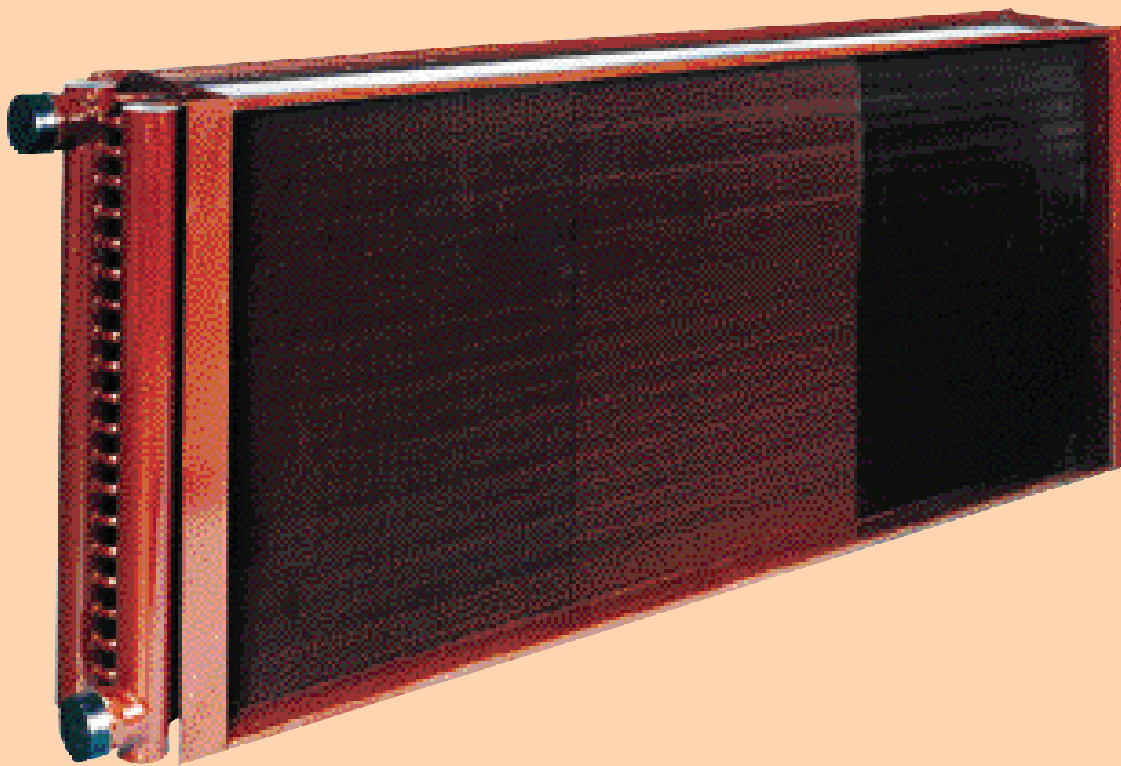


CORROSION PROTECTION

***HERESITE CORROSION PROTECTION
FOR FINNED TUBE HEATING, COOLING
AND QDT HEAT RECOVERY COILS***



EngA®

DESOTO, KANSAS

ENGINEERED AIR®

CALGARY, ALBERTA

QDT®
HEAT PIPES

NEWMARKET, ONTARIO

INTRODUCTION

The first **HERESITE** coating application to the exterior surfaces of finned tube coils took place in the early 1950's. Since that time the **HERESITE** baking phenolic coating has effectively demonstrated its value in protecting heat transfer coils from corrosive attack, thereby appreciably increasing equipment service life. The excellent chemical and temperature resistance coupled with the good heat transfer properties of the **HERESITE** coating have made possible the outstanding results being obtained. **ENGINEERED AIR**, in searching for corrosion resistant coatings for finned tube heat transfer products, realized that **HERESITE** baked phenolic resins were far superior to any other type of coating on the market, both in terms of heat transfer characteristics and resistance to corrosive attack from an extremely wide range of chemicals.

HERESITE – DESCRIPTION

HERESITE is the registered trademark for pure phenol-formaldehyde thermosetting resinous coatings.

