Solutions
Document Type: Combined SDS + TDS
Version: 1.0 Professional Draft
Compliance Basis: OSHA HazCom / GHS / GCC / EU CLP style coverage

Proprietary Formula Protected

DOCUMENT CONTROL & CONFIDENTIALITY

Field	Details
Product	CHEMSOL CH 5
Document Scope	Customer-facing Safety Data Sheet and Technical Data Sheet for international industrial sales support.
Formula Confidentiality	Exact formulation, exact percentages, exact ingredient identities and actual CAS details are withheld as proprietary confidential business information.
Verification Note	Professional working draft. Final SDS/TDS must be verified against final formulation, raw material SDS, finished product testing, destination-market rules and transport classification before regulatory release.

PART A — SAFETY DATA SHEET

This section provides a 16-section SDS structure suitable for OSHA HazCom, GHS-aligned international communication, GCC customer use, EU/UK style hazard communication and professional industrial documentation.

1. IDENTIFICATION

Product Identifier	CHEMSOL CH 5
Recommended Use	Concentrated food-grade compatible descaler for water jet machines, laser jet cooling systems, coffee machines, boilers, heat exchangers, food processing equipment, cooling circuits and copper pipe systems.
Uses Advised Against	Do not use on marble, limestone, acid-sensitive stone, zinc, galvanized steel, untested coatings or sensitive materials without compatibility testing. Not for human consumption.
Supplier	Alkemist / Water & Chemicals Solutions
Website / Email	www.waterchemicalssolution.com | admin@alkemist.org
Emergency Information	Use local emergency services / poison centre according to destination country requirements.

2. HAZARD IDENTIFICATION

WARNING: Causes serious eye irritation. May cause skin irritation. Acidic descaling liquid. Not classified as corrosive to metals at recommended use dilution when used according to instructions and compatibility limits.

GHS Classification	Eye Irritation Category 2. Skin Irritation Category 2 may apply depending on final test data and concentration. Not classified as flammable. Not classified as corrosive to metals at recommended use dilution.
Signal Word	**Warning**
Hazard Statements	H319 Causes serious eye irritation. H315 Causes skin irritation, if applicable to final classification. May be mildly irritating to respiratory tract mist.
Precautionary Statements	Wear protective gloves and eye/face protection. Wash hands thoroughly after handling. Avoid breathing mist or spray. 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.
Other Hazards	Acidic product may react with strong alkalis, chlorine bleach, hypochlorite products, cyanides or sulfides. Do not mix with other chemicals unless approved by technical team.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Proprietary composition disclosure: Exact ingredient names, actual percentages and actual CAS numbers are withheld as trade secret while maintaining safe handling information. Do not disclose specific acid, chelant, surfactant or inhibitor identities in customer-facing documents.

Component Description	CAS	Concentration	Function
Proprietary Organic Descaling Acid Blend	Proprietary	15–35%	Scale dissolution, lime removal and mineral deposit breakdown.
Proprietary Food-Grade Chelating Agent System	Proprietary	5–20%	Metal ion complexing, deposit loosening and water hardness control.
Proprietary Nonionic Wetting & Cleaning Agent	Proprietary	1–10%	Wetting, penetration, cleaning and deposit contact improvement.
Proprietary Metal Protection & Corrosion Inhibitor Package	Proprietary	1–10%	Multi-metal compatibility support and reduced attack during controlled use.
Water and Performance Additives	Proprietary	Balance	Carrier, stabilization and performance adjustment.

4. FIRST AID MEASURES

Inhalation	Move person to fresh air. If mist inhalation causes coughing or irritation, obtain medical advice.
Skin Contact	Remove contaminated clothing. Wash skin with plenty of water and mild soap. If irritation persists, seek medical advice.
Eye Contact	Rinse cautiously with water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Obtain medical attention if irritation persists.
Ingestion	Rinse mouth. Do not induce vomiting. Drink water if conscious. Call poison centre or physician if symptoms occur.
Symptoms	Eye irritation, redness, tearing, skin irritation, mild respiratory irritation from mist.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	Use extinguishing media suitable for surrounding fire: water spray, dry chemical, foam or carbon dioxide.
Specific Hazards	Product is water-based and not flammable. Heating may produce irritating fumes from decomposition of organic components.
Protective Equipment	Firefighters should wear self-contained breathing apparatus and full protective equipment in major fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Wear gloves, eye protection and suitable footwear. Avoid contact with eyes and skin. Provide ventilation for large spills.
Environmental Precautions	Prevent uncontrolled discharge into drains, soil and waterways. Neutralize and dispose according to local regulations.
Cleanup Method	Contain spill with inert absorbent. Neutralize cautiously with approved alkaline neutralizer if trained. Collect in labeled containers. Rinse area with water after removal.

