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**Table 1-D** Heat Loss for Pipes (Watts Per Foot) Insulation Thickness 2.5"

| ΔT  | NPS Pipe Size |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |
|-----|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
|     | 0.25          | 0.5  | 0.75 | 1    | 1.5  | 2    | 2.5  | 3    | 4    | 6    | 8    | 10   | 12   | 14   | 16   | 18   | 20   | 24    | 30    |
| 25  | 0.4           | 0.5  | 0.5  | 0.6  | 0.7  | 0.8  | 0.9  | 1.0  | 1.2  | 1.6  | 2.0  | 2.4  | 2.7  | 2.9  | 3.3  | 3.7  | 4.0  | 4.7   | 5.8   |
| 50  | 0.8           | 1.0  | 1.1  | 1.2  | 1.4  | 1.6  | 1.8  | 2.1  | 2.5  | 3.3  | 4.0  | 4.8  | 5.6  | 6.0  | 6.8  | 7.5  | 8.2  | 9.7   | 11.9  |
| 75  | 1.2           | 1.5  | 1.6  | 1.8  | 2.2  | 2.5  | 2.8  | 3.2  | 3.8  | 5.0  | 6.2  | 7.4  | 8.5  | 9.2  | 10.4 | 11.5 | 12.6 | 14.9  | 18.3  |
| 100 | 1.7           | 2.0  | 2.2  | 2.5  | 3.0  | 3.4  | 3.8  | 4.4  | 5.2  | 6.9  | 8.4  | 10.1 | 11.6 | 12.6 | 14.2 | 15.7 | 17.3 | 20.3  | 25.0  |
| 125 | 2.1           | 2.6  | 2.8  | 3.2  | 3.8  | 4.4  | 4.9  | 5.6  | 6.6  | 8.8  | 10.8 | 12.9 | 14.9 | 16.1 | 18.1 | 20.1 | 22.1 | 26.0  | 31.9  |
| 150 | 2.6           | 3.1  | 3.5  | 3.9  | 4.7  | 5.4  | 6.0  | 6.8  | 8.1  | 10.8 | 13.2 | 15.8 | 18.3 | 19.8 | 22.2 | 24.6 | 27.1 | 31.9  | 39.2  |
| 175 | 3.1           | 3.7  | 4.1  | 4.6  | 5.6  | 6.4  | 7.2  | 8.1  | 9.7  | 12.8 | 15.8 | 18.9 | 21.8 | 23.6 | 26.5 | 29.4 | 32.3 | 38.0  | 46.7  |
| 200 | 3.6           | 4.4  | 4.8  | 5.4  | 6.6  | 7.5  | 8.4  | 9.5  | 11.3 | 15.0 | 18.4 | 22.0 | 25.4 | 27.5 | 30.9 | 34.3 | 37.7 | 44.4  | 54.5  |
| 225 | 4.2           | 5.0  | 5.6  | 6.2  | 7.5  | 8.6  | 9.6  | 10.9 | 13.0 | 17.2 | 21.1 | 25.3 | 29.2 | 31.6 | 35.5 | 39.4 | 43.2 | 51.0  | 62.6  |
| 250 | 4.7           | 5.7  | 6.3  | 7.0  | 8.5  | 9.7  | 10.9 | 12.4 | 14.7 | 19.5 | 24.0 | 28.7 | 33.1 | 35.8 | 40.2 | 44.6 | 49.0 | 57.8  | 70.9  |
| 275 | 5.3           | 6.4  | 7.1  | 7.9  | 9.6  | 10.9 | 12.3 | 13.9 | 16.5 | 21.9 | 26.9 | 32.2 | 37.1 | 40.2 | 45.2 | 50.1 | 55.0 | 64.9  | 79.6  |
| 300 | 5.9           | 7.1  | 7.9  | 8.8  | 10.7 | 12.1 | 13.6 | 15.5 | 18.3 | 24.4 | 29.9 | 35.8 | 41.3 | 44.7 | 50.2 | 55.7 | 61.2 | 72.1  | 88.5  |
| 325 | 6.5           | 7.8  | 8.7  | 9.7  | 11.8 | 13.4 | 15.1 | 17.1 | 20.2 | 26.9 | 33.0 | 39.5 | 45.6 | 49.4 | 55.5 | 61.5 | 67.6 | 79.6  | 97.7  |
| 350 | 7.2           | 8.6  | 9.5  | 10.6 | 12.9 | 14.7 | 16.5 | 18.7 | 22.2 | 29.5 | 36.3 | 43.4 | 50.0 | 54.2 | 60.9 | 67.5 | 74.1 | 87.4  | 107.2 |
| 375 | 7.8           | 9.4  | 10.4 | 11.6 | 14.1 | 16.0 | 18.0 | 20.4 | 24.2 | 32.2 | 39.6 | 47.3 | 54.6 | 59.1 | 66.4 | 73.6 | 80.9 | 95.4  | 117.0 |
| 400 | 8.5           | 10.2 | 11.3 | 12.6 | 15.3 | 17.4 | 19.6 | 22.2 | 26.3 | 35.0 | 43.0 | 51.4 | 59.3 | 64.2 | 72.1 | 80.0 | 87.8 | 103.5 | 127.1 |

**Table 1-E** Heat Loss for Pipes (Watts Per Foot) Insulation Thickness 3"

| ΔT  | NPS Pipe Size |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |
|-----|---------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
|     | 0.25          | 0.5 | 0.75 | 1    | 1.5  | 2    | 2.5  | 3    | 4    | 6    | 8    | 10   | 12   | 14   | 16   | 18   | 20   | 24   | 30    |
| 25  | 0.4           | 0.4 | 0.5  | 0.5  | 0.6  | 0.7  | 0.8  | 0.9  | 1.1  | 1.4  | 1.7  | 2.0  | 2.3  | 2.5  | 2.8  | 3.1  | 3.4  | 4.0  | 4.9   |
| 50  | 0.7           | 0.9 | 1.0  | 1.1  | 1.3  | 1.5  | 1.6  | 1.9  | 2.2  | 2.9  | 3.5  | 4.2  | 4.8  | 5.2  | 5.8  | 6.4  | 7.0  | 8.3  | 10.1  |
| 75  | 1.1           | 1.4 | 1.5  | 1.7  | 2.0  | 2.3  | 2.5  | 2.8  | 3.3  | 4.4  | 5.4  | 6.4  | 7.3  | 7.9  | 8.9  | 9.8  | 10.8 | 12.7 | 15.5  |
| 100 | 1.6           | 1.9 | 2.0  | 2.3  | 2.7  | 3.1  | 3.4  | 3.9  | 4.6  | 6.0  | 7.3  | 8.7  | 10.0 | 10.8 | 12.1 | 13.4 | 14.7 | 17.3 | 21.2  |
| 125 | 2.0           | 2.4 | 2.6  | 2.9  | 3.5  | 3.9  | 4.4  | 5.0  | 5.8  | 7.7  | 9.4  | 11.1 | 12.8 | 13.8 | 15.5 | 17.2 | 18.8 | 22.1 | 27.1  |
| 150 | 2.4           | 2.9 | 3.2  | 3.6  | 4.3  | 4.8  | 5.4  | 6.1  | 7.2  | 9.4  | 11.5 | 13.7 | 15.7 | 17.0 | 19.0 | 21.1 | 23.1 | 27.1 | 33.2  |
| 175 | 2.9           | 3.5 | 3.8  | 4.2  | 5.1  | 5.8  | 6.4  | 7.3  | 8.5  | 11.2 | 13.7 | 16.3 | 18.7 | 20.2 | 22.7 | 25.1 | 27.5 | 32.3 | 39.6  |
| 200 | 3.4           | 4.0 | 4.5  | 4.9  | 5.9  | 6.7  | 7.5  | 8.5  | 10.0 | 13.1 | 16.0 | 19.0 | 21.9 | 23.6 | 26.5 | 29.3 | 32.1 | 37.8 | 46.2  |
| 225 | 3.9           | 4.6 | 5.1  | 5.7  | 6.8  | 7.7  | 8.6  | 9.7  | 11.5 | 15.0 | 18.4 | 21.8 | 25.1 | 27.1 | 30.4 | 33.6 | 36.9 | 43.4 | 53.1  |
| 250 | 4.4           | 5.3 | 5.8  | 6.4  | 7.7  | 8.8  | 9.8  | 11.0 | 13.0 | 17.1 | 20.8 | 24.8 | 28.5 | 30.8 | 34.5 | 38.1 | 41.8 | 49.2 | 60.2  |
| 275 | 5.0           | 5.9 | 6.5  | 7.2  | 8.7  | 9.8  | 11.0 | 12.4 | 14.6 | 19.1 | 23.4 | 27.8 | 31.9 | 34.5 | 38.7 | 42.8 | 46.9 | 55.2 | 67.5  |
| 300 | 5.5           | 6.6 | 7.2  | 8.0  | 9.7  | 10.9 | 12.2 | 13.8 | 16.2 | 21.3 | 26.0 | 30.9 | 35.5 | 38.4 | 43.0 | 47.6 | 52.2 | 61.4 | 75.1  |
| 325 | 6.1           | 7.3 | 8.0  | 8.9  | 10.7 | 12.1 | 13.5 | 15.2 | 17.9 | 23.5 | 28.7 | 34.1 | 39.2 | 42.4 | 47.5 | 52.6 | 57.6 | 67.7 | 82.9  |
| 350 | 6.7           | 8.0 | 8.8  | 9.7  | 11.7 | 13.2 | 14.8 | 16.7 | 19.6 | 25.8 | 31.5 | 37.5 | 43.1 | 46.5 | 52.1 | 57.7 | 63.2 | 74.3 | 91.0  |
| 375 | 7.3           | 8.7 | 9.6  | 10.6 | 12.8 | 14.5 | 16.2 | 18.2 | 21.4 | 28.2 | 34.4 | 40.9 | 47.0 | 50.8 | 56.9 | 62.9 | 69.0 | 81.1 | 99.3  |
| 400 | 7.9           | 9.4 | 10.4 | 11.6 | 13.9 | 15.7 | 17.5 | 19.8 | 23.3 | 30.6 | 37.3 | 44.4 | 51.0 | 55.2 | 61.8 | 68.4 | 74.9 | 88.1 | 107.8 |

**Table 2** Insulation Factor

| Insulation Material | Temperature (°F) to be Maintained |      |      |      |      |      |      |      |      |  |
|---------------------|-----------------------------------|------|------|------|------|------|------|------|------|--|
|                     | 50                                | 100  | 150  | 200  | 250  | 300  | 400  | 500  | 600  |  |
| Fiberglass          | 1                                 | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    |  |
| Cellular Glass      | 1.53                              | 1.50 | 1.48 | 1.44 | 1.42 | 1.40 | 1.36 | 1.34 | 1.32 |  |
| Calcium Silicate    | 1.47                              | 1.47 | 1.45 | 1.44 | 1.41 | 1.39 | 1.34 | 1.32 | 1.30 |  |
| Polyurethane        | 0.60                              | 0.60 | 0.58 | 0.57 | *    | *    | *    | *    | *    |  |

\* Temperature (°F) exceeds the recommended values for foam.



**Note:** All insulation factors were determined based on leading insulation manufacturers' specifications.