Underwriters Laboratories Inc.®

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MR. R DECHURCH
HEAT TRACE PRODUCTS L L C
233 FLORENCE ST
LEOMINSTER MA 01453

Date: 2006/10/09
Subscriber: 130083001
File No: E125118
Project No: 06NK03192
PD No: 06M53638
Type: R
PO Number: 317828

Subject: **Procedure And/Or Report Material**

The following material resulting from the investigation under the above numbers is enclosed.

Issue Date	Vol	Sec	Pages	Revised Date
2006/09/12	1		Revised Authorization Page(s)	2006/09/12
2006/09/12	1		Marking Data Page(s)	
1989/11/27	1	1	Cover Page(s)	
1989/11/27	1	1	New Description Page(s) 1A	2006/09/12
1989/11/27	1	1	Revised Description Page(s) 1	2006/09/12
1989/11/27	1	1	New Illustration(s) 15	2006/09/12
1989/11/27	1	1	New Test Record 3	2006/09/12
2000/05/22	1	2	Cover Page(s)	
2000/05/22	1	2	New Description Page(s) 1A	2006/09/12
2000/05/22	1	2	Revised Description Page(s) 1	2006/09/12
2000/05/22	1	2	New Illustration(s) 5	2006/09/12

Inspections at your plant will be conducted under the supervision of Pamela Blanchette, Area Manager, UL Inspection Center New England

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

Please review this material and report any inaccuracies to our Customer Service Professional, PHONE: 1-877-ULHELPS (1-877-854-3577), FAX: 1-847-407-1395, E-MAIL: customerservice.nbk@us.ul.com, referring to the above Project and/or PD Numbers.

NBK File

UL INSPECTION CENTER 14

ADDENDUM TO TRANSMITTAL LETTER

MR. R DECHURCH
HEAT TRACE PRODUCTS L L C
233 FLORENCE ST
LEOMINSTER MA 01453

Date:	2006/10/09
Subscriber:	130083001
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Issue Date	Vol	Sec	Pages		Revised Date
2000/05/22	1	2	New	Test Record 2	2006/09/12

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File E125118 Vol 1 Issued: 1989-11-10
Revised: 2006-10-06

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

PIPE HEATING CABLE, INDUSTRIAL AND COMMERCIAL
(KQXR,KQXR7)
****
Complementary Product Category
HEATING CABLE SYSTEMS FOR USE ON FIRE PROTECTION SYSTEM PIPING
(VGNJ)

Manufacturer: (130083-001)
HEAT TRACE PRODUCTS L L C
233 FLORENCE ST
LEOMINSTER MA 01453

Applicant: (130083-001)
SAME AS MANUFACTURER

Listee: (130083-001)
SAME AS MANUFACTURER

This Procedure authorizes the above manufacturer to use the marking specified by Underwriters Laboratories Inc. only on products covered by this Procedure, in accordance with the applicable Follow-Up Service Agreement.

The prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

The Procedure contains information for the use of the above named Manufacturer and representatives of Underwriters Laboratories Inc. and is not to be used for any other purpose. It is lent to the Manufacturer with the understanding that it is not to be copied, either wholly or in part, and that it will be returned to Underwriters Laboratories Inc. upon request.

This PROCEDURE, and any subsequent revisions, is the property of UNDERWRITERS LABORATORIES INC. and is not transferable.

UNDERWRITERS LABORATORIES INC.

Sajeev Jesudas
Chief Operating Officer

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

LISTING MARK

The Listing mark consists of four elements placed in close proximity and shall appear on Listed products only. Minimum size is not specified, as long as the Listing Mark is legible. The following is suggested.

XXXX = The control number assigned by UL, 24X6

The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL Mark is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible to the naked eye.

The product identity is: "PIPE HEATING CABLE".

The product identity may be omitted if the Mark is directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process. The product identity may appear elsewhere on the product if the other three elements are part of the nameplate which includes the rating or the catalog or model designation.

Separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) will always include the four elements.

The manufacturer may reproduce the Mark or obtain it from a UL authorized supplier.

THIS PAGE IS TO BE REVISED BY FUS DEPARTMENT ONLY

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

LISTING MARK

The Listing Mark consists of four elements placed in close proximity and shall appear on Listed products only. Minimum size is not specified, as long as the Listing Mark is legible. The following is suggested. (If only Canadian coverage is authorized, use only the C-UL Symbol).

UL Symbol to the left and the C-UL Symbol to the right.

Alternatively, the Canadian/US Mark may be used. The UL Symbol with "C" to the left and "US" to the right.

XXXX = The control number assigned by UL, 24X6.

The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL Mark is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible to the naked eye.

The product identity is: "HEATING CABLE", "PIPE HEATING CABLE", or other appropriate product identities.

The product identity may be omitted if the Mark is directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process. The product identity may appear elsewhere on the product if the other three elements are part of the nameplate which includes the rating or the catalog or model designation.

Separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) will always include the four elements.

The manufacturer may reproduce the Mark or obtain it from a UL authorized supplier.

THIS PAGE IS TO BE REVISED BY FUS DEPARTMENT ONLY

Listing Mark Data Page

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

LISTING MARK

The Listing Mark consists of four elements placed in close proximity and shall appear on Listed products only. Minimum size is not specified, as long as the Listing Mark is legible. The following is suggested.

XXXX = The control number assigned by UL, 24X6.

The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL Mark is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible to the naked eye.

The product identity is: "Pipe Heating Cable."

The product identity may be omitted if the Mark is directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process. The product identity may appear elsewhere on the product if the other three elements are part of the nameplate which includes the rating or the catalog or model designation.

Separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) will always include the four elements.

The manufacturer may reproduce the Mark or obtain it from a UL authorized supplier. The list of UL authorized label suppliers can be found on UL's online directory at www.ul.com.

D E S C R I P T I O N

PRODUCT COVERED:

Industrial and Commercial Pipe Heating Cable Systems, Part No. 2803, 2805, 2806 followed by the digits "10" or "20" and followed by letters "C" or "R".

GENERAL PURPOSE AND USE:

These are self-regulating pipe heating cables manufactured in various voltages, wattages, and lengths. They are intended to be laid along side or wrapped around a pipe or valve. No "In-Line" or "T" splices are available.

The steel sprinkler pipe heating cable is intended for use on listed Schedules 5,10,30,and 40 steel sprinkler pipe, elbows,tees,flanges, hangers, and valves with a maximum pipe diameter of 6 in., on piping systems where the minimum ambient temperature is not less than -40°F. The product is intended to be installed on standpipe and sprinkler piping, between buildings, on piping in unheated areas or piping through coolers or freezers. This product is not intended to be used as the means to prevent freezing of either sprinkler system control valves, branchlines, or sprinklers. UL Listed glass fiber insulation with weatherproof cladding shall be installed in accordance with the manufacturer's installation instructions.

MAXIMUM ELECTRICAL RATINGS:

Part No.	W/ft	V	Maximum Operating Optional Overshield	Length, ft
2803-10C	3	120	Tinned Copper Braid	150
2803-10R	3	120	Braid and Overjacket	150
2805-10C	5	120	Tinned Copper Braid	125
2805-10R	5	120	Braid and Overjacket	125
2806-10C	6	120	Tinned Copper Braid	250
2806-10R	6	120	Braid and Overjacket	250
2806-20C	6	277	Tinned Copper Braid	450
2806-20R	6	277	Braid and Overjacket	450

INSTALLATION:

The cable is to be permanently secured to a pipe or valve and covered with thermal insulation. For further details of the installation, refer to the manufacturer's instruction manual which is to be included in each connection kit. See ILLS. 1 through 4 for contents of the instruction manual.

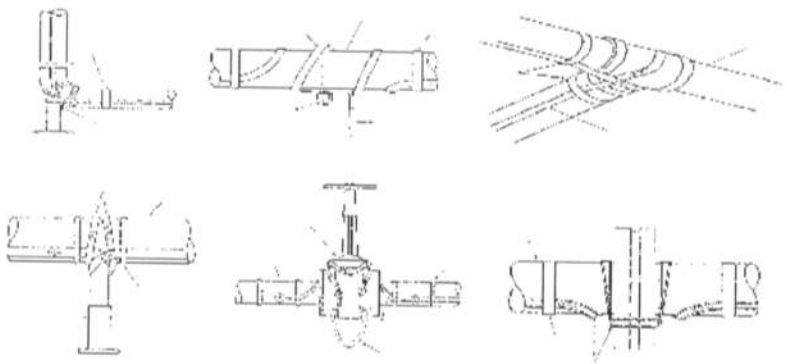
For fire protection system use see ILL. 15 for guidelines.

Installation Guidelines for Fire Protection Systems

1. For use on insulated UL Listed schedules 5, 10, 20, and 40 standpipe and sprinkler system pipe up to and including 6 inch in size. Includes use on elbows, tees, flanges, hangars and valves as explained below: (Valid only when used in conjunction with fiberglass insulation with a minimum k-factor of 0.25 BTU/hr-°F-ft^2 in with weatherproof cladding)

   For piping 2" and smaller in diameter use one single run of 2705 or 2806 cable.
   For piping between 2" and 4" in diameter, use one single run of 2708 cable.
   For piping between 4" and up 5.5" in diameter use one single run of 2710 cable.
   For piping greater than 5.5" and less than or equal to 6" in diameter use the 2710 cable wrapped around the piping with a center to center spacing between wraps of 10 "or less.

   For cable application to elbows, tees, flanges, hangars (supports) and valves, follow one or more of the diagrams below:



2. For systems having piping which connects between buildings in unheated areas, coolers and freezers.
3. For systems having sprinkler piping that is installed in coolers or freezers where the temperature is -40°F or greater.

Not intended to be used as the means to prevent freezing of sprinkler branch lines including all accessories for these lines and automatic (deluge, preaction, dry pipe, alarm, etc…) valves as referenced in NFPA 13.

For use in Ordinary Hazard Occupancies only as specified in NFPA 13 the Standard for Installation of Sprinkler Systems.

Fire suppression system heater circuits must be connected to monitoring equipment. A Listed Power Supervisory Relay with the appropriate voltage coil shall be connected in parallel prior to the heat tracing. The output contacts of the listed power supervisory relay should be connected to a Listed Fire Control Panel which has provisions for supervisory circuits.

DESCRIPTION

PRODUCT COVERED:

Commercial Pipe Heating Cable system, Series 2700 and Series SRHW.

GENERAL PURPOSE AND USE:

These are self-regulating pipe heating cables, manufactured in various voltage, wattage, and lengths. They are intended to be laid along side or wrapped around a pipe or valve.

The steel sprinkler pipe heating cable is intended for use on listed Schedules 5,10,30,and 40 steel sprinkler pipe, elbows,tees,flanges, hangers, and valves with a maximum pipe diameter of 6 in., on piping systems where the minimum ambient temperature is not less than -40°F. The product is intended to be installed on standpipe and sprinkler piping, between buildings, on piping in unheated areas or piping through coolers or freezers. This product is not intended to be used as the means to prevent freezing of either sprinkler system control valves, branchlines, or sprinklers. UL Listed glass fiber insulation with weatherproof cladding shall be installed in accordance with the manufacturer's installation instructions.

Part No.	W/ft	V ac	Shield	Overjacket	Max Op Length - ft	Parent Heater	Notes
2703-11C,R00	3	120	Tinned copper	FRTPE	330	-	1, 2
2703-21C,R00	3	240	Tinned copper	FRTPE	660	-	1, 2
2705-11C,R00	5	120	Tinned copper	FRTPE	270	-	1, 2
2705-21C,R00	5	240	Tinned copper	FRTPE	540	-	1, 2
2708-11C,R00	8	120	Tinned copper	FRTPE	210	-	1, 2
2708-21C,R00	8	240	Tinned copper	FRTPE	420	-	1, 2
2710-11C,R00	10	120	Tinned copper	FRTPE	165	-	1, 2
2710-21C,R00	10	240	Tinned copper	FRTPE	360	-	1, 2
SRHW-1B40	3	120	Tinned copper	FRTPE	330	2703-11R00	3
SRHW-2B40	2.3	208	Tinned copper	FRTPE	660	2703-21R00	3
SRHW-1G45	5	120	Tinned copper	FRTPE	270	2705-11R00	3
SRHW-2G45	3.8	208	Tinned copper	FRTPE	540	2705-21R00	3
SRHW-1Y50	8	120	Tinned copper	FRTPE	210	2708-11R00	3
SRHW-2Y50	6.1	208	Tinned copper	FRTPE	420	2708-21R00	3
SRHW-1R60	10	120	Tinned copper	FRTPE	180	2710-11R00	3
SRHW-2R60	7.6	208	Tinned copper	FRTPE	360	2710-21R00	3

Notes:

1. Letter in italics determines shield/overjacket construction - C = tinned copper braid minimum 80% minimum coverage; R = tinned copper braid as above and FRTPE overjacket.

