

2000 STANDARD for

REMOTE MECHANICAL- DRAFT AIR-COOLED REFRIGERANT CONDENSERS



Standard 460

IMPORTANT

SAFETY RECOMMENDATIONS

It is strongly recommended that the product be designed, constructed, assembled and installed in accordance with nationally recognized safety requirements appropriate for products covered by this standard.

ARI, as a manufacturers' trade association, uses its best efforts to develop standards employing state-of-the-art and accepted industry practices. However, ARI does not certify or guarantee safety of any products, components or systems designed, tested, rated, installed or operated in accordance with these standards or that any tests conducted under its standards will be non-hazardous or free from risk.

Note:

This standard supersedes ARI Standard 460-94.

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REMOTE MECHANICAL-DRAFT AIR-COOLED REFRIGERANT CONDENSERS

Section 1. Purpose

1.1 Purpose. The purpose of this standard is to establish for remote mechanical-draft air-cooled condensers: definitions; test requirements; rating requirements; minimum data requirements for published ratings; marking and nameplate data; and conformance conditions.

1.1.1 Intent. This standard is intended for the guidance of the industry, including manufacturers, engineers, installers, contractors and users.

1.1.2 Review and Amendment. This standard is subject to review and amendment as technology advances.

Section 2. Scope

2.1 Scope. This standard applies to remote mechanical-draft air-cooled refrigerant condensers as defined in Section 3 for use with or without external air resistance.

2.2 Exclusions.

2.2.1 This standard does not apply to air-cooled condensers designed primarily for installation within the machinery compartment of a self-contained product or in a factory-assembled condensing unit.

2.2.2 This standard does not apply to remote mechanical-draft evaporative refrigerant condensers as covered by ARI Standard 490.

Section 3. Definitions

3.1 Definitions. All terms in this document will follow the standard industry definitions in the current edition of *ASHRAE Terminology of Heating, Ventilation, Air Conditioning and Refrigeration* unless otherwise defined in this section.

3.2 Bubble Point. Refrigerant liquid saturation temperature at a specified pressure.

3.3 Capacity. The total heat rejection effect of a remote air-cooled condenser.

3.3.1 Net Refrigeration Effect. The rate of total heat absorption by the refrigerant, at stated evaporator conditions, of the complete refrigeration system. This effect is equal to the product of the refrigerant mass flow rate through the system and the enthalpy difference between the refrigerant vapor leaving the evaporator and the refrigerant liquid entering the liquid control device of the evaporator, expressed in Btu/h [W].

3.3.2 Total Heat Rejection Effect. The rate of total heat removal from the refrigerant. This effect is equal to the product of the mass flow rate and enthalpy difference between the refrigerant vapor entering the condenser and the refrigerant liquid leaving the condenser, expressed in Btu/h [W]. (The total heat rejection effect, for all practical purposes, is equal to the net refrigeration effect in the evaporator of the system plus the heat added to the refrigerant by the refrigerant compressor.) As an alternative, this effect may be expressed in terms of its net refrigeration effect for a specific system.

3.4 Dew Point. Refrigerant vapor saturation temperature at a specified pressure.

3.5 Entering Air Dry Bulb Temperature. The average dry bulb temperature of the ambient air entering the condenser assembly, in EF [EC].

3.6 Entering Air Wet Bulb Temperature. The wet bulb temperature of the air entering the condenser assembly, in EF [EC].

3.7 Published Rating. A statement of the assigned values of those performance characteristics, under stated rating conditions, by which a unit may be chosen to fit its application. These values apply to all units of like nominal size and type (identification) produced by the same manufacturer. As used herein, the term *published rating* includes the rating of all performance characteristics shown on the unit or published in specification, advertising or other literature controlled by the manufacturer, at stated rating conditions.

3.7.1 Standard Rating. A rating based on tests performed at Standard Rating Conditions.

3.7.2 Application Rating. A rating based on tests performed at application rating conditions (other than Standard Rating Conditions).