Drexan Energy Systems Inc.

SPECIFICATION

Self-Regulating Heating Cable

MultiTrace®

CONTENTS

1. SCOPE

This specification covers the requirements for self-regulating heating cables for pipe tracing and roof de-icing applications.

2. PRODUCTS

2.1 OVERVIEW

2.1.1 Self-regulating heating cable shall vary its power output relative to the temperature of the surface of the pipe or vessel. The cable shall be designed such that it can be crossed over itself and cut to length.

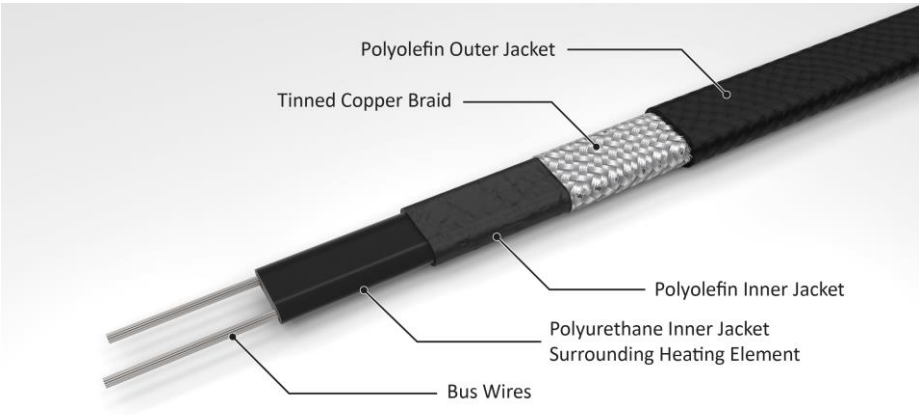
2.1.2 All cables shall be capable of passing a 1.5 kV dielectric test for one minute after undergoing a 7 J impact (CSA C22.2. No. 130-03, 6.2.10).

2.1.3 The heating cable shall be MultiTrace self-regulating heater, with the continuous exposure (maintain) capacity up to 150°F/65°C and intermittent exposure capability up to 185°F/85°C.

2.2 CONSTRUCTION

2.2.1 The heating cable shall consist of two 16 AWG or larger tin-plated copper bus wires, embedded in a self-regulating polymeric core that controls power output so that the cable can be used directly on plastic or metal pipes. Cables shall have a temperature identification number (T-rating) of T6 (185°F/85°C) without use of thermostats. The heating cable shall have a tinned copper braid with a resistance less than the heating cable bus wire resistance as specified in ASTM B193 (CSA, C22.2, No. 130-03 Clause 4.3.4.1)

2.2.2 The braid shall be protected from chemical attack and mechanical abuse by a modified polyolefin outer jacket



2.3 PRODUCT CHARACTERISTICS

2.3.1	Minimum bend radius @ 68˚F/20˚C	1.18 in. (30 mm)
2.3.2	Weight (nominal)	0.84 lb./10 ft. (125 g/m)
2.3.3	Cable dimensions	0.51 x 0.22 in. (13.0 x 5.7 mm)
2.3.4	Bus wire size	16 AWG
2.3.5	Outer jacket color	Black
2.3.6	Supply Voltage	
	• MT-1	100 - 130 VAC
	• MT-2	208 - 277 VAC

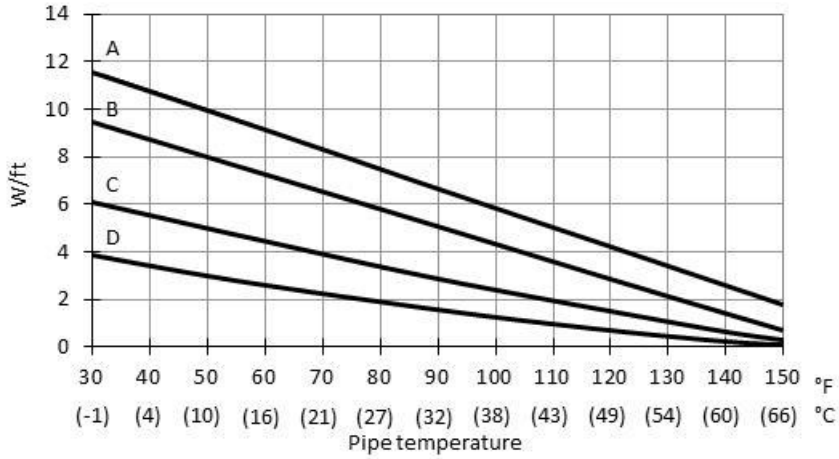
2.4 TEMPERATURE RATINGS

2.4.1	Maximum Continuous Exposure Temperature (power on)	150˚F/65˚C
2.4.2	Maximum Intermittent Exposure Temperature, 1000 hrs (power-on)	185˚F/85˚C
2.4.3	Temperature ID Number (T-Rating)	T6: 185˚F/85˚C Temperature ID numbers are consistent with applicable electrical codes
2.4.4	Minimum Installation Temperature	-40˚F/-40˚C