2. Overjacket is optional

3. These heaters are identical to the 2700 Series heater except for the color of the jacket over the tinned copper braid.

INSTALLATION:

The cable is permanently secured to a pipe or valve and covered with thermal insulation. For further details of the installation, refer to the manufacturer's Instruction Manual, which is to be included in each connection kit.

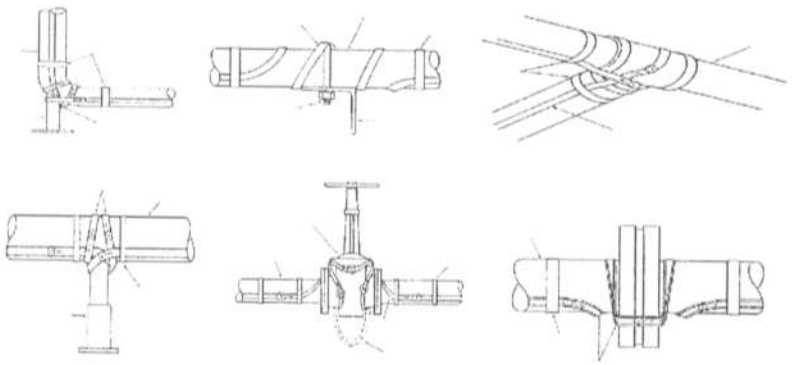
For fire protection system use, see ILL. 5 concerning guidelines.

Installation Guidelines for Fire Protection Systems

1. For use on insulated UL Listed schedules 5, 10, 20, and 40 standpipe and sprinkler system pipe up to and including 6 inch in size. Includes use on elbows, tees, flanges, hangars and valves as explained below: (Valid only when used in conjunction with fiberglass insulation with a minimum k-factor of 0.25 BTU/hr-°F-ft^2–in with weatherproof cladding)

   For piping 2" and smaller in diameter use one single run of 2705 or 2806 cable.
   For piping between 2" and 4" in diameter, use one single run of 2708 cable.
   For piping between 4" and up 5.5" in diameter use one single run of 2710 cable.
   For piping greater than 5.5" and less than or equal to 6" in diameter use the 2710 cable wrapped around the piping with a center to center spacing between wraps of 10 "or less.

   For cable application to elbows, tees, flanges, hangars (supports) and valves, follow one or more of the diagrams below:



2. For systems having piping which connects between buildings in unheated areas, coolers and freezers.
3. For systems having sprinkler piping that is installed in coolers or freezers where the temperature is -40°F or greater.

Not intended to be used as the means to prevent freezing of sprinkler branch lines including all accessories for these lines and automatic (deluge, preaction, dry pipe, alarm, etc…) valves as referenced in NFPA 13.

For use in Ordinary Hazard Occupancies only as specified in NFPA 13 the Standard for Installation of Sprinkler Systems.

Fire suppression system heater circuits must be connected to monitoring equipment. A Listed Power Supervisory Relay with the appropriate voltage coil shall be connected in parallel prior to the heat tracing. The output contacts of the listed power supervisory relay should be connected to a Listed Fire Control Panel which has provisions for supervisory circuits.

File E125118
Project 89NK11713
Project 06NK03192

Issued: November 27, 1989
Revised: September 12, 2006

REPORT

on

INDUSTRIAL AND COMMERCIAL PIPE HEATING CABLE

Complementary Product Category

HEATING CABLE SYSTEMS FOR USE ON FIRE PROTECTION SYSTEM PIPING (VGNJ)

Fluorocarbon Co.
Aurora, OH

D E S C R I P T I O N

PRODUCT COVERED:

Industrial and Commercial Pipe Heating Cable Systems, Part No. 2803, 2805, 2806 followed by the digits "10" or "20" and followed by letters "C" or "R".

GENERAL PURPOSE AND USE:

These are self-regulating pipe heating cables manufactured in various voltages, wattages, and lengths. They are intended to be laid along side or wrapped around a pipe or valve. No "In-Line" or "T" splices are available.

