SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus standard developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Consensus is defined by the American National Standards Institute (ANSI), of which ASHRAE is a member and which has approved this standard as an ANS, as "substantial agreement reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution." Compliance with this standard is voluntary until and unless a legal jurisdiction makes compliance mandatory through legislation.

ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

The Manager of Standards of ASHRAE should be contacted for:

a. interpretation of the contents of this Standard,
b. participation in the next review of the Standard,
c. offering constructive criticism for improving the Standard,
d. permission to reprint portions of the Standard.

ARI SAFETY DISCLAIMER

ARI does not set safety standards and does not certify or guarantee the safety of any products, components or systems designed, rested, rated, installed or operated in accordance with this standard/guideline. It is strongly recommended that products be designed, constructed, assembled, installed and operated in accordance with nationally recognized safety standards and code requirements appropriate for products covered by this standard/guideline.

ARI uses its best efforsts to develop standards/guidelines employing state-of-the-art and accepted industry practices. ARI does not certify or guarantee that any tests conducted under its standards/guidelines will be non-hazardous or free from risk.

ASHRAE DISCLAIMER

ASHRAE uses its best efforts to promulgate Standards and Guidelines for the benefit of the public in light of available information and accepted industry practices. However, ASHRAE does not guarantee, certify, or assure the safety or performance of any products, components, or systems tested, installed, or operated in accordance with ASHRAE's Standards or Guidelines or that any tests conducted under its Standards or Guidelines will be nonhazardous or free from risk.

ASHRAE INDUSTRIAL ADVERTISING POLICY ON STANDARDS

ASHRAE Standards and Guidelines are established to assist industry and the public by offering a uniform method of testing for rating purposes, by suggesting safe practices in designing and installing equipment, by providing proper definitions of this equipment, and by providing other information that may serve to guide the industry. The creation of ASHRAE Standards and Guidelines is determined by the need for them, and conformance to them is completely voluntary.

In referring to this Standard or Guideline and in marking of equipment and in advertising, no claim shall be made, either stated or implied, that the product has been approved by ASHRAE.

CONTENTS

ANSI/ARI/ASHRAE ISO Standard 13256-2
Water-Source Heat Pumps—Testing and Rating for Performance
Part 2: Water-to-Water and Brine-to-Water Heat Pumps

This standard is an identical adoption of the ISO standard.

SECTION **PAGE**

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

This part of ISO 13256 was developed by ISO Technical Committee TC 86, Refrigeration, Subcommittee SC 6, Testing and rating of air-conditioners and heat pumps.

ISO 13256 consists of the following parts, under the general title Water-source heat pumps—Testing and rating for performance:

- *Part 1: Water-to-air and brine-to-air heat pumps*
- *Part 2: Water-to-water and brine-to-water heat pumps*

Annexes A and B form an integral part of this part of ISO 13256. Annexes C and D are for information only.

Introduction

This part of ISO 13256 covers heating and cooling systems which are generally referred to as "water-source heat pumps." These systems generally include an indoor coil with air-moving means, a compressor, and a refrigerant-to-water or refrigerant-to-brine heat exchanger. A system may provide both heating and cooling, cooling-only, or heating-only functions.

1. Scope

1.1 This part of ISO 13256 establishes performance testing and rating criteria for factory-made residential, commercial and industrial, electrically driven, mechanical-compression type, water-to-water and brine-to-water heat pumps. The requirements for testing and rating contained in this part of ISO 13256 are based on the use of matched assemblies.

1.2 Equipment designed for rating at one application under this part of ISO 13256 may not be suitable for rating at all applications covered in this part of ISO 13256.

1.3 This part of ISO 13256 does not apply to the testing and rating of individual assemblies for separate use or to units having two or more indoor sections connected to a single outdoor section. It does not apply to heat pumps covered in ISO 5151, ISO 13253, or ISO 13256-1.

Note: For the purpose of the remaining clauses, the terms "equipment" or "heat pump" may be used to mean "water-to-water heat pumps" or brine-to-water heat pumps," and the term "liquid" refers to either "water" or "brine."

2. Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 13256. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 13256 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 817:2005, *Refrigerants — Designation system.*

3. Definitions

For the purposes of this part of ISO 13256, the following definitions apply.

3.1 water-to-water and brine-to-water heat pump

heat pump which consists of one or more factory-made assemblies which normally include an indoor-side refrigerant-to-water heat exchanger, compressor(s), and an outdoor-side refrigerant-to-water or refrigerant-to-brine heat exchanger(s), including means to indirectly provide both cooling and heating, cooling-only, or heating-only functions

Notes

1. When such equipment is provided in more than one assembly, the separated assemblies should be designed to be used together.
2. Such equipment may also provide functions for sanitary water heating.

3.1.1 water-loop-heat pump application

Water-to-water heat pump using liquid circulating in a common piping loop functioning as a heat source/heat sink.

Note—The temperature of the liquid loop is usually mechanically controlled within a temperature range of 15°C to 40°C.

3.1.2 ground-water heat pump application

Water-to-water heat pump using water pumped from a well, lake or stream functioning as a heat source/heat sink

Note—The temperature of the water is related to the climatic conditions and may vary from 5°C to 25°C for deep wells.

3.1.3 ground-loop heat pump application

brine-to-water heat pump using a brine solution circulating through a subsurface piping loop functioning as a heat source/heat sink

Notes

1. The heat exchange loop may be placed in horizontal trenches or vertical bores, or be submerged in a body of surface water.
2. The temperature of the brine is related to the climatic conditions and may vary from –5°C to 40°C.