

# Heresite Corrosion Protection

Heresite is a unique baked phenolic coating TTP uses to protect air cooled heat exchangers from external corrosion.

The following information has been supplied to TTP by Heresite-Saekaphen Inc.

## Introduction

The first HERESITE coating application to the exterior surfaces of finned tube coils took place over thirty years ago. Since that time, the HERESITE baked phenolic coating has effectively demonstrated its value in protecting heat transfer coils from corrosive attack, hereby increasing equipment service life. The excellent chemical and temperature resistance, coupled with the superior heat transfer properties of the HERESITE coating, lead to outstanding results.

## Description

The HERESITE coating of finned tube coils is accomplished by a multiple coat application of dipping and baking, resulting in complete coating coverage of the fins, tubes, headers, casings, etc. Consequently, protection against corrosion is provided for the entire coil. Due to specialized surface preparation techniques, plus the good adhesive properties of the HERESITE coating, it is possible to efficiently HERESITE coat all the usual metals used in fabricating finned tube coils.

The HERESITE coating that is applied to finned tube coils is a Flexible Brown Baked Phenolic Coating. This coating is applied to either aluminum, copper or steel with equal results.

We feel it is important to emphasize that HERESITE baked phenolic coatings are manufactured and sold only by HERESITE-SAEKAPHEN, INC. Further, the application of the HERESITE baked phenolic coating to finned tube coils is performed only at our plant in, Manitowoc, Wisconsin.

Practically all types of finned tube coils used for oil, water, air, gas and process cooling (and heating), as well as large condensing coils can be HERESITE protected against damaging environments. Currently, the HERESITE coating of air-conditioning and industrial process coils exposed to corrosive fumes and salt atmosphere is on the increase.

HERESITE coating offers a more economical solution than special metals for these applications. For example, we understand that aluminum fin coils coated with HERESITE are more economical than copper fin coils. Special metal casing materials are unnecessary since the HERESITE coating is applied to the casing as well as to the finned tubes. Additionally, HERESITE coated aluminum fins will resist attack from most cleaning agents more successfully than copper fin coils. It is noted that the HERESITE coating is applied to both plate fin coils as well as spiral wound tubing.

## Chemical Resistance

The HERESITE baked phenolic coating will withstand exposure to practically all corrosive and chemical fumes with the exception of strong alkalis such as sodium hydroxide, strong oxidizing agents such as aqua regia and concentrations of bromine, chlorine, and fluorine in excess of 100 parts per million. Complete chemical resistance data is shown on the following page.

## Temperature Resistance

Maximum temperature resistance of 450°F. However, HERESITE baked phenolic coatings cannot be recommended for all chemical atmospheres at temperatures up to 450°F since corrosive activity and permeation may be greater at higher temperatures depending upon the chemicals involved. Excellent adhesion and flexibility enable HERESITE coating to withstand thermal shock. Also, the HERESITE lining will operate at sub zero temperatures without loss of chemical and mechanical properties.

## Thermal Conductivity

The HERESITE baked phenolic coating is a good thermal conductor and its thermal conductivity is expressed as approximately 2000 BTU per hour per square foot per degree Fahrenheit based on an average 3 mil coating thickness. The "K" factor = 6.0.

Coil manufacturers have indicated there is no need to add additional heating or cooling surface due to the presence of the HERESITE coating.

Guide to Chemical Resistance of HERESITE Baked Phenolic Linings: HERESITE baked phenolic linings will withstand exposure to practically all corrosive atmospheres with the exception of strong alkalis, strong oxidizers and wet bromine, chlorine and fluorine in concentrations greater than 100 PPM. Due to the fact that resistance of HERESITE is dependent upon conditions of service, environment, fabrication details plus other factors, TTP should be consulted for specific recommendation.

## HERESITE Advantages

- Elimination of costly metals
- Extended service life
- Smooth surface – reduced cleaning
- Complete coverage by dipping
- Good thermal conductor
- Good abrasion resistance
- Resistant to many corrosive environments
- Good temperature resistance

## Note

**3 week lead time adder**

# HERESITE

## HERESITE is resistant to Fumes of the Following

acetates - all  
acetic acid  
acetone  
acetylene  
acrylonitrile  
alcohols - all  
aldehydes - all  
alum  
amines - all  
ammonia  
ammonium hydroxide  
ammonium nitrate  
aniline  
benzoic acid  
benzol  
boric acid  
brine  
butane  
carbolic acid  
carbonates - all  
carbon monoxide  
carbon tetrachloride  
chlorides - all  
chlorinated solvents - all  
chlorine - less than 100 ppm  
chloroform  
chromic acid  
citric acid  
coke oven gas  
esters - all  
ethers - all  
ethylene oxide  
fatty acids  
fluosilicic acid  
formaldehyde  
formic acid  
freon  
fuels - all  
gases - inert  
gases - manufactured  
gases - natural  
glycerin  
glycols - all  
hydrocarbons - all  
hydrochloric acid  
hydrogen  
iodides - all  
ketones - all  
lacquers  
lactic acid  
maleic acid  
malic acid  
methanol  
methylene chloride  
naphthalene  
nitrates - all  
nitric acid (dilute)  
nitrates - all  
nitrobenzene  
nitrogen fertilizers  
oils, mineral and vegetable - all  
oxalic acid  
oxygen  
perchloric acid (dilute)  
phenol  
phosphoric acid  
picric acid  
propane  
salicylic acid  
silicic acid  
steam vapor  
stearic acid  
sulfate liquors  
sulfonic acid  
sulfur dioxide  
sulfuric acid  
sulfurous acid  
surfactants  
tannic acids  
tetraethyl lead  
toluene  
trisodium phosphate  
urea  
saltwater  
water  
xylene

## HERESITE is not resistant to Fumes of the Following

aluminum fluoride  
ammonium fluoride  
aqua regia  
bleaching compounds  
brass plating solutions  
bromine - over 100 ppm  
bronze plating solutions  
cadmium cyanide  
calcium hypochlorite  
caustic soda  
chlorine - over 100 ppm  
cyanide plating solutions  
fluorine - over 100 ppm  
hydrofluoric acid (conc.)  
hydrogen peroxide  
hypochlorites  
nitric acid (conc.)  
nitrogen oxides  
potassium hydroxide  
sodium fluoride (conc.)  
sodium hydroxide (conc.)