7. HANDLING AND STORAGE

Handling	Avoid eye/skin contact. Do not breathe mist or spray. Do not mix with bleach, chlorine products, strong alkalis or incompatible chemicals. Use correct dilution and avoid prolonged unnecessary contact with metals.
Storage	Store in original sealed container in a cool, dry, well-ventilated area. Keep away from heat, direct sunlight and incompatible materials.
Incompatibles	Strong alkalis, oxidizers, chlorine bleach, hypochlorite products, cyanides, sulfides and acid-sensitive materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	Use normal ventilation. Avoid mist generation. Use local exhaust if spraying or using in confined equipment.
Eye Protection	Chemical splash goggles recommended. Face shield for transfer or splash risk.
Skin Protection	Chemical-resistant gloves such as nitrile or neoprene, protective clothing and apron for bulk handling.
Respiratory Protection	Not normally required for manual dilution and circulation use. Use approved respirator if mist cannot be controlled.
Hygiene	Wash hands after handling. Remove contaminated clothing and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear liquid	**Colour**	Colorless to pale yellow
Odour	Mild	**pH Concentrate**	1.5–3.0
Specific Gravity	1.05–1.20	**Water Solubility**	Complete
Flash Point	Not applicable / water-based	**Boiling Point**	Approx. 100°C
VOC	Low / non-fuming formulation profile	**Flammability**	Not flammable

10. STABILITY AND REACTIVITY

Reactivity	Acidic product. Reacts with strong alkalis and incompatible chemicals.
Chemical Stability	Stable under recommended storage and use conditions.
Conditions to Avoid	Excessive heat, freezing, contamination and mixing with incompatible products.
Incompatible Materials	Bleach, hypochlorite, strong alkalis, oxidizers, cyanides, sulfides and acid-sensitive stone.
Hazardous Decomposition	Irritating fumes may be produced under fire or high heat conditions.

11. TOXICOLOGICAL INFORMATION

Likely Routes	Eye contact, skin contact, mist inhalation and accidental ingestion.
Acute Toxicity	Not expected to be acutely toxic under normal industrial handling when used according to instructions.
Skin Irritation	May cause irritation, especially with prolonged or repeated contact with concentrate.
Eye Irritation	Causes serious eye irritation. Eye protection required.
Sensitization	Not expected based on intended ingredient classes; verify by final raw material SDS.
Chronic Effects	No chronic effects expected under normal use; final assessment depends on final raw material SDS and formulation verification.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Avoid uncontrolled release. Product acidity may affect aquatic organisms if discharged without neutralization.
Persistence / Degradability	Designed with eco-friendly, water-soluble components where applicable; final biodegradability depends on raw material data.
Mobility	Completely miscible in water.
Discharge Note	Neutralize and dispose according to local regulations. Do not discharge concentrated product into waterways.

13. DISPOSAL CONSIDERATIONS

Dispose of unused product, spent descaling solution and contaminated packaging according to local, regional and national regulations. Spent solution may contain dissolved metals, scale residues and process contaminants. Neutralization and waste characterization may be required before disposal.

14. TRANSPORT INFORMATION

UN Number	Not regulated as dangerous goods in many cases, subject to final pH, corrosivity test and destination transport rules.
Proper Shipping Name	Not applicable if not regulated; verify before shipment.
Hazard Class	Not classified as corrosive to metals at recommended use dilution. Final concentrate classification must be confirmed by test data.
Packing Group	Not applicable if not regulated.
Transport Note	Transport classification must be confirmed from final formulation, pH reserve acidity, packaging size and destination rules.

