

# SUM-KOOL®

## INTRODUCTION

Water is the life blood of our planet. Clear mountain streams tumbling over rocks create the impression of purity. For human consumption that is probably an accurate assumption.

In the industrial world just the opposite is probably true. That pure looking mountain stream contains invisible dissolved solids that come out of solution on heat transfer surfaces to cause a multitude of problems.

The problems caused by water related scale, rust and corrosion affect every industry from nuclear power plants to automobile engines. It has been shown that 1 /16 of an inch of scale is equivalent to approximately 3 inches of steel in heat transferability.

To restore these scaled surfaces to their original serviceability it is necessary to remove the water deposited scale.

Sum-Kool\* is an effective and efficient heat transfer system cleaner designed to remove encrusted lime scale, rust and corrosion products from water-wetted surfaces.

- Sum-Kool is non-toxic, non-hazardous and biodegradable.
- Sum-Kool is non-acid and does not require neutralization.
- Sum-Kool operates in a pH range from 6.0 to 8.5 and can be safely disposed in municipal water handling operations.

Sum-Kool is non-corrosive and will not adversely affect the following materials: stainless steel, carbon steel, brass, admiralty metal, copper, iron, lead, aluminum, PVC plastic, polyethylene, rubber, leather or any metal or material normally found in water-wetted equipment.

Sum-Kool may adversely affect materials containing magnesium or zinc. These materials should be tested to ascertain the concentration, temperature and time effects before treatment with Sum-Kool. It is recommended that treatment be at a concentration of less than 2 percent, a temperature not over 140°F and for less than 2 hours to prevent etching.

\* SUM-KOOL is a registered trademark of Summit Industrial Products, Inc.

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designed to remove encrusted lime scale, rust and corrosion  
from water-wetted surfaces**



[www.klsummit.com](http://www.klsummit.com)

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P.O. Box 131359 • 9010 CR 2120 • Tyler, TX 75713 • Phone 903.534.8021 • Fax 903.581.4376

# APPLICATION

Sum-Kool cleans by chemically tying up the multivalent metal ions in solution. The time required for any given application will depend upon the temperature available, the concentration of the Sum-Kool solution and the quantity of scale, rust and corrosion present.

Sum-Kool solution is most effectively used by circulating it through the equipment to be cleaned. When possible, circulation should be upflow to assure all of the internal surface is covered.

While it is difficult to provide a detail procedure for the cleaning operation, since every application is different, most applications have a number of steps in common.

1. The equipment to be cleaned (compressor, heat exchanger, pump, filter system, boiler, etc...) should be shut down, drained and a visual inspection made to ascertain the amount of scale deposited. Consult the concentration guide for the approximate concentration of Sum-Kool to be used.
2. The equipment should be closed, filled with clean water and backflushed for 10 minutes to remove as much loose scale and debris as possible. The equipment should then be completely drained of all water.
3. A Sum-Kool solution of appropriate strength (from concentration selection guide) should be added to the system and circulated while bringing the solution to the desired temperature (100°F - 180°F).
4. Circulation should continue for two to eight hours depending on the quantity and composition of scale to be removed. Inspection on 2 hour intervals should give you some guide as to the appropriate length of time.
5. When the cleaning solution is spent and scale is still present repeat the cleaning process.
6. There will normally be a slight odor of ammonia as the Sum-Kool solution is spent. The pH of the solution should also rise to about 8.0, however, if the pH of the water used to make the cleaning solution was very low the solution could become spent without reaching a pH of 8.0. Visual inspection is the best method of judging completion of the process.
7. When the cleaning process is complete, drain the system and flush with fresh water before returning it to service.

# SUM-KOOL®

*Sum-Kool is designed to safely remove lime scale and corrosion from a broad variety of industrial operations:*

- All types of power plant boilers and piping systems including nuclear power plants.
- Equipment in refineries, utility companies, paper mills, chemical plants, foundries and other industries.
- Sewage disposal plants, water treating facilities and other municipal water handling operations.
- Compressor stations and radiator systems of all types including closed loop cooling systems.
- Any equipment that is water cooled in any manner or that requires the removal of multivalent metal ions.
- Applications in office buildings, hospitals and electronic facilities where accidental spills or leaks could result in adverse effects.
- Any cleaning application requiring a solution with an extremely low metal ion content.

## PHYSICAL PROPERTIES

APPEARANCE	-	BLUE GREEN COLOR PLEASANT ODOR
SPECIFIC GRAVITY	-	1.06
BOILING POINT	-	214°F
FREEZING POINT	-	15°F
FLASH POINT	-	NONE

# SUM-KOOL CONCENTRATION SELECTION GUIDE

<b>Scale Thickness</b>	<b>Sum-Kool Concentration (% Sum-Kool in water)</b>
1 /16"	5%
1/8"	10%
1/4"	15%
1/2"	20%
1"	25%*

\*May require multiple cleanings.

## CLEANING TIME

Cleaning time depends on many factors including scale composition, solution temperature, solution concentration, thickness, surface area to volume ratio, agitation and recirculation rate. For this reason only approximate times can be given.

<b>Solution Temperature</b>	<b>Approximate Cleaning Time</b>
°F	HOURS
100	24+
125	16-24
150	8-16
175	4-8
200	2-4

Sum-Kool can be used in a number of other applications such as on line cleaning and as a metal surface treatment to prevent corrosion. Consult with your Summit Technical Representative for additional information.