The steel sprinkler pipe heating cable is intended for use on listed Schedules 5,10,30,and 40 steel sprinkler pipe, elbows,tees,flanges, hangers, and valves with a maximum pipe diameter of 6 in., on piping systems where the minimum ambient temperature is not less than -40°F. The product is intended to be installed on standpipe and sprinkler piping, between buildings, on piping in unheated areas or piping through coolers or freezers. This product is not intended to be used as the means to prevent freezing of either sprinkler system control valves, branchlines, or sprinklers. UL Listed glass fiber insulation with weatherproof cladding shall be installed in accordance with the manufacturer's installation instructions.

MAXIMUM ELECTRICAL RATINGS:

Part No.	W/ft	V	Maximum Operating Optional Overshield	Length, ft
2803-10C	3	120	Tinned Copper Braid	150
2803-10R	3	120	Braid and Overjacket	150
2805-10C	5	120	Tinned Copper Braid	125
2805-10R	5	120	Braid and Overjacket	125
2806-10C	6	120	Tinned Copper Braid	250
2806-10R	6	120	Braid and Overjacket	250
2806-20C	6	277	Tinned Copper Braid	450
2806-20R	6	277	Braid and Overjacket	450

INSTALLATION:

The cable is to be permanently secured to a pipe or valve and covered with thermal insulation. For further details of the installation, refer to the manufacturer's instruction manual which is to be included in each connection kit. See ILLS. 1 through 4 for contents of the instruction manual.

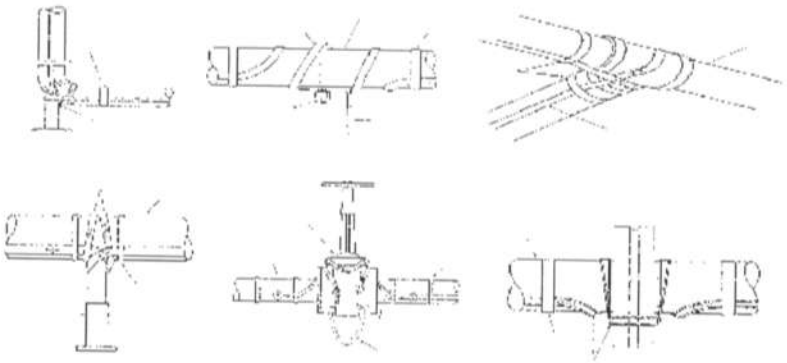
For fire protection system use see ILL. 15 for guidelines.

Installation Guidelines for Fire Protection Systems

1. For use on insulated UL Listed schedules 5, 10, 20, and 40 standpipe and sprinkler system pipe up to and including 6 inch in size. Includes use on elbows, tees, flanges, hangars and valves as explained below: (Valid only when used in conjunction with fiberglass insulation with a minimum k-factor of 0.25 BTU/hr-°F-ft^2 -in with weatherproof cladding)

   For piping 2" and smaller in diameter use one single run of 2705 or 2806 cable.
   For piping between 2" and 4" in diameter, use one single run of 2708 cable.
   For piping between 4" and up 5.5" in diameter use one single run of 2710 cable.
   For piping greater than 5.5" and less than or equal to 6" in diameter use the 2710 cable wrapped around the piping with a center to center spacing between wraps of 10 "or less.

   For cable application to elbows, tees, flanges, hangars (supports) and valves, follow one or more of the diagrams below:



2. For systems having piping which connects between buildings in unheated areas, coolers and freezers.
3. For systems having sprinkler piping that is installed in coolers or freezers where the temperature is -40°F or greater.

Not intended to be used as the means to prevent freezing of sprinkler branch lines including all accessories for these lines and automatic (deluge, preaction, dry pipe, alarm, etc…) valves as referenced in NFPA 13.

For use in Ordinary Hazard Occupancies only as specified in NFPA 13 the Standard for Installation of Sprinkler Systems.

Fire suppression system heater circuits must be connected to monitoring equipment. A Listed Power Supervisory Relay with the appropriate voltage coil shall be connected in parallel prior to the heat tracing. The output contacts of the listed power supervisory relay should be connected to a Listed Fire Control Panel which has provisions for supervisory circuits.

TEST RECORD NO. 3

SAMPLES:

Representative samples of the Series 2705 and 2710 heating cable using the recommended termination kits installed on Schedule 40 pipe were used in this investigation.

The products are currently Listed under File E125118 as Pipe Heating Cables, Industrial and Commercial.

The pipe heating cable was investigated for Fire Protection Service, for systems having piping which connects between buildings in unheated area, coolers, and freezers where the temperature is -40°F or greater.

GENERAL:

Test results relate only to the items tested.