2.5 NOMINAL POWER OUTPUT RATING AT 120V/240V

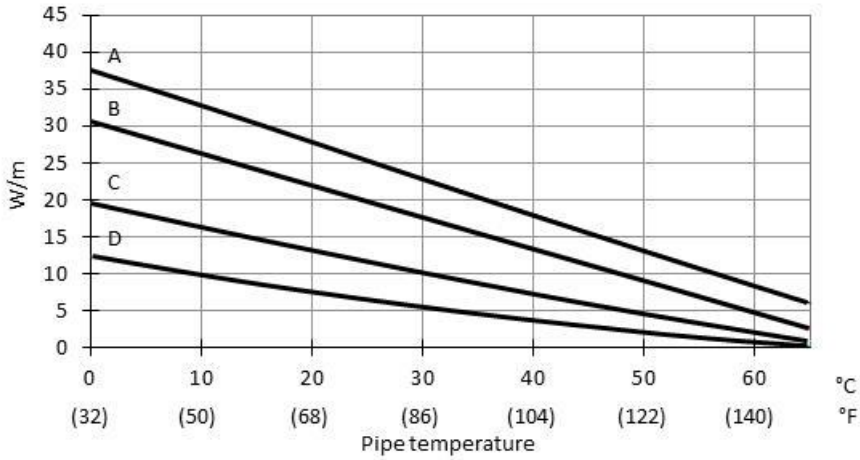
[A] 10-1, 10-2
10.0-12.2 W/ft. @ 50˚F
33-40 W/m @ 10˚C

[B] 8-1, 8-2
8.0-9.8 W/ft. @ 50˚F
26-32 W/m @ 10˚C



[C] 5-1, 5-2
5.0-6.4 W/ft. @ 50˚F
16-21 W/m @ 10˚C

[D] 3-1, 3-2
3.0-4.0 W/ft. @ 50˚F
10-13 W/m @ 10˚C



2.6 ADJUSTMENT FACTORS

	Power Output	Circuit Length
208V		
3-2	0.82	0.96
5-2	0.89	0.93
8-2	0.94	0.89
10-2	0.96	1.06
277V		
3-2	1.21	1.06
5-2	1.14	1.09
8-2	1.07	1.11
10-2	1.07	0.94

2.7 MAXIMUM CIRCUIT LENGTH BASED ON CIRCUIT BREAKER SIZES

For on metal pipes

Maximum continuous circuit length per circuit breaker (feet)

	START-UP AMBIENT TEMP		120V				240V			
	˚F	˚C	15A	20A	30A	40A	15A	20A	30A	40A
MT3	50	10	335	335	335	335	665	665	665	665
	32	0	295				590			
	14	-10	245	330			495	660		
	0	-18	215	290			435	580		
	-20	-29	185	245			370	495		
	-40	-40	160	215	320		320	430	645	
MT5	50	10	225	275	275	275	455	550	550	550
	32	0	190	255			385	510		
	14	-10	165	220			330	440		
	0	-18	145	195			295	395		
	-20	-29	125	170	255		255	340	515	
	-40	-40	110	150	225		225	300	450	
MT8	50	10	145	195	215	215	215	285	430	435
	32	0	125	170			185	250	375	
	14	-10	110	145			165	220	335	
	0	-18	100	135	200		150	205	305	410
	-20	-29	90	120	180		135	185	275	370
	-40	-40	80	105	160		125	165	250	335
MT10	50	10	100	130	185	185	100	135	200	265
	32	0	90	120	180		90	120	180	245
	14	-10	80	110	165		85	110	165	225
	0	-18	75	100	155		75	105	155	210
	-20	-29	70	90	140		70	95	145	195
	-40	-40	60	85	125	170	65	90	135	180

3. TESTING

3.1 INSPECTION ITEM AND FREQUENCY

- Product code — All
- Product length — All
- Appearance — All
- Cable dimension (width and thickness) — Each lot
- Power Output — Each coil
- Dielectric withstand — All
- Insulation resistance — All

3.2 INSPECTION REPORT

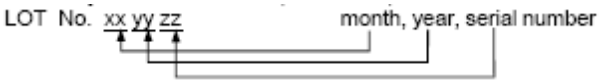
The inspection report, that is written with the test results (as described above) is attached to the product for each shipment.

