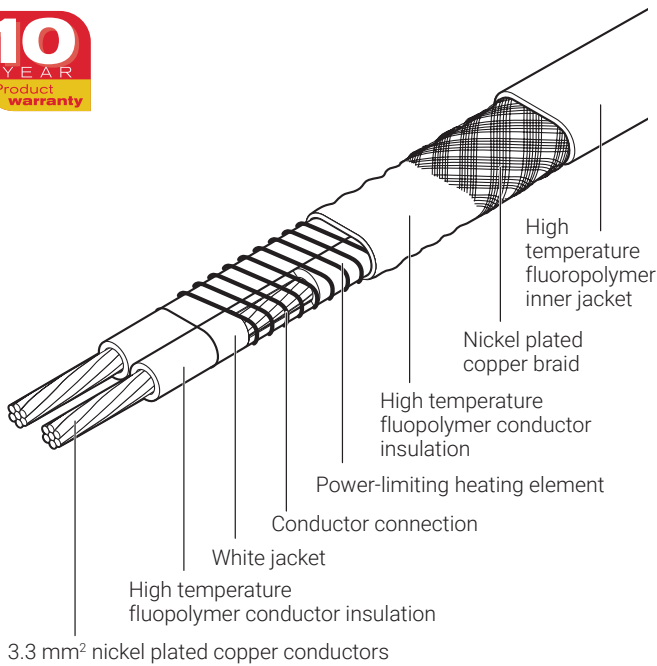


### High-Temperature Power-Limiting Heating Cable

#### HEATING CABLE CONSTRUCTION



nVent RAYCHEM VPL is a family of power limiting heating cables designed for pipe and equipment heat-tracing in industrial applications.

VPL can be used for frost protection and process temperature maintenance requiring high power output and/or high temperature exposure. VPL can provide process temperature maintenance up to 235°C (depending on cable type) and can withstand routine steam purges and temperature exposure to 260°C with power off.

Power-limiting cables are parallel heaters formed by a coiled resistor alloy heating element wrapped around two parallel conductors. The distance between conductor contact points forms the heating zone length. This parallel construction allows it to be cut-to-length and terminated on-site. The power output of VPL heating cables decreases with increasing temperature. VPL heating cables can be overlapped once. The relatively flat power temperature curve of VPL ensures a low start-up current and high output at elevated temperatures. VPL cables are approved for use in hazardous areas. Approvals are listed below.

#### APPLICATION

|                     |   |
|---------------------|---|
| Area classification | Hazardous, Zone 1, Zone 2 (Gas), Zone 21, Zone 22 (Dust) Ordinary   |
| Traced surface type | Carbon steel<br>Stainless steel<br>Painted or unpainted metal   |
| Chemical resistance | Organics and corrosives<br>For aggressive organics and corrosives consult your local nVent representative |

#### SUPPLY VOLTAGE

VPL2: 208-277 Vac  
VPL4: 400-480 Vac

## APPROVALS

SGS20ATEX0045X

Ex II 2 G Ex 60079-30-1 eb IIC T\* Gb

Ex II 2 D Ex 60079-30-1 tb IIIC IP66 T\*\*°C Db

Tmin -60°C

IECEX BAS 20.0008X

Ex 60079-30-1 eb IIC T\* Gb Ex 60079-30-1 tb IIIC IP66 T\*\*°C Db

Ex 60079-30-1 eb mb IIC T\* Gb Ex 60079-30-1 mb tb IIIC IP66 T\*\*°C Db

Tmin -60°C (\*\* See schedule)

\*By design. Temperature classification (T-rating) has to be established by using the principles of stabilized design or the use of a temperature limiting device. Use TraceCalc design software or contact nVent.

The VPL heating cables are approved by DNV for use on ships and mobile off-shore units.

