

50 Using Part 1 — Insulation

Abstract

This section covers the organization of Part I—Insulation, of the *Insulation and Refractory Manual*.

Scope and Application

Part 1 of the Insulation and Refractory manual has been written for Company personnel who are unfamiliar with insulation and fireproofing materials, but who are responsible for selecting, installing, or inspecting insulation and fireproofing. It is directed both to entry-level personnel and non-specialists, regardless of experience.

The intent is to provide practical, useful information based on Company experience. Therefore, forms have been included in the front of the manual for your convenience in suggesting changes. Your input and experience are important for improving subsequent printings and keeping this manual up-to-date.

Organization

The colored tabs in the manual will help you find information quickly. In summary:

- **White** tabs identify general purpose topics.
- **Blue** tabs are Engineering Guidelines.
- **Gray** tabs are used for Specifications, Data Sheets, Data Sheet Guides, and related industry standards (API/ANSI).
- A **Red** tab is included for local documents.

Engineering Guidelines

This part of the manual contains: 1) an overview of insulation for hot and cold systems; 2) methods for determining economical thickness of insulation; 3) a section on selecting fireproofing materials; and 4) safe handling procedures for insulation materials. Where the text cites a reference, it is noted by a number enclosed in brackets, e.g., [1]. The references are in the tabbed References section, located at the end of Part 2 of the manual. Abstracts of the engineering guidelines are given next.

Section 100 Insulation Selection—Hot Systems

This section covers the selection of insulating materials for hot lines, tanks, and major equipment. It discusses the properties and uses of different types of insulation. Flexible removable covers are described, and the Company's specifications for insulating hot systems are listed.

Ceramic fiber insulating refractory is covered in Part 2 of this manual.

Section 200 Insulation Selection—Cold Systems

This section describes cold equipment that we insulate and why we insulate, types of insulation material and special concerns when insulating cold systems. It also includes a chart for choosing the insulation thickness.

Section 300 Choosing Economical Insulation Thickness

This section will guide you in selecting the most economical thickness of insulation for hot equipment. It has a manual procedure for determining heat loss and doing an economic analysis. It includes selection charts based on different payout periods and energy values to help the engineer quickly determine economical thickness for various sizes of pipe and small-diameter vessels. It also includes instructions for using the VM and PC versions of the computer program INSUL for more detailed studies.

Note that this section assumes that insulation thickness is strictly driven by economics (i.e., the price of fuel). However, as discussed in Sections 100 and 200, other reasons for insulating, such as process considerations and personnel protection, may also affect choice of insulation thickness. Personnel protection is addressed in this section, but decisions based on process considerations are not addressed. Process-based decisions about insulation thickness must be made on a case-by-case basis.

The selection charts in this section only apply to the economics of insulating **hot** equipment. The same principles can be used for cold equipment with cost of refrigeration substituting for fuel cost. Section 200 includes some quick selection charts for insulation of cold equipment. The Tank Manual contains a procedure for determining economical thickness for tank insulation.

Section 400 Fireproofing Materials

This section has been moved to the *Fire Protection Manual*, Section 1700.

Section 500 Safe Handling Practices for Insulation and Refractory Materials

This section provides guidelines for safe handling of insulation and refractory materials which contain asbestos, crystalline silica, or ceramic fiber. It discusses the potential health hazards when using these materials along with where these materials are used or have been used in the past. It summarizes the regulations which govern the exposure and work practices related to these materials.

Specifications, Standard Drawings and Forms

This part of the manual contains: 1) the Company's specifications in commented form; 2) the Company's standard drawings and forms that pertain to insulation.

Other Company Manuals

The text sometimes refers to documents in other Company manuals. These documents carry the prefix of that manual. The prefixes are defined here:

Prefix	Company Manual
CIV	Civil and Structural
CMP	Compressor
COM	Coatings
CPM	Corrosion Prevention
DRI	Driver
ELC	Electrical
EXH	Exchanger and Cooling Tower
FFM	Fluid Flow
FPM	Fire Protection
HTR	Fired Heater and Waste Heat Recovery
ICM	Instrumentation and Control
IRM	Insulation and Refractory
MAC	Machinery Support Systems
NCM	Noise Control
PIM	Piping
PMP	Pump
PPL	Pipeline
PVM	Pressure Vessel
TAM	Tank
UTL	Utilities
WEM	Welding

To Get Help With Insulation:

Call CRTC Materials and Equipment Engineering at CTN 242-3247.