PROCESS INDUSTRY PRACTICES

TECHNICAL REVISION
June 2021

Insulation

PIP INSA1000
Acoustic Insulation Systems Specification

PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

PRINTING HISTORY

March 2001	*Issued*	*May 2008*	*Editorial Revision*	*June 2021*	*Technical Revision*
June 2006	*Complete Revision*	*July 2012*	*Reaffirmation with Editorial Revision*		
February 2007	*Editorial Revision*	*April 2015*	*Technical Revision*		

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Data Form

INSA1000-D001 – Documentation Requirements Sheet

List of Details

INSA1001 – Various Acoustic Insulation Configurations
INSA1002 – Piping - Layer Staggering & Overlapping of Absorptive Barrier
INSA1003 – Piping - Sheet and Mastic Barrier Layer Attachment
INSA1004 – General Arrangement - Piping Insulation
INSA1005 – Piping - Flange Insulation
INSA1006 – Valves without Extended Bonnets

1. Scope

This Practice describes the requirements for the design, application, and extent of acoustic insulation on piping and equipment operating at high and low temperatures. Systems requiring additional insulation specifications beyond PIP Practices, such as *ISO 15665*, shall be covered by purchaser's documentation.

Listing of or reference to supporting documents within this Practice does not imply suitability for specific designs.

Comment: Use of this Practice for contractual purposes requires the purchaser to make specific choices and assemble additional supporting documents.

2. References

Applicable parts of the following Practices and industry codes and standards should be considered an integral part of this Practice. The edition in effect on the date of contract award should be used, except as otherwise noted. Short titles will be used herein where appropriate.

2.1 Process Industry Practices (PIP)

- PIP INEG1000 - *Insulation Design Guide*
- PIP INTG1000 - *Insulation Inspection Checklist*
- PIP INSC1000 - *Cold Service Insulation Materials and Installation Specification*
- PIP INSH1000 - *Hot Service Insulation Materials and Installation Specification*

2.2 Industry Codes and Standards

- International Organization for Standardization (ISO)
  - ISO 15565 - *Acoustics - Acoustic Insulation for Pipes, Valves and Flanges*

3. Definitions

absorptive layer: Porous, resilient, low-density 48 to 128 kg/m³ (3 to 8 lb/ft³) material such as glass or mineral fiber applied to a sound-radiating surface to absorb sound

acoustic insulation: Insulation that attenuates acoustic energy radiating from surfaces by absorption and containment. Acoustic insulation can be used to reduce surface radiation from many different types of piping and equipment and to comply with regulatory requirements. Acoustic insulation is composed of a resilient sound-absorptive layer and an outer-barrier layer applied to noise-radiating surfaces.

Noise Reduction (NR): Difference in noise, also known as sound pressure level, at a given point before and after acoustic treatment, measured in dBA

outer barrier layer: Impermeable, dense material such as loaded vinyl, elastomer, or mastic installed over the absorptive layer to provide a sound barrier

transmission loss: Reduction in magnitude between the incident and transmitted sound for a given acoustic material