15. REGULATORY INFORMATION

Hazard Communication	Prepared in OSHA HazCom / GHS-style 16-section format for industrial customer communication.
EU / UK / GCC Note	Classification and labeling should be verified under applicable EU CLP, UK CLP and GCC destination requirements before market placement.
Food Equipment Use	Uses food-grade compatible component classes. Equipment must be thoroughly rinsed with potable water after descaling before returning to food-contact service.
Formula Confidentiality	Exact formulation is proprietary and withheld from customer-facing documents, except where legal emergency disclosure is required.

16. OTHER INFORMATION

Revision	1.0 Professional Working Draft
Prepared For	CHEMSOL CH 5 — Food Grade Multi-Metal Descaler Liquid
Disclaimer	This SDS is based on the supplied product concept and proprietary component ranges. Final release requires verification against actual formulation, raw material SDS, finished product pH/corrosion/irritation data, customer destination rules and final packaging.

PART B — TECHNICAL DATA SHEET

This section provides a commercial TDS for product marketing, customer technical support, application guidance and international sales documentation.

1. TDS PRODUCT DESCRIPTION

CHEMSOL CH 5 is a concentrated, eco-friendly, food-grade compatible multi-metal descaler liquid developed for removal of calcium carbonate scale, lime deposits, hard water fouling, mineral buildup, iron oxides and process water deposits from industrial and food-contact equipment systems.

The formulation combines proprietary organic descaling acids, food-grade compatible chelation technology, nonionic wetting and cleaning support and a corrosion-inhibited metal protection package. It is designed to provide effective scale removal while maintaining compatibility with copper, stainless steel, cast iron, mild steel, brass, bronze and nickel alloys when used according to recommended dilution and contact time.

2. KEY BENEFITS

Multi-Metal Safe
Designed for copper, stainless steel, cast iron, mild steel, brass, bronze and nickel alloys under controlled use.

Food Grade Compatible
Suitable for descaling food processing equipment after proper rinsing and service return procedure.

Professional Descaling
Removes lime scale, calcium carbonate, iron oxides and mineral deposits from critical equipment.

- Copper safe descaler for pipe systems and cooling circuits.
- Non-fuming acidic cleaning technology.
- Eco-friendly water-soluble formulation profile.
- Corrosion-inhibited technology for controlled multi-metal use.
- Useful for coffee machine descaling and industrial scale removal.
- Suitable for laser cooling circuit cleaner and water jet machine maintenance.
- Helps restore water flow, heat transfer and equipment efficiency.

3. APPLICATIONS

Equipment / System	Purpose	Technical Benefit
Water Jet Machines	Removal of hard water deposits and mineral buildup.	Improved flow reliability and reduced nozzle/system fouling.
Laser Jet Cooling Systems	Cooling circuit descaling and deposit cleaning.	Improved heat transfer and reduced blockage risk.
Coffee Machines	Lime scale removal from boilers, heating elements and water lines.	Improved water flow, taste protection and heating efficiency after proper rinse.
Boilers and Heat Exchangers	Scale removal from heat-transfer surfaces.	Restores thermal efficiency and reduces energy loss.
Food Processing Equipment	Removal of mineral films and process water deposits.	Supports hygiene maintenance and equipment reliability.
Copper Pipe Systems	Controlled descaling of copper-compatible circuits.	Removes scale while reducing metal attack risk.

4. COMPATIBLE MATERIALS

Material	Compatibility Guidance
Copper	Suitable under recommended dilution/contact time. Avoid unnecessary prolonged contact with concentrate.
Stainless Steel	Suitable for typical descaling applications. Rinse thoroughly after use.
Cast Iron / Mild Steel	Suitable under controlled use due to inhibitor package; rinse and dry after cleaning where corrosion risk exists.
Brass / Bronze	Suitable under controlled use; test first on sensitive or polished components.
Nickel Alloys	Generally compatible; verify by test patch for critical equipment.
Acid Sensitive Materials	Do not use on marble, limestone, zinc, galvanized surfaces or untested coatings.

5. PERFORMANCE CHARACTERISTICS

1. Wetting

Nonionic wetting technology improves contact with scale and deposits.

2. Dissolution

Organic acid blend dissolves calcium carbonate and lime deposits.

3. Chelation

Chelating system binds dissolved metal ions and helps prevent redeposition.

4. Protection

Inhibitor package reduces metal attack during controlled descaling.

CHEMSOL CH 5 is intended to remove calcium carbonate, lime scale, hard water deposits, iron oxides and process water fouling while supporting equipment compatibility and safe maintenance routines.

