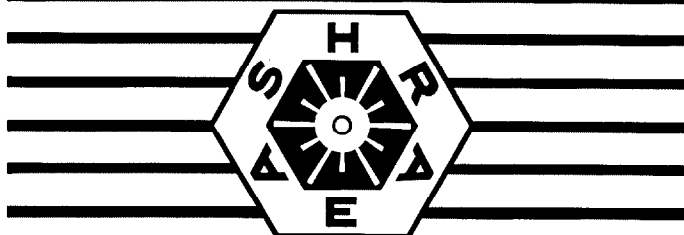


Supersedes ANSI/ASHRAE 30-1978



# ASHRAE<sup>®</sup> STANDARD

AN AMERICAN NATIONAL STANDARD

## Method of Testing Liquid-Chilling Packages

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**AMERICAN SOCIETY OF HEATING,  
REFRIGERATING AND  
AIR-CONDITIONING ENGINEERS, INC.**  
1791 Tullie Circle, NE • Atlanta, GA 30329

ASHRAE Standard Project Committee 30-1976  
**Cognizant TCs: TC 8.5 (Lead) Liquid-to-Refrigerant Heat Exchangers  
and TC 8.2 Centrifugal Machines**

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This is a preview of "ANSI/ASHRAE 30-1995". Click [here](#) to purchase the full version from the ANSI store.

## 1. PURPOSE

The purpose of this standard is to prescribe methods of testing for the thermal performance of refrigerant-cooled liquid-chilling packages, using the vapor compression cycle.

## 2. SCOPE

**2.1** This standard covers the types of liquid-chilling packages described in Section 4, "Liquid-Chilling Package Types." Types of compressors employed include reciprocating, centrifugal, scroll, and rotary (vane, helical, screw, etc.) compression equipment.

**2.2** This standard does not include self-contained, mechanically refrigerated drinking-water coolers covered in *ANSI/ASHRAE 18-1987 (RA 91)*<sup>1</sup> nor the bottled and canned beverage coolers covered in *ANSI/ASHRAE 32-1986 (RA 90)*<sup>2</sup>.

**2.3** This standard does not include specification of the test rating conditions under which the package must operate. For information pertaining to published ratings and conditions, refer to *ARI Standard 550-92, Centrifugal and Rotary Screw Water-Chilling Packages*,<sup>3</sup> and *ARI Standard 590-92, Reciprocating Water-Chilling Packages*<sup>4</sup>.

## 3. DEFINITIONS

**air-cooled condenser:** a refrigerating system component, including condenser fans, that condenses refrigerant vapor by rejecting heat to air mechanically circulated over its heat transfer surface, causing a temperature rise in the air. Desuperheating and subcooling of the refrigerant may occur as well.

**compressor saturated discharge temperature:** the saturation temperature corresponding to the refrigerant pressure at the compressor discharge, usually taken at or immediately downstream of the compressor discharge service valve (in either case on the downstream side of the valve seat), where discharge valves are used.

**evaporatively cooled condenser:** a refrigerating system component, including condenser fans, that condenses refrigerant vapor by rejecting heat to a water and air mixture mechanically circulated over its heat transfer surface, causing evaporation of the water and an increase in enthalpy of the air. Desuperheating and subcooling of the refrigerant may occur as well.

**liquid:** the fluid being cooled in the cooler (evaporator), as distinguished from refrigerant in the liquid state.

**liquid-chilling package:** a machine specifically designed to make use of a refrigerant cycle to remove heat from a liquid and reject this heat to a cooling medium, usually air or water. The refrigerant condenser may, or may not, be an integral part of this package.

**liquid cooler:** a factory-made assembly of elements in which the liquid and refrigerant are in heat transfer relationships, causing the refrigerant to evaporate and the liquid to be cooled.

**may:** used where a provision is permissible but not mandatory.

**net refrigerating effect:** the product of the weight rate of liquid flow and the difference in enthalpy of the entering and leaving liquid, expressed in heat units per unit of time.

**primary test:** the test from which ratings are calculated.

**specified values:** the selected conditions under which the test is to be conducted.

**shall:** used where a provision is mandatory if compliance with this standard is claimed.

**ton (of refrigeration):** equal to 12,000 Btu/h (3.516 kW).

**water-cooled condenser:** a heat transfer vessel that condenses refrigerant vapor, usually in the shell, while rejecting this heat of condensation to condensing water circulating through tubes or coils contained in the shell. Desuperheating and subcooling of the refrigerant may occur as well.

## 4. LIQUID-CHILLING PACKAGE TYPES

**4.1** A water-cooled liquid-chilling package consists of one or more of each of the following: refrigerant compressors, liquid coolers, and water-cooled condensers. All necessary components and controls for operation of the package shall be included.

**4.2** An air-cooled liquid-chilling package consists of one or more of each of the following: refrigerant compressors, liquid coolers, and air-cooled condensers. All necessary components and controls for operation of the package shall be included.

**4.3** An evaporatively cooled liquid-chilling package consists of one or more of each of the following: refrigerant compressors, liquid coolers, and evaporatively cooled condensers. All necessary components and controls for operation of the package shall be included.

**4.4** A condenserless liquid-chilling package consists of one or more of each of the following: refrigerant compressors and liquid coolers, suitable for field connection to one or more remotely located (field supplied) refrigerant condensers. All necessary components and controls for operation of the package shall be included.

## 5. EXPRESSION OF TEST RESULTS

**5.1** Liquid-chilling package test performance shall be expressed in the following terms: