

Chromalox®

Application Instructions

SERVICE REFERENCE

DIVISION 4	SECTION HTRC
SALES REFERENCE (Supersedes PC401-2)	PC401-3
161-562798-001	
DATE	AUGUST, 2004

Heat Transfer and Release Coating (Patented)



Model No. HTRC
PCN 014293
4 oz. Liquid in Plastic Jar

GENERAL

Chromalox HTRC is used for improving heat transfer and release in the following applications:

1. Cartridge units in drilled holes.
2. Tubular units in drilled holes, grooves or clamp-on surfaces.
3. Strip and Ring heaters in grooves or clamped on to rough surfaces.

Laboratory tests have demonstrated that in high temperature applications, improved heat transfer can lower the internal wire temperature to provide up to 100% improvement in heater life. Chromalox HTRC is recommended for use in the above applications where sheath temperature of the heater is expected to exceed 750°F.

HTRC has an excellent heat transfer co-efficient approaching that of aluminum.

APPLICATION

For best results, thoroughly mix Chromalox HTRC by shaking or stirring until material is well suspended. Mating surfaces should be clean and dry and free of grease and dust.

CAUTION

ELECTRICAL HAZARD. Disconnect all power to heater. In cleaning heater surfaces, wipe with a dry clean cloth only. Do not use any cleaning solutions or solvents that may contaminate the electrical insulation on the heater.

If heater has previously been energized, disconnect power and allow heater to cool. Apply a thin coat to heater surface with a paint brush. Allow to air dry. Several coats can be applied to yield layers as required if each coat is allowed to dry before subsequent applications. Water can be used for thinning and clean up.

IMPORTANT : Chromalox HTRC coating will not contaminate the heater terminals, however since this is a water base coating, the terminals and surrounding area should be allowed to dry thoroughly before energizing heater. Once thoroughly dry, the Chromalox HTRC coating will have a slippery soap like texture. As the heating unit is fitted into its application, the excess coating will be shaved off assuring a good fit for improved heat transfer.

The Chromalox HTRC coating also will facilitate removal of the heating unit when required.

CAUTION

Use of heat transfer material other than HTRC voids heater warranty.

SPECIFICATIONS

Maximum Use Temperature — 1800°F

Shelf Life — Greater than one year

Refer to Material Safety Data Sheet before use (see other side).



MATERIAL SAFETY DATA SHEET

DATE AUGUST 25, 2004		SECTION 1	
MANUFACTURER'S NAME CHROMALOX, INC.		EMERGENCY TELEPHONE NO. 1-800-368-2493	
ADDRESS 103 GAMMA DRIVE EXT., PITTSBURGH, PA 15238			
CHEMICAL NAME AND SYNONYMS BORON NITRIDE		TRADE NAME AND SYNONYMS CHROMALOX HEAT TRANSFER AND RELEASE COATING	
CHEMICAL FAMILY METAL NITRIDE		FORMULA BN IN PAINT FORM	
SECTION II — HAZARDOUS INGREDIENTS			
PAINTS, PRESERVATIVES & SOLVENTS		%	TLV (mg M ³)
PIGMENTS			
BORON NITRIDE		25	5
VEHICLE			
WATER*		70	NA
HYDRATED ALUMINA		5	10
*WATER IS ACIDIFIED USING NITRIC ACID (HNO ₃) AT A 3% CONCENTRATION.			
SECTION III — PHYSICAL DATA			
BOILING POINT (°F)		NE	SPECIFIC GRAVITY (H ₂ O-1) 1.19
VAPOR PRESSURE		NE	PERCENT VOLATILE BY WEIGHT (%) 70
VAPOR DENSITY (AIR = 1)		1	EVAPORATION RATE LESS THAN WATER
SOLUBILITY IN WATER			STATE LIQUID
DILUTABLE			
APPEARANCE AND ODOR WHITE/NEARLY ODORLESS			
SECTION IV — FIRE, EXPLOSION & REACTIVITY HAZARD DATA			
FLASH POINT (Method Used) NOT FLAMMABLE			
EXTINGUISHING MEDIA NOT FLAMMABLE			
SPECIAL FIRE FIGHTING PROCEDURES NONE			
UNUSUAL FIRE AND EXPLOSION HAZARDS NONE			
STABILITY		CONDITIONS TO AVOID	
UNSTABLE		NONE KNOWN	
STABLE	XX		
INCOMPATIBILITY (Materials to Avoid) MATERIALS HIGHLY SENSITIVE TO ACIDIC SOLUTIONS.			
HAZARDOUS DECOMPOSITION PRODUCTS ON FIRST HEATING TO 600 C, H ₂ O AND NO _x ARE EMITTED IN SMALL QUANTITIES.			
HAZARDOUS POLYMERIZATION		MAY OCCUR	CONDITIONS TO AVOID NONE KNOWN
		WILL NOT OCCUR	
			XX

