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GP 52-10

Insulation

Group Practice

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GP 52-10. This Group Practice (GP) is based on, and supersedes, heritage documents from the merged BP companies as follows:

British Petroleum

RP 52-1 Thermal Insulation.

Amoco Corporation

A NM-I-HOT-C Non-Metallic Materials—Insulation—Hot—Installation Specification.
 A NM-I-HOT-A Non-Metallic Materials—Insulation—Hot—Acceptable Products List.
 A NM-I-COLD-C Non-Metallic Materials—Insulation—Cold—Installation Specification.
 A NM-I-COLD-A Non-Metallic Materials—Insulation—Cold—Acceptable Products List.
 A NM-I-00-G Non-Metallic Materials—Insulation—Guide.
 A NM-I-00-E Non-Metallic Materials—Insulation—Engineering Specification.

Amoco PTA

PTA NM-I-HOT-C Non-Metallic Materials—Insulation—Hot—Installation Specification.
 PTA NM-I-HOT-A Non-Metallic Materials—Insulation—Hot—Acceptable Products List.
 PTA NM-I-COLD-C Non-Metallic Materials—Insulation—Cold—Installation Specification.
 PTA NM-I-COLD-A Non-Metallic Materials—Insulation—Cold—Acceptable Products List.
 PTA NM-I-00-G Non-Metallic Materials—Insulation—Guide.
 PTA NM-I-00-E Non-Metallic Materials—Insulation—Engineering Specification.

ARCO Petroleum Products Company

Engineering Standard 100-82 Thermal Insulation.

BP – Gulf of Mexico Deep Water Development Program

1400-20-CO-SP-8041 Equipment and Piping Insulation.

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1. Scope

- a. This Group Practice (GP) provides requirements for materials selection, extent, and thickness of external thermal and combined thermal and acoustic insulation of equipment, piping, valves, and fittings in temperature range of -180°C to 800°C (-292°F to $1\,472^{\circ}\text{F}$).
- b. This document should be read in conjunction with GIS 52-101, which contains many of the detailed requirements necessary for effective insulation design and installation.
- c. The following are not within the scope of this GP:
 1. Insulation of burners, furnaces, and similar equipment if refractory or fire resistant qualities may be required.
 2. Insulation of buildings and structures for air conditioning, or similar purposes.
 3. Buried insulated piping. This is excluded as special case demanding a different approach to that described in this GP.
 4. The role of thermal insulation in passive fire protection is not specifically addressed in this document, and BP Group ETPs in the 24-Series should be consulted for further details.

2. Normative references

The following normative documents contain requirements that, through reference in this text, constitute requirements of this technical practice. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical practice are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

BP

GIS 52-101	Insulation.
GP 06-25	Design for the Prevention of Corrosion under Insulation and Fireproofing (CUI and CUF).

American Society for Testing and Materials (ASTM)

ASTM C516	Standard Specification for Vermiculite Loose Fill Thermal Insulation.
ASTM C533	Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.
ASTM C547	Standard Specification for Mineral Fiber Preformed Pipe Insulation.
ASTM C549	Standard Specification for Perlite Loose Fill Insulation.
ASTM C552	Standard Specification for Cellular Glass Thermal Insulation.
ASTM C553	Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
ASTM C591	Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
ASTM C592	Standard Specification for Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation.
ASTM C680	Standard Practice for Estimate of the Heat Gain or Loss and the Surface Temperatures of Insulated Flat, Cylindrical, and Spherical Systems by Use of Computer Programs.



ASTM C764	Standard Specification for Mineral Fiber Loose-Fill Insulation.
ASTM C892	Standard Specification for High-Temperature Fiber Blanket Thermal Insulation.
ASTM C1126	Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.
ASTM C1289	Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
ASTM E84	Test Method for Surface Burning Characteristics of Building Materials.

British Standards Institute (BSI)

BS 476	Fire tests on building materials and structures, Part 7, Method of test to determine the classification of the surface spread of flame of products.
BS 3958	Thermal insulating materials - Part 1: Magnesia preformed insulation. Part 2: Calcium silicate preformed insulation. Part 3: Metal mesh faced man-made mineral fibre mattresses. Part 4: Bonded preformed man-made mineral fibre pipe sections.
BS 5608	Specification for preformed rigid polyurethanes (PUR) and polyisocyanurate (PIR) foams for thermal insulation of pipework and equipment.
BS EN 13166	Thermal insulation products for buildings - Factory made products of phenolic foam (PF) - Specification.

International Organization for Standardisation (ISO)

ISO 8142	Thermal insulation - Bonded preformed man-made mineral fibre pipe sections.
ISO 12241	Thermal insulation for building equipment and industrial installations – Calculation rules

3. Symbols and abbreviations

For the purpose of this GP, the following symbols and abbreviations apply:

CUI Corrosion under insulation.

4. General design considerations

4.1. The purpose of insulation

- a. Insulation for both onshore and offshore use may be specified for the following purposes:
 1. Saving of energy by reducing the transfer of heat.
 2. Maintenance of process temperatures.
 3. Prevention of freezing, condensation, vaporisation, or formation of undesirable compounds such as hydrates and halides.
 4. Protection of personnel from injury through contact with cold and hot equipment.
 5. Prevention of condensation on the surface of equipment conveying fluids at low temperatures.
 6. Reduction of pressure relief loads in event of fire.
- b. Thermal insulation shall only be applied where safety or process requirements dictate.