The **HERESITE** coating applied to finned tube coils is the P-413 Flexible Brown Baking Phenolic Coating. This coating is applied to either aluminum, copper or steel with equal results.

We feel it is important to emphasize that **HERESITE** baking phenolic coatings are manufactured and sold only by **HERESITE PROTECTIVE COATINGS INC.** Further, the application of the **HERESITE** baking phenolic coating to finned tube coils is performed at the **HERESITE** plant in Manitowoc, Wisconsin, USA, at **ENGINEERED AIR** in Calgary, Alberta, Canada and at other authorized facilities.

HERESITE – ADVANTAGES

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, with many new applications being found.

HERESITE coating offers a more economical solution than special metals for these applications. Typically, 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 the finned tubes. Additionally, **HERESITE** coated aluminum fins will resist attack from most cleaning agents more successfully than copper fin coils.

HERESITE – APPLICATION

The present day **HERESITE** coating of finned tube coils is the result of many years experience during which time application equipment and procedures have been constantly improved. Today, Engineered Air has one of the largest **HERESITE** facilities in the world. This enables us to **HERESITE** coat, on a routine basis, coils up to the following size and weight.

Maximum Fin Dimensions	- 240" long x 78" wide x 18" deep
Maximum Weight Per Coil	- 4000 pounds per coil
Fin Spacing, 1 to 3 tube rows	- 16 per inch maximum
Fin Spacing, 4 to 6 tube rows	- 14 per inch maximum
Fin Spacing, 7 and 8 tube rows	- 12 per inch maximum

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. Due to specialized surface preparation techniques plus good adhesive properties of the **HERESITE P-413** coating, it is possible to efficiently **HERESITE** coat all the usual metals used in fabricating finned tube coils.

HERESITE – TECHNICAL DATA

Chemical Resistance

The **HERESITE** baking 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 (ppm). Complete chemical resistance data are shown on the following page.

Temperature Resistance

Maximum temperature resistance is 400°F. However, **HERESITE** baking phenolic coatings cannot be recommended for all chemical atmospheres at temperature up to 400°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** baking phenolic coating is a good thermal conductor and its thermal conductivity is expressed as approximately 2000 B.T.U. per hour per square foot per degree Fahrenheit based on an average 3 mil coating thickness. The "K" factor = 6.0.

There is no need to add additional heating or cooling surface due to the presence of **HERESITE** coating.

A GUIDE TO THE CHEMICAL RESISTANCE OF HERESITE BAKED PHENOLIC LININGS

As indicated on Page 3, **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. Because the resistance of **HERESITE** is dependent upon conditions of service, environment, fabrication details plus other factors, **ENGINEERED AIR SALES OFFICES** should be consulted for specific recommendations.

HERESITE IS RESISTANT TO FUMES OF THE FOLLOWING

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

HERESITE IS NOT RESISTANT TO FUMES OF THE FOLLOWING

<i>Aluminum fluoride</i>	<i>cadmium cyanide</i>	<i>hydrogen peroxide</i>
<i>Ammonium fluoride</i>	<i>calcium hypochlorite</i>	<i>hypochlorites</i>
<i>Aqua regia</i>	<i>caustic soda</i>	<i>nitric acid (conc.)</i>
<i>Bleaching compounds</i>	<i>chlorine - over 100ppm</i>	<i>nitrogen oxides</i>
<i>Brass plating solutions</i>	<i>cyanide plating solutions</i>	<i>potassium hydroxide</i>
<i>Bromine – over 100 ppm</i>	<i>fluorine – over 100 ppm</i>	<i>sodium fluoride (conc.)</i>
<i>Bronze plating solutions</i>	<i>hydrofluoric acid (conc.)</i>	<i>sodium hydroxide (conc.)</i>

Note: The statements made in this bulletin are based upon both research and experience and are believed to be entirely accurate. However, no guarantee of their accuracy can be made for obvious reasons and no responsibility can be assumed by **HERESITE PROTECTIVE COATINGS INC.** or **ENGINEERED AIR**.