SECTION V — HEALTH HAZARD DATA		
ROUTES OF ENTRY		
INGESTION		INHALATION
CARCINOGENIC	THRESHOLD LIMIT VALUE	
NO	NOT ESTABLISHED	
EFFECTS OF OVEREXPOSURE		
MILD SKIN IRRITATION WITH CONTINUED EXPOSURE. IRRITATION OR INJURY TO RESPIRATORY TRACT. BURNING IN MOUTH, ABDOMINAL PAIN. SEVERE EXPOSURE TO BN DUST		
MAY PRODUCE PNEUMOCONIOSIS. MAY CAUSE EYE DAMAGE. MILDLY ACIDIC, pH = 2 to 3.		
EMERGENCY AND FIRST AID PROCEDURES		
FLUSH EYES WITH WATER FOR AT LEAST 15 MINUTES. REMOVE CLOTHING AND WASH CONTAMINATED CLOTHING AND WASH CONTAMINATED AREAS OF THE BODY WITH SOAP AND WATER. IF INGESTED, GIVE FLUIDS IN LARGE QUANTITIES. IF INHALED, REMOVE TO FRESH AIR AND TREAT SYMPTOMS. IF INGESTED OR INHALED, SEEK PROMPT MEDICAL ATTENTION.		
SECTION VI — SPILL OR LEAK PROCEDURES		
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
CONTAIN, ABSORB ONTO A NON-FLAMMABLE ABSORBENT MATERIAL AND DISPOSE OF AS DIRECTED BELOW.		
WASTE DISPOSAL METHOD		
CONSULT LOCAL, STATE AND FEDERAL REGULATIONS. THIS MATERIAL IN LIQUID FORM IS MILDLY ACIDIC, pH = 2 to 3.		
SECTION VII — SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify Type)		
IF SPRAYED, USE MSHA/NIOSH APPROVED RESPIRATOR.		
VENTILATION	LOCAL EXHAUST	SPECIAL
	NORMAL ROOM VENTILATION	
	MECHANICAL	OTHER
	IF SPRAYED USE APPROVED SPRAY BOOTH	
PROTECTIVE GLOVES	EYE PROTECTION	
RUBBER	GOGGLES	
OTHER PROTECTIVE EQUIPMENT		
PROTECTIVE CLOTHING		
SECTION VIII — SPECIAL PRECAUTIONS FOR SAFE HANDLING		
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
STORE IN ORIGINAL CONTAINER. AVOID USE OF MATERIALS OR EQUIPMENT SENSITIVE OR REACTIVE WITH ACIDIC SOLUTIONS.		
OTHER PRECAUTIONS		
WHEN DRIED AND UNDER DUSTING CONDITIONS, NOTE EFFECT OF OVER-EXPOSURE WITH BORON NITRIDE CONTAINING PRODUCTS CITED ABOVE.		

Disclaimer:

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

WARRANTY AND LIMITATION OF REMEDY AND LIABILITY

Chromalox warrants only that the Products and parts manufactured by Chromalox, when shipped, and the work performed by Chromalox when performed, will meet all applicable specification and other specific product and work requirements (including those of performance), if any, and will be free from defects in material and workmanship under normal conditions of use. All claims for defective or nonconforming (both hereinafter called defective) Products, parts or work under this warranty must be made in writing immediately upon discovery, and in any event, within one (1) year from delivery, provided, however all claims for defective Products and parts must be made in writing no later than eighteen (18) months after shipment by Chromalox. Defective and nonconforming items must be held for Chromalox's inspections and returned to the original f.o.b. point upon request. THE FOREGOING IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Notwithstanding the provisions of this WARRANTY AND LIMITATION Clause, it is specifically understood that Products and parts not manufactured and work not performed by Chromalox are warranted only to the extent and in the manner that the same are warranted to Chromalox by Chromalox's vendors, and then only to the extent that Chromalox is reasonably able to enforce such warranty, it being understood Chromalox shall have no obligation to initiate litigation unless Buyer undertakes to pay all cost and expenses therefor, including but not limited to attorney's fees, and indemnifies Chromalox against any liability to Chromalox's

vendors arising out of such litigation.

Upon Buyer's submission of a claim as provided above and its substantiation, Chromalox shall at its option either (i) repair or replace its Products, parts or work at the original f.o.b. point of delivery or (ii) refund an equitable portion of the purchase price.

THE FOREGOING IS CHROMALOX'S ONLY OBLIGATION AND BUYER'S EXCLUSIVE REMEDY FOR BREACH OF WARRANTY, AND IS BUYER'S EXCLUSIVE REMEDY AGAINST CHROMALOX FOR ALL CLAIMS ARISING HEREUNDER OR RELATING HERETO WHETHER SUCH CLAIMS ARE BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORIES, BUYER'S FAILURE TO SUBMIT A CLAIM AS PROVIDED ABOVE SHALL SPECIFICALLY WAIVE ALL CLAIMS FOR DAMAGES OR OTHER RELIEF, INCLUDING BUT NOT LIMITED TO CLAIMS BASED ON LATENT DEFECTS. IN NO EVENT SHALL BUYER BE ENTITLED TO INCIDENTAL OR CONSEQUENTIAL DAMAGES AND BUYER SHALL HOLD CHROMALOX HARMLESS THEREFROM. ANY ACTION BY BUYER ARISING HEREUNDER OR RELATING HERETO, WHETHER BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORIES, MUST BE COMMENCED WITHIN ONE (1) YEAR AFTER THE DATE OF SHIPMENT OR IT SHALL BE BARRED.

W2008M

Chromalox®

PRECISION HEAT AND CONTROL

2150 N. RULON WHITE BLVD., OGDEN, UT 84404
Phone: 1-800-368-2493 www.chromalox.com