ISO 12241:2008-06 (E)

Thermal insulation for building equipment and industrial installations - Calculation rules

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms, definitions and symbols 1
3.1 Terms and definitions 1
3.2 Definition of symbols 2
3.3 Subscripts 3

4 Calculation methods for heat transfer 3
4.1 Fundamental equations for heat transfer 3
4.2 Surface temperature 14
4.3 Prevention of surface condensation 17
4.4 Determination of total heat flow rate for plane walls, pipes and spheres 20

5 Calculation of the temperature change in pipes, vessels and containers 21
5.1 Longitudinal temperature change in a pipe 21
5.2 Temperature change and cooling times in pipes, vessels and containers 22

6 Calculation of cooling and freezing times of stationary liquids 22
6.1 Calculation of the cooling time for a given thickness of insulation to prevent the freezing of water in a pipe 22
6.2 Calculation of the freezing time of water in a pipe 24

7 Determination of the influence of thermal bridges 25
7.1 General 25
7.2 Calculation of correction terms for plane surfaces 26
7.3 Calculation of correction terms for pipes 26

8 Underground pipelines 27
8.1 General 27
8.2 Calculation of heat loss (single line) without channels 27
8.3 Other cases 29

Annex A (normative) Thermal bridges in pipe insulation 30

Annex B (informative) Projecting thermal bridges of roughly constant cross-section 33

Annex C (informative) Examples 38

Bibliography 45