DNV Certificate No. DNV-GL TAE00000SF



TC RU C-BE.MЮ62.B.00054/18

1Ex e IIC T\* Gb X 1Ex e mb IIC T\* Gb X

Ex tb IIIC T\* Db X Ex tb mb IIIC T\* Db X

Ta -60°C...+56°C IP66

ООО "ТехИмпорт"



Ex e IIC T2~T6 Gb

Ex tD A21 IP66 T300°C/200°C/135°C/100°C/85°C

## SPECIFICATIONS

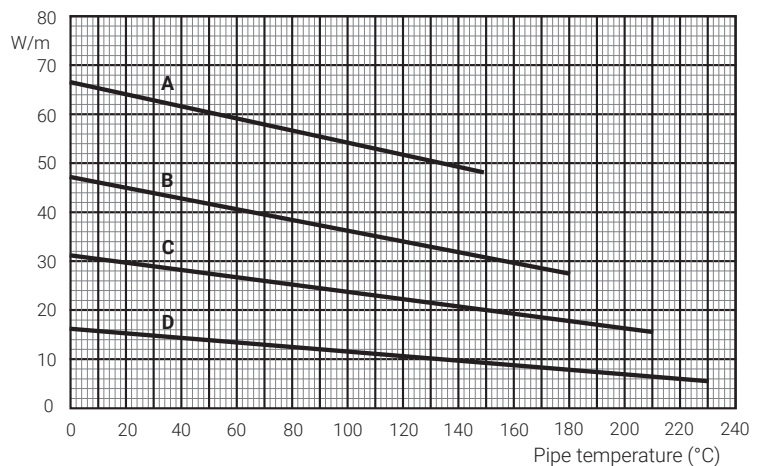
|  | Cable   | 208 V | 230 V | 254 V | 277 V | 400 V | 480 V |
|--|---|-------|-------|-------|-------|-------|-------|
| Maximum maintain or continuous exposure temperature (power on) | 5VPL2-CT  | 235°C | 230°C | 225°C | 225°C | -     | -     |
|  | 10VPL2-CT   | 220°C | 210°C | 200°C | 195°C | -     | -     |
|  | 15VPL2-CT   | 200°C | 180°C | 145°C | 105°C | -     | -     |
|  | 20VPL2-CT   | 150°C | 150°C | -     | -     | -     | -     |
|  | 5VPL4-CT  | -     | -     | -     | -     | 230°C | 230°C |
|  | 10VPL4-CT   | -     | -     | -     | -     | 215°C | 205°C |
|  | 15VPL4-CT   | -     | -     | -     | -     | 195°C | 160°C |
|  | 20VPL4-CT   | -     | -     | -     | -     | 150°C | 150°C |
| Maximum continuous exposure temperature (power off)            | 260°C   |       |       |       |       |       |       |
| Temperature classification                                     | To be established using the principles of stabilized design or the use of a temperature limiting device. Use TraceCalc design software or contact nVent for assistance. |       |       |       |       |       |       |
| Minimum installation temperature                               | -60°C   |       |       |       |       |       |       |
| Minimum bend radius  | -60°C ≤ T < -20°C: 19 mm<br>-20°C ≤ T < -10°C: 15 mm<br>T ≥ +10°C: 12 mm  |       |       |       |       |       |       |
| Minimum clearance  | 15 mm   |       |       |       |       |       |       |

## THERMAL OUTPUT RATING

Nominal power output rating on insulated steel pipes at 240 V and 480 V (power output of VPL4 at 400 V will be lower)

- A 20VPL-CT**
- B 15VPL-CT**
- C 10VPL-CT**
- D 5VPL-CT**

To choose the correct heating cable for your application use the TraceCalc design software.



## ADJUSTMENT FACTORS

|       |                | 5VPL2-CT | 10VPL2-CT | 15VPL2-CT | 20VPL2-CT   |
|-------|----------------|----------|-----------|-----------|-------------|
| 254 V | Power output   | 1.2      | 1.19      | 1.19      | Not allowed |
|       | Circuit length | 1.05     | 1.04      | 1.04      | Not allowed |
| 277 V | Power output   | 1.3      | 1.28      | 1.26      | Not allowed |
|       | Circuit length | 1.13     | 1.11      | 1.09      | Not allowed |
| 400 V | Power output   | 0.72     | 0.73      | 0.74      | 0.75        |
|       | Circuit length | 0.86     | 0.87      | 0.89      | 0.9         |

| Nominal power output (W/m at 10°C) | 5VPLx-CT | 10VPLx-CT | 15VPLx-CT | 20VPLx-CT |
|------------------------------------|----------|-----------|-----------|-----------|
| VPL2 at 230 V                      | 15       | 30        | 45        | 61        |
| VPL2 at 240 V/VPL4 at 480 V        | 16       | 33        | 49        | 65        |
| VPL4 at 400 V                      | 12       | 24        | 36        | 49        |

## PRODUCT DIMENSIONS (NOMINAL) AND WEIGHT

|   |            |            |            |            |
|---|------------|------------|------------|------------|
| Thickness (mm)                                | 7.9        | 7.9        | 7.9        | 7.9        |
| Width (mm)                                    | 11.7       | 11.7       | 11.7       | 11.7       |
| Nominal cold lead/<br>heating zone length (m) | 1.2 (VPL2) | 0.9 (VPL2) | 0.6 (VPL2) | 0.5 (VPL2) |
|   | 2.4 (VPL4) | 1.7 (VPL4) | 1.3 (VPL4) | 1.1 (VPL4) |
| Weight (g/m)                                  | 200        | 200        | 200        | 200        |

## MAXIMUM CIRCUIT LENGTH BASED ON TYPE 'C' CIRCUIT BREAKERS ACCORDING TO EN 60898

| VPL2 at 230 V                |                      | 5VPL2-CT                                     | 10VPL2-CT | 15VPL2-CT | 20VPL2-CT |
|------------------------------|----------------------|--|-----------|-----------|-----------|
| Electrical protection sizing | Start-up temperature | Maximum heating cable length per circuit (m) |           |           |           |
| 16 A                         | -20°C                | 195  | 100       | 70        | 50        |
|                              | +10°C                | 215  | 110       | 75        | 55        |
| 25 A                         | -20°C                | 220*   | 155*      | 105       | 80        |
|                              | +10°C                | 220*   | 155*      | 115       | 85        |
| 32 A                         | -20°C                | 220*   | 155*      | 130*      | 100       |
|                              | +10°C                | 220*   | 155*      | 130*      | 110*      |
| 40 A                         | -20°C                | 220*   | 155*      | 130*      | 110*      |
|                              | +10°C                | 220*   | 155*      | 130*      | 110*      |

| VPL4 at 480 V and 400 V      |                      | 5VPL4-CT   | 10VPL4-CT  | 15VPL4-CT  | 20VPL4-CT  |
|------------------------------|----------------------|--|------------|------------|------------|
| Electrical protection sizing | Start-up temperature | Maximum heating cable length per circuit (m) at 480 Vac and (at 400 Vac) |            |            |            |
| 16 A                         | -20°C                | 390 (335)  | 195 (170)  | 130 (115)  | 100 (90)   |
|                              | +10°C                | 425 (365)  | 210 (185)  | 140 (125)  | 105 (95)   |
| 25 A                         | -20°C                | 450* (450)   | 310 (265)  | 205 (185)  | 155 (140)  |
|                              | +10°C                | 450* (450)   | 320* (290) | 220 (195)  | 165 (150)  |
| 32 A                         | -20°C                | 450* (450)   | 320* (320) | 260* (235) | 200 (180)  |
|                              | +10°C                | 450* (450)   | 320* (320) | 260* (250) | 210 (190)  |
| 40 A                         | -20°C                | 450* (450)   | 320* (320) | 260* (260) | 225* (225) |
|                              | +10°C                | 450* (450)   | 320* (320) | 260* (260) | 225* (225) |

\*The maximum heating cable length must not exceed these values, even when voltage adjustment factors are used.

The above numbers are for circuit length estimation only. For more detailed information please use the nVent RAYCHEM TraceCalc software or contact your local nVent representative.

nVent requires the use of a 30 mA residual current device to provide maximum safety and protection from fire.

Where design results in higher leakage current, the preferred trip level for adjustable devices is 30 mA above any inherent capacitive leakage characteristic of the heater as specified by the trace heater supplier or alternatively, the next common available trip level for non adjustable devices, with a maximum of 300 mA. All safety aspects need to be proven.

## ORDERING DETAILS

|                  |            |            |            |            |
|------------------|------------|------------|------------|------------|
| Part description | 5VPL2-CT   | 10VPL2-CT  | 15VPL2-CT  | 20VPL2-CT  |
| Part No.         | 451828-000 | 892652-000 | 068380-000 | 589252-000 |
| Part description | 5VPL4-CT   | 10VPL4-CT  | 15VPL4-CT  | 20VPL4-CT  |
| Part No.         | P000000678 | P000000679 | P000000680 | P000000681 |

## COMPONENTS

nVent offers a full range of components for power connections, splices and end seals. These components must be used to ensure proper functioning of the product and compliance with electrical requirements.

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