

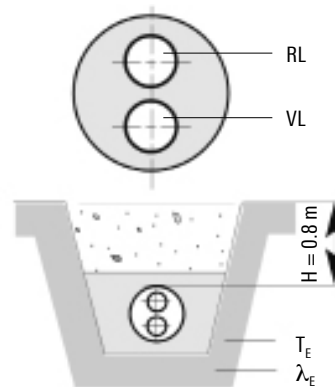
# Heat loss

Insulation thickness 3

| Heat loss q [W/m] for VL and RL together |                 |                                       |       |       |       |       |        |        |        |        |
|--|-----------------|---------------------------------------|-------|-------|-------|-------|--------|--------|--------|--------|
| PREMANT DUO                              | U-value<br>W/mK | Average operating temperature TB [°C] |       |       |       |       |        |        |        |        |
|  |                 | 50 °C                                 | 60 °C | 70 °C | 80 °C | 90 °C | 100 °C | 110 °C | 120 °C | 130 °C |
| 26.9/ 26.9 - 140                         | 0.135           | 5.4                                   | 6.8   | 8.1   | 9.5   | 10.8  | 12.2   | 13.5   | 14.9   | 16.2   |
| 33.7/ 33.7 - 160                         | 0.147           | 5.9                                   | 7.4   | 8.8   | 10.3  | 11.8  | 13.2   | 14.7   | 16.2   | 17.6   |
| 42.4/ 42.4 - 180                         | 0.163           | 6.5                                   | 8.2   | 9.8   | 11.4  | 13.0  | 14.7   | 16.3   | 17.9   | 19.6   |
| 48.3/ 48.3 - 180                         | 0.187           | 7.5                                   | 9.4   | 11.2  | 13.1  | 15.0  | 16.8   | 18.7   | 20.6   | 22.4   |
| 60.3/ 60.3 - 225                         | 0.184           | 7.4                                   | 9.2   | 11.0  | 12.9  | 14.7  | 16.6   | 18.4   | 20.2   | 22.1   |
| 76.1/ 76.1 - 250                         | 0.212           | 8.5                                   | 10.6  | 12.7  | 14.8  | 17.0  | 19.1   | 21.2   | 23.3   | 25.4   |
| 88.9/ 88.9 - 280                         | 0.226           | 9.0                                   | 11.3  | 13.6  | 15.8  | 18.1  | 20.3   | 22.6   | 24.9   | 27.1   |
| 114.3/114.3 - 355                        | 0.224           | 9.0                                   | 11.2  | 13.4  | 15.7  | 17.9  | 20.2   | 22.4   | 24.6   | 26.9   |
| 139.7/139.7 - 450                        | 0.218           | 8.7                                   | 10.9  | 13.1  | 15.3  | 17.4  | 19.6   | 21.8   | 24.0   | 26.2   |
| 168.3/168.3 - 500                        | 0.248           | 9.9                                   | 12.4  | 14.9  | 17.4  | 19.8  | 22.3   | 24.8   | 27.3   | 29.8   |
| 219.3/219.3 - 630                        | 0.257           | 10.3                                  | 12.9  | 15.4  | 18.0  | 20.6  | 23.1   | 25.7   | 28.3   | 30.8   |

**Caution:** In contrast to the single pipes heat losses the losses for both pipes listed together here.

Type of installation: 1-pipe, laid in the ground  
 Ground temperature:  $T_E = 10\text{ °C}$   
 Coverage height:  $H = 0.8\text{ m}$   
 Soil conductivity:  $\lambda_E = 1.2\text{ W/mK}$   
 Conductivity of PE jacket:  $\lambda_{PE} = 0.4\text{ W/mK}$   
 Conductivity of PUR foam:  $\lambda_{PUR} = 0.0260\text{ W/mK}$



# Heat loss

## Insulation thickness 2

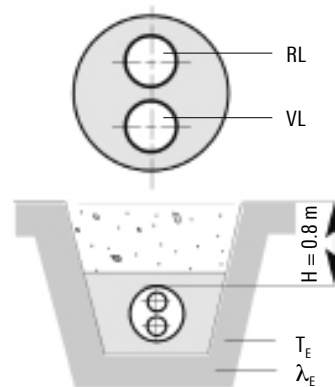
Heat loss q [W/m] for VL and RL together

| PREMANT DUO       | U-value<br>W/mK | Average operating temperature TB [°C] |       |       |       |       |        |        |        |        |
|-------------------|-----------------|---------------------------------------|-------|-------|-------|-------|--------|--------|--------|--------|
|                   |                 | 50 °C                                 | 60 °C | 70 °C | 80 °C | 90 °C | 100 °C | 110 °C | 120 °C | 130 °C |
| 26.9/ 26.9 - 140  | 0.154           | 6.1                                   | 7.7   | 9.2   | 10.8  | 12.3  | 13.8   | 15.4   | 16.9   | 18.4   |
| 33.7/ 33.7 - 160  | 0.165           | 6.6                                   | 8.3   | 9.9   | 11.6  | 13.2  | 14.9   | 16.5   | 18.2   | 19.8   |
| 42.4/ 42.4 - 180  | 0.184           | 7.3                                   | 9.2   | 11.0  | 12.9  | 14.7  | 16.5   | 18.4   | 20.2   | 22.0   |
| 48.3/ 48.3 - 180  | 0.216           | 8.6                                   | 10.8  | 12.9  | 15.1  | 17.3  | 19.4   | 21.6   | 23.7   | 25.9   |
| 60.3/ 60.3 - 225  | 0.211           | 8.4                                   | 10.5  | 12.6  | 14.8  | 16.9  | 19.0   | 21.1   | 23.2   | 25.3   |
| 76.1/ 76.1 - 250  | 0.253           | 10.1                                  | 12.6  | 15.2  | 17.7  | 20.2  | 22.8   | 25.3   | 27.8   | 30.3   |
| 88.9/ 88.9 - 280  | 0.278           | 11.1                                  | 13.9  | 16.7  | 19.5  | 22.2  | 25.0   | 27.8   | 30.6   | 33.4   |
| 114.3/114.3 - 355 | 0.275           | 11.1                                  | 13.8  | 16.6  | 19.4  | 22.1  | 24.9   | 27.7   | 30.4   | 33.2   |
| 139.7/139.7 - 450 | 0.258           | 10.4                                  | 13.0  | 15.5  | 18.1  | 20.7  | 23.3   | 25.9   | 28.5   | 31.1   |
| 168.3/168.3 - 500 | 0.310           | 12.4                                  | 15.5  | 18.7  | 21.8  | 24.9  | 28.0   | 31.1   | 34.2   | 37.3   |
| 219.3/219.3 - 630 | 0.328           | 13.0                                  | 16.3  | 19.6  | 22.8  | 26.1  | 29.3   | 32.6   | 35.8   | 39.1   |

**Caution:** In contrast to the single pipes heat losses the losses for both pipes listed together here.

Type of installation:  
 Ground temperature:  
 Coverage height:  
 Soil conductivity:  
 Conductivity of PE jacket:  
 Conductivity of PUR foam:

1-pipe, laid in the ground  
 $T_E = 10 \text{ °C}$   
 $H = 0.8 \text{ m}$   
 $\lambda_E = 1.2 \text{ W/mK}$   
 $\lambda_{PE} = 0.4 \text{ W/mK}$   
 $\lambda_{PUR} = 0.0260 \text{ W/mK}$



# Heat loss

## Insulation thickness 1

| Heat loss q [W/m] for VL and RL together |                 |                                       |       |       |       |       |        |        |        |        |
|--|-----------------|---------------------------------------|-------|-------|-------|-------|--------|--------|--------|--------|
| PREMANT DUO                              | U-value<br>W/mK | Average operating temperature TB [°C] |       |       |       |       |        |        |        |        |
|  |                 | 50 °C                                 | 60 °C | 70 °C | 80 °C | 90 °C | 100 °C | 110 °C | 120 °C | 130 °C |
| 26.9/ 26.9 - 125                         | 0.174           | 7.0                                   | 8.7   | 10.5  | 12.2  | 13.9  | 15.7   | 17.4   | 19.2   | 20.9   |
| 33.7/ 33.7 - 140                         | 0.195           | 7.8                                   | 9.7   | 11.7  | 13.6  | 15.6  | 17.5   | 19.5   | 21.4   | 23.3   |
| 42.4/ 42.4 - 160                         | 0.216           | 8.6                                   | 10.8  | 12.9  | 15.1  | 17.2  | 19.4   | 21.6   | 23.7   | 25.9   |
| 48.3/ 48.3 - 160                         | 0.263           | 10.5                                  | 13.2  | 15.8  | 18.4  | 21.1  | 23.7   | 26.3   | 29.0   | 31.6   |
| 60.3/ 60.3 - 200                         | 0.254           | 10.2                                  | 12.7  | 15.2  | 17.8  | 20.3  | 22.8   | 25.4   | 27.9   | 30.5   |
| 76.1/ 76.1 - 225                         | 0.312           | 12.5                                  | 15.6  | 18.7  | 21.8  | 24.9  | 28.1   | 31.2   | 34.3   | 37.4   |
| 88.9/ 88.9 - 250                         | 0.363           | 14.5                                  | 18.1  | 21.8  | 25.4  | 29.0  | 32.6   | 36.3   | 39.9   | 43.5   |
| 114.3/114.3 - 315                        | 0.362           | 14.6                                  | 18.3  | 21.9  | 25.6  | 29.2  | 32.9   | 36.5   | 40.2   | 43.8   |
| 139.7/139.7 - 400                        | 0.331           | 13.4                                  | 16.7  | 20.1  | 23.4  | 26.8  | 30.1   | 33.5   | 36.8   | 40.2   |
| 168.3/168.3 - 450                        | 0.413           | 16.6                                  | 20.8  | 25.0  | 29.1  | 33.3  | 37.4   | 41.6   | 45.7   | 49.9   |
| 219.3/219.3 - 560                        | 0.473           | 18.9                                  | 23.6  | 28.3  | 33.0  | 37.7  | 42.4   | 47.1   | 51.8   | 56.6   |

**Caution:** In contrast to the single pipes heat losses the losses for both pipes listed together here.

Type of installation: 1-pipe, laid in the ground  
 Ground temperature:  $T_E = 10\text{ °C}$   
 Coverage height:  $H = 0.8\text{ m}$   
 Soil conductivity:  $\lambda_E = 1.2\text{ W/mK}$   
 Conductivity of PE jacket:  $\lambda_{PE} = 0.4\text{ W/mK}$   
 Conductivity of PUR foam:  $\lambda_{PUR} = 0.0260\text{ W/mK}$