6. TYPICAL PROPERTIES

Property	Typical Value
Appearance	Clear liquid
Colour	Colorless to pale yellow
Odour	Mild
pH Concentrate	1.5–3.0
Specific Gravity	1.05–1.20
Water Solubility	Complete
Foaming	Low to moderate depending on agitation
Formula Type	Food-grade compatible, corrosion-inhibited descaling concentrate

7. DILUTION GUIDELINES

Scale Condition	Dilution	Recommended Use
Light Scale	1:10	Routine coffee machine descaling, light mineral film, preventive maintenance.
Moderate Scale	1:5	Cooling circuits, water jet systems, moderate heat exchanger fouling.
Heavy Scale	1:3	Heavy lime scale, boilers, industrial heat exchangers and severe mineral buildup.
Concentrate	Use only under technical control	Spot treatment or severe deposits after compatibility check.

Dilution method: Always add CHEMSOL CH 5 to water, not water into product, when preparing large-volume dilutions. Use clean plastic or acid-compatible containers.

8. OPERATING PROCEDURE

1. Inspect equipment, metallurgy and deposit severity before use.
2. Prepare selected dilution according to scale level.
3. Isolate system from food/product service and drain loose water where needed.
4. Circulate, soak or apply solution to scaled surfaces.
5. Allow sufficient contact time until scale reaction slows or deposits dissolve.
6. For circulation cleaning, monitor pH and visual clarity; replace solution if spent.
7. Drain spent solution into suitable waste container.
8. Rinse thoroughly with clean potable water until neutral/acceptable rinse condition is achieved.
9. For food-contact equipment, perform final potable water rinse before returning to service.
10. Dispose of spent solution according to local rules.

9. SUGGESTED CONTACT TIME

Application	Typical Contact Time	Notes
Coffee Machines	10–30 minutes	Follow machine manufacturer guidance; rinse thoroughly.
Cooling Circuits	30–120 minutes circulation	Monitor pH and flow improvement.
Heat Exchangers	1–4 hours circulation	Depends on scale thickness and temperature.
Boilers / Industrial Equipment	Technical supervision required	Control venting, compatibility, spent solution and neutralization.

10. SAFETY INFORMATION FOR TDS USERS

- Wear gloves and eye protection during handling and dilution.
- Avoid contact with eyes and skin.
- Do not mix with bleach, chlorine products, alkalis or other cleaners.
- Use in ventilated area and avoid mist inhalation.
- Rinse all food-contact surfaces thoroughly before returning equipment to service.
- Refer to SDS before bulk handling, transport or disposal.

11. STORAGE CONDITIONS & PACKAGING

Storage	Store sealed in original packaging, cool and dry, away from direct sunlight and incompatible materials.
Temperature	Recommended 5–35°C. Protect from freezing and excessive heat.
Shelf Life	12–24 months from date of manufacture when stored correctly; confirm by batch CoA.
Packaging Options	1 L, 5 L, 20 L, 25 L, 200 L drum and 1000 L IBC subject to customer requirement and transport rules.

12. TROUBLESHOOTING GUIDE

Observation	Likely Cause	Recommended Action
Scale not removing quickly	Solution too dilute, heavy scale or spent solution.	Increase dilution strength, extend contact time or refresh solution.
Reaction stops early	Acid capacity consumed by scale.	Drain and recharge with fresh diluted solution.
Metal darkening	Overexposure, high concentration or sensitive alloy.	Stop treatment, rinse immediately and reduce strength/contact time.
Foaming during circulation	High turbulence, process residues or air entrainment.	Reduce flow/agitation and check system condition.
Residual acidic smell/taste risk in food equipment	Insufficient rinse.	Repeat potable water rinsing until acceptable rinse pH/condition.

13. TDS DISCLAIMER & APPROVAL

The information provided in this SDS/TDS is based on the supplied product concept and proprietary performance requirements. It is intended as a professional technical guide for industrial and commercial use. Final suitability must be confirmed by site testing, material compatibility checks, raw material SDS review, finished product QC and local regulatory compliance verification.

Customer / User Verification

Signature:

Date:

Equipment / Site:

Alkemist / WCS Technical Approval

Signature:

Date:

Remarks: