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ANSI/ASHRAE Standard 182-2020
Method of Testing Absorption Water-Chilling and Water-Heating Packages

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NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE website at www.ashrae.org/technology.

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(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

Standard 182 was developed through an agreement between ASHRAE and the Air Conditioning, Heating and Refrigeration Institute (AHRI) that resulted in ASHRAE ownership of methods of test intended for use with AHRI rating procedures. Standard 182 is intended to be used in conjunction with absorption chiller rating procedures such as AHRI 560.

ASHRAE Standard 182 provides a method of test (MOT) for factory performance testing of absorption chillers/heaters. Absorption chillers are used for producing chilled water from a hot fluid. Natural gas or other combustible substances can also be used as a heat source with direct-fired chillers. In the latter case, chillers may be designed to provide water-heating capability in addition to water-chilling capability. Standard 182 provides testing requirements for three different operating modes: cooling-only mode, heating-only mode, or simultaneous heating/cooling mode. This MOT can be applied to any of these test modes, although each mode should be considered as a separate and distinct test. The most-prescribed test mode is cooling only. Test facilities that are designed for cooling-only operation may not be capable of performing heating-only or simultaneous heating/cooling tests. Users should carefully consider facility capabilities when prescribing heating-only or simultaneous heating/cooling tests.

This standard targets commercially available products, including products employing single- and double-effect absorption cycles. Although lithium-bromide/water chillers are the most common type, absorption chillers using other fluids, such as ammonia/water, also can be tested using this standard. The standard is further intended for use with water-cooled products and does not include provisions for the testing air-cooled products.

The 2020 edition of this standard constitutes a complete revision of the 2008 edition (reaffirmed in 2013). The title, purpose, and scope are unchanged from the previous version. This standard was derived from ASHRAE Standard 30-2017, and users may note similarities between the two standards.

1. PURPOSE

The purpose of this standard is to prescribe a method of testing absorption water-chilling and water-heating packages to verify capacity and thermal energy input requirements at a specific set of operating conditions.

2. SCOPE

This standard applies to

a. absorption packages used to chill and/or heat water, as defined in Section 3, and
b. testing that will occur where proper instrumentation and load stability can be provided.

It is not the intent of this standard to provide for testing in typical field installations, where steady-state conditions are often difficult to achieve and adequate provisions for measurement are not made.

3. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

absorber: a heat and mass exchanger in which a concentrated solution absorbs refrigerant vapor and becomes dilute. This process is accompanied by the release of heat that is rejected to a liquid cooling stream.

absorption package: a factory-designed and prefabricated assembly used for chilling and/or heating water that consists of an evaporator, absorber, condenser, generator(s), and solution heat exchanger(s), with interconnections and accessories.

The package uses a mixture of at least two components. The more volatile component is the refrigerant, and the less volatile substance with high affinity for the refrigerant is the absorbent. Either single or multiple reconcentrations of an absorbent solution, known as “effects,” can be