TEST METHOD REFERENCE:

The following tests were conducted in accordance with Electrical Resistance Heat Tracing for Commercial and Industrial Applications, UL515, 1st Edition:

1. Examination of Samples
2. Low temperature
3. Vibration

Based upon the similarities between the Series 2700 pipe heating cable submitted under this investigation with the presently UL Listed Series 2700 pipe heating cables under File E125118, only the tests described below were necessary.

The cable type series 2700 was considered representative of the series 2800 cable types.

The manufacturer's installation instructions were used in the evaluation of the product to determine an appropriate investigation. The installation guidelines for Fire Protection Systems will be included as a separate document in the pipe heating cable kit instructions. See Fig. 6 for installation guidelines.

For thermocouple locations on pipe assemblies, please see Fig. 5.

EXAMINATION OF SAMPLES:

METHOD

Representative samples were examined for compliance with the manufacturer's installation instructions. Also, the manufacturer's installation instructions were examined for conformance with the applicable requirements of UL.

RESULTS

The samples were found to conform with the manufacturer's installation instructions. The installation instructions also complied with the applicable requirements.

LOW TEMPERATURE TEST:

METHOD

Representative samples of the Series 2705 and 2710 heating cable were installed on Schedule 40, 1 in. and 6 in. diameter pipe assemblies,respectively, and were exposed to an ambient temperature of -40°F for 360 h (15 days). The protection for the 1 in. size used a single straight tracing and the protection for the 6 in. size used a spiral wrapping installed in accordance with the manufacturer's instructions using the appropriate termination kits specified and provided by the manufacturer. Listed fiberglass insulation with weather cladding was installed over the pipe. The insulation had a minimum K Factor of 0.25 BTU-in./h degree F ft^2. Each assembly was filled completely with water. The water temperature within the pipe as well as surface temperature on the pipe was continuously monitored and recorded throughout the exposure, using Type K thermocouples.

RESULTS

The heating cable maintained an internal water temperature above 40°F throughout the exposure. See Figs. 1-2.

VIBRATION TEST:

METHOD

Representative samples of the Series 2705 and 2710 pipe heating cable were installed on Schedule 40, 1 and a 6 in. diameter pipe assemblies approximately 30 in. long, respectively, incorporating a Listed rubber gasketed fitting on the 6 in. assembly. The assemblies were secured to the vibration table by means of pipe hangers located on the ends of the sample. The heat tape was installed in accordance with the manufacturer's installation instructions. The assemblies were subjected to a vibration consisting of a variable frequency between 18 and 37 hertz for a period of 120 h with a total displacement of 0.04 in. After the completion of the vibration, the assemblies were filled with water, insulated with Listed fiberglass with weather cladding and exposed to an ambient temperature of -40°F for a period of 24 h. The water temperature within the pipe assemblies was monitored.

RESULTS

After the completion of the vibration conditioning, the assemblies maintained an internal water temperature greater than 40°F throughout the exposure. See Figs.3-4.

Test Record Summary:

The results of this investigation indicate that the product(s) evaluated comply with applicable requirements, and therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Test Record by:
SCOTT S. DANKERT
Engineering Associate

Reviewed by:
MICHAEL G. McCORMICK
Lead Engineering Associate

File E125118
Project 00NK14426
Project 06NK03192

Issued: May 22, 2000
Revised: September 12, 2006

REPORT

on

PIPE HEATING CABLE, INDUSTRIAL AND COMMERCIAL

Complementary Product Category

HEATING CABLE SYSTEMS FOR USE ON FIRE PROTECTION SYSTEM PIPING (VGNJ)

Rockbestos-Surprenant Cable Corp.
East Granby, CT

DESCRIPTION

PRODUCT COVERED:

Commercial Pipe Heating Cable system, Series 2700 and Series SRHW.

GENERAL PURPOSE AND USE:

These are self-regulating pipe heating cables, manufactured in various voltage, wattage, and lengths. They are intended to be laid along side or wrapped around a pipe or valve.

The steel sprinkler pipe heating cable is intended for use on listed Schedules 5,10,30,and 40 steel sprinkler pipe, elbows,tees,flanges, hangers, and valves with a maximum pipe diameter of 6 in., on piping systems where the minimum ambient temperature is not less than -40°F. The product is intended to be installed on standpipe and sprinkler piping, between buildings, on piping in unheated areas or piping through coolers or freezers. This product is not intended to be used as the means to prevent freezing of either sprinkler system control valves, branchlines, or sprinklers. UL Listed glass fiber insulation with weatherproof cladding shall be installed in accordance with the manufacturer's installation instructions.

Part No.	W/ft	V ac	Shield	Overjacket	Max Op Length - ft	Parent Heater	Notes
2703-11*C*,R00	3	120	Tinned copper	FRTPE	330	-	1, 2
2703-21*C*,R00	3	240	Tinned copper	FRTPE	660	-	1, 2
2705-11*C*,R00	5	120	Tinned copper	FRTPE	270	-	1, 2
2705-21*C*,R00	5	240	Tinned copper	FRTPE	540	-	1, 2
2708-11*C*,R00	8	120	Tinned copper	FRTPE	210	-	1, 2
2708-21*C*,R00	8	240	Tinned copper	FRTPE	420	-	1, 2
2710-11*C*,R00	10	120	Tinned copper	FRTPE	165	-	1, 2
2710-21*C*,R00	10	240	Tinned copper	FRTPE	360	-	1, 2
SRHW-1B40	3	120	Tinned copper	FRTPE	330	2703-11R00	3
SRHW-2B40	2.3	208	Tinned copper	FRTPE	660	2703-21R00	3
SRHW-1G45	5	120	Tinned copper	FRTPE	270	2705-11R00	3
SRHW-2G45	3.8	208	Tinned copper	FRTPE	540	2705-21R00	3
SRHW-1Y50	8	120	Tinned copper	FRTPE	210	2708-11R00	3
SRHW-2Y50	6.1	208	Tinned copper	FRTPE	420	2708-21R00	3
SRHW-1R60	10	120	Tinned copper	FRTPE	180	2710-11R00	3
SRHW-2R60	7.6	208	Tinned copper	FRTPE	360	2710-21R00	3

Notes:

1. Letter in italics determines shield/overjacket construction - C = tinned copper braid minimum 80% minimum coverage; R = tinned copper braid as above and FRTPE overjacket.

2. Overjacket is optional

3. These heaters are identical to the 2700 Series heater except for the color of the jacket over the tinned copper braid.

INSTALLATION:

The cable is permanently secured to a pipe or valve and covered with thermal insulation. For further details of the installation, refer to the manufacturer's Instruction Manual, which is to be included in each connection kit.

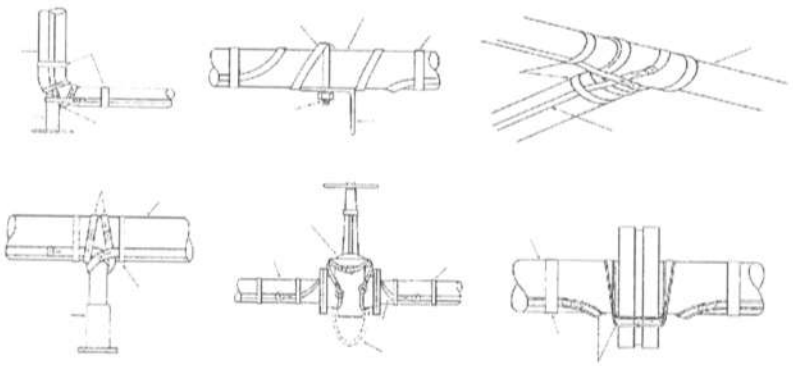
For fire protection system use, see ILL. 5 concerning guidelines.

Installation Guidelines for Fire Protection Systems

1. For use on insulated UL Listed schedules 5, 10, 20, and 40 standpipe and sprinkler system pipe up to and including 6 inch in size. Includes use on elbows, tees, flanges, hangars and valves as explained below: (Valid only when used in conjunction with fiberglass insulation with a minimum k-factor of 0.25 BTU/hr-°F-ft^2–in with weatherproof cladding)

   For piping 2" and smaller in diameter use one single run of 2705 or 2806 cable.
   For piping between 2" and 4" in diameter, use one single run of 2708 cable.
   For piping between 4" and up 5.5" in diameter use one single run of 2710 cable.
   For piping greater than 5.5" and less than or equal to 6" in diameter use the 2710 cable wrapped around the piping with a center to center spacing between wraps of 10 "or less.

   For cable application to elbows, tees, flanges, hangars (supports) and valves, follow one or more of the diagrams below:



2. For systems having piping which connects between buildings in unheated areas, coolers and freezers.
3. For systems having sprinkler piping that is installed in coolers or freezers where the temperature is -40°F or greater.

Not intended to be used as the means to prevent freezing of sprinkler branch lines including all accessories for these lines and automatic (deluge, preaction, dry pipe, alarm, etc…) valves as referenced in NFPA 13.

For use in Ordinary Hazard Occupancies only as specified in NFPA 13 the Standard for Installation of Sprinkler Systems.

Fire suppression system heater circuits must be connected to monitoring equipment. A Listed Power Supervisory Relay with the appropriate voltage coil shall be connected in parallel prior to the heat tracing. The output contacts of the listed power supervisory relay should be connected to a Listed Fire Control Panel which has provisions for supervisory circuits.

TEST RECORD NO. 2

SAMPLES:

Representative samples of the Series 2705 and 2710 heating cable using the recommended termination kits installed on Schedule 40 pipe were used in this investigation.

The products are currently Listed under File E125118 as Pipe Heating Cables, Industrial and Commercial.

The pipe heating cable was investigated for Fire Protection Service, for systems having piping which connects between buildings in unheated area, coolers, and freezers where the temperature is -40°F or greater.

GENERAL:

Test results relate only to the items tested.

TEST METHOD REFERENCE:

The following tests were conducted in accordance with Electrical Resistance Heat Tracing for Commercial and Industrial Applications, UL515, 1st Edition:

1. Examination of Samples
2. Low temperature
3. Vibration

Based upon the similarities between the Series 2700 pipe heating cable submitted under this investigation with the presently UL Listed Series 2700 pipe heating cables under File E125118, only the tests described below were necessary.

The cable type series 2700 was considered representative of the series 2800 cable types.

The manufacturer's installation instructions were used in the evaluation of the product to determine an appropriate investigation. The installation guidelines for Fire Protection Systems will be included as a separate document in the pipe heating cable kit instructions. See Fig. 6 for installation guidelines.

For thermocouple locations on pipe assemblies, please see Fig. 5.

EXAMINATION OF SAMPLES:

METHOD

Representative samples were examined for compliance with the manufacturer's installation instructions. Also, the manufacturer's installation instructions were examined for conformance with the applicable requirements of UL.

RESULTS

The samples were found to conform with the manufacturer's installation instructions. The installation instructions also complied with the applicable requirements.

LOW TEMPERATURE TEST:

METHOD

Representative samples of the Series 2705 and 2710 heating cable were installed on Schedule 40, 1 in. and 6 in. diameter pipe assemblies, respectively, and were exposed to an ambient temperature of -40°F for 360 h (15 days). The protection for the 1 in. size used a single straight tracing and the protection for the 6 in. size used a spiral wrapping installed in accordance with the manufacturer's instructions using the appropriate termination kits specified and provided by the manufacturer. Listed fiberglass insulation with weather cladding was installed over the pipe. The insulation had a minimum K Factor of 0.25 BTU-in./h degree F ft^2. Each assembly was filled completely with water. The water temperature within the pipe as well as surface temperature on the pipe was continuously monitored and recorded throughout the exposure, using Type K thermocouples.

RESULTS

The heating cable maintained an internal water temperature above 40°F throughout the exposure. See Figs. 1-2.

VIBRATION TEST:

METHOD

Representative samples of the Series 2705 and 2710 pipe heating cable were installed on Schedule 40, 1 and a 6 in. diameter pipe assemblies approximately 30 in. long, respectively, incorporating a Listed rubber gasketed fitting on the 6 in. assembly. The assemblies were secured to the vibration table by means of pipe hangers located on the ends of the sample. The heat tape was installed in accordance with the manufacturer's installation instructions. The assemblies were subjected to a vibration consisting of a variable frequency between 18 and 37 hertz for a period of 120 h with a total displacement of 0.04 in. After the completion of the vibration, the assemblies were filled with water, insulated with Listed fiberglass with weather cladding and exposed to an ambient temperature of -40°F for a period of 24 h. The water temperature within the pipe assemblies was monitored.

RESULTS

After the completion of the vibration conditioning, the assemblies maintained an internal water temperature greater than 40°F throughout the exposure. See Figs.3-4.

Test Record Summary:

The results of this investigation indicate that the product(s) evaluated comply with applicable requirements, and therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

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