4. MARKINGS

DREXAN VANCOUVER CANADA V6E 4L7 HEATTRACER MULTITRACE w-v PARALLEL HEATING CABLE MAX xxxVAC 32A vW/FT @50F (zzW/M@10C) [CSA] CUS ORDINARY AREA CLASSIFICATION T6 –G,-WS, CE 2503 12ATEX3095X Ex II 2G Ex e IIC T6 Gb MIN INSTALL -40C WARNING: REFER TO INSTALLATION INSTRUCTIONS LOT No. xxyyzz ####M I (####FT on other side)

- The address and trademark is "DREXAN VANCOUVER CANADA V6E 4L7 HEATTRACER"
- The model and reference number, as:
  (a) MT: "MULTITRACE **w-v** PARALLEL HEATING CABLE" (see chart)
- The rated voltage and the rated current, as "MAX xxxVAC 32A" (see chart)
- The rated wattage, as "yW/FT @ 50F (zzW/M @ 10C)" (see chart)
- The CSA trademark, class and division as:
  (a) MT: "[CSA monogram] CUS ORDINARY AREA CLASSIFICATION"
- The Maximum surface temperature code as "T6"
- The environmental classifications as:
  (a) MT: "-G, –WS"
- ATEX 2014/34/EU markings as: CE 2503 12ATEX3095X Ex II 2G Ex e IIC T6 Gb
- The Minimum install temperature as: MIN INSTALL -40C
- The words "WARNING: REFER TO INSTALLATION INSTRUCTIONS"
- The month and year of manufacture, date code, as "LOT No. xxyyzz".

Note:



- The spool length index as "####M I" (####FT I on the other side)

Model	**w-v**	**xxx** VAC	**y** W/ft.	**zz** W/m
3-1	3-1	120	3	10
5-1	5-1		5	16
8-1	8-1		8	26
10-1	10-1		10	33
3-2	3-2	277	3	10
5-2	5-2		5	16
8-2	8-2		8	26
10-2	10-2		10	33

5. PACKING

Ends of each product must be covered by end caps. For packaging, customer specified label must be applied to the carton box.

6. GENERAL

Furnish, install and commission a complete AMSI/IEEE Std. 515 (US) CSA/CUS Std. C22.2 No. 130-03 certified trace heating system comprising self-regulating heating cables, connection components, and control for the purposes of roof and gutter de-icing applications.

6.1 MULTITRACE SELF-REGULATING HEATER CABLE

a. The cable shall be Drexan HeatTracer MultiTrace self-regulating cable consisting of two (2) 16 AWG nickel copper bus wires encased in a semi-conductive, self-regulating polymeric that changes its wattage output as it responds to temperature along the cable length. Wattage output tolerances of the cable shall be -0 / +20%. Cables with negative wattage output tolerances shall not be used. The core shall be encased in a radiated cross-linked, modified polyolefin dielectric jacket. The dielectric jacket shall have a tinned copper wire shield (braided) encased in an outer jacket of modified polyolefin.

b. The cable shall be capable of operating at 120, 208, 220, 240 and 277 volts without use of a transformer.

c. The cable shall be capable of being cut to length in the field with all connection components field installed.

6.2 COMPONENTS

Drexan HeatTracer power connections, splices and end seals must be used with Drexan HeatTracer Cables in accordance with the installation instructions, to ensure product performance criteria and to comply with requirements of warranty, codes and approvals.

The connection components shall be one of the following varieties:

a. Heat Shrinkable

b. Metallic assemblies

c. Polymeric quick connections

6.3 CONTROL [CHOOSE OPTION A, B, OR C]

a. Automatic Snow Controller **(Recommended)**
The system shall be controlled by a snow/ice sensor mounted in the bottom of the gutter.

b. Manual Switch **(Acceptable Alternative)**
The system shall be controlled by a manual switch either directly or through an appropriate contactor.

c. Thermostat Control **(Acceptable Alternative)**
A fixed set-point thermostat shall be installed to control the heater either directly or through a contactor. The thermostat may be either ambient or line-sensing.

7. INSTALLATION AND COMMISSIONING:

7.1 Trace heating cable and cable connection components shall be installed in accordance with Manufacturer's Installation Instructions, including compliance with maximum circuit lengths for the selected breaker size and the design ambient start up conditions.

7.2 Heating cable shall be affixed to bottom of gutter using TAPE-AL aluminum foil, chloride free tape. Cable fastened to the roof shall be fastened by clips and methods dependent on the roof surface material.

7.3 The system shall be considered acceptable when all of the following conditions are met:

a. Heating cable has been correctly installed.
b. Connection components have been correctly installed.

Note: The heating cable circuit shall be protected with ground fault equipment in accordance with Global and Canadian Electrical Codes.