



STANDARD

ANSI/ASHRAE Standard 190-2013

Method of Testing for Rating Indoor Pool Dehumidifiers

Approved by the ASHRAE Standards Committee on January 26, 2013; by the ASHRAE Board of Directors on January 29, 2013; and by the American National Standards Institute on May 3, 2013.

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ISSN 1041-2336



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CONTENTS

ANSI/ASHRAE Standard 190, Method of Testing for Rating Indoor Pool Dehumidifiers

SECTION	PAGE
Foreword.....	2
1 Purpose	2
2 Scope	2
3 Instruments.....	2
4 Airflow and Air Differential Pressure Measurement Apparatus	2
5 Methods of Testing and Calculation	2
6 Test Procedures	5
7 Data to Be Recorded	5
8 Test Results.....	8
9 Symbols Used in Equations.....	8
10 Reference Properties and Data	9

NOTE

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

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FOREWORD

This Standard was prepared under the auspices of ASHRAE. It may be used, in whole or in part, by an association or government agency with due credit to ASHRAE. Adherence is strictly on a voluntary basis and merely in the interests of obtaining uniform standards throughout the industry.

1. PURPOSE

The purpose of this standard is to prescribe test methods for determining the moisture removal capacity and efficiency, the pool heating capacity, and sensible and total cooling capacity for indoor pool dehumidifiers.

2. SCOPE

2.1 This standard applies to indoor pool dehumidifiers using electrically driven, mechanical vapor-compression refrigeration systems consisting of one or more factory-made assemblies that dehumidify and circulate air and may include pool water heating, air reheating, cooling, filtering, and heat recovery.

2.2 Systems other than the above are excluded.

3. INSTRUMENTS

3.1 Temperature-Measuring Instruments

3.1.1 All temperature measurements shall be made in accordance with ANSI/ASHRAE Standard 41.1 *Standard Method for Temperature Measurement*.

3.2 Pressure-Measuring Instruments

3.2.1 Pressure measurements shall be made in accordance with ASHRAE Standard 41.3 *Standard Method for Pressure Measurement*.

3.3 Air Differential Pressure and Airflow Measurements

3.3.1 The static pressure difference across nozzles and velocity pressures at nozzle throats shall be measured according to ASHRAE Standard 41.6 *Standard Method for Measurement of Moist Air Properties*.

3.4 Electrical Instruments

3.4.1 Electrical measurements shall be made with either indicating or integrating instruments.

3.4.2 Instruments used for measuring the electrical power input to fan motors, compressor motors, or other

equipment accessories shall be accurate to $\pm 1.0\%$ of the indicated value.

3.4.3 Instruments used for measuring the electrical power input to heaters or other apparatus furnishing heat loads shall be accurate to $\pm 1.0\%$ of the quantity measured.

3.4.4 Voltages shall be measured at the equipment terminals. Instruments used for measuring voltages shall be accurate to $\pm 1.0\%$ of the quantity measured.

3.5 Liquid Flow Measurement

3.5.1 Water flow rates shall be measured with a liquid flowmeter or quantity meter having an accuracy of $\pm 1.0\%$ of the indicated value in accordance with ASHRAE Standard 41.8 *Standard Methods of Measurement of Flow of Liquids in Pipes Using Orifice Flowmeters*.

3.5.2 Condensate collection rates shall be determined using a liquid quantity meter having an accuracy of $\pm 1.0\%$ of the indicated value.

3.6 Time and Mass Measurements

3.6.1 Time interval measurements shall be made with an instrument having an accuracy of $\pm 0.2\%$ of the indicated value.

3.6.2 Mass measurements shall be made with an instrument having an accuracy of $\pm 1.0\%$ of the indicated value.

4. AIRFLOW AND AIR DIFFERENTIAL PRESSURE MEASUREMENT APPARATUS

4.1 Air Enthalpy Apparatus

4.1.1 Recommended configurations for the test apparatus are provided in ASHRAE Standard 41.2 *Standard Methods for Laboratory Air-Flow Measurement* at the desired wet-bulb and dry-bulb temperatures.

4.2 Airflow-Measuring Apparatus

4.2.1 Airflow measurements shall be made in accordance with ASHRAE Standard 41.2 *Standard Methods for Laboratory Air-Flow Measurement*.

4.3 External Static-Pressure Measurements.

4.3.1 External static pressure shall be measured in accordance with ASHRAE Standard 41.2 *Standard Methods for Laboratory Air-Flow Measurement*.

5. METHODS OF TESTING AND CALCULATION

5.1 Standard Test Method

5.1.1 The following test method for measuring space-conditioning capacity, for all component arrangements shown in Table 1, is covered in this standard:

a. Indoor Air Enthalpy Method.

5.1.2 For the validation of the air enthalpy measurements, it is required to use the cooling condensate mass method. Section 5.2 describes a method for measuring cooling condensate and determining moisture removal capacity. Condensate mass measurements shall be $\pm 5\%$ of measurement of air enthalpy test results.