BSR/ASHRAE Addendum c
to ANSI/ASHRAE Standard 72-2022

First Public Review Draft

Proposed Addendum c to Standard 72-2022, Method of Testing Open and Closed Commercial Refrigerators and Freezers

First Public Review (June 2026)
(Draft shows Proposed Changes to Current Standard)

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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

This proposed addendum adds test method requirements for refrigerators operating with R-744 as the refrigerant in a direct-expansion configuration. It also adds two definitions associated with this proposed addition.

Note: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.

Addendum c to Standard 72-2022

Modify Section 3 as follows. The remainder of Section 3 remains unchanged.

3. DEFINITIONS

[…]

liquid overfeed system: system feeding an evaporator with refrigerant at a rate to make the exit vapor quality less than one.

[…]

mechanical subcooler: a heat exchanger external to a remote refrigerator used to reduce the liquid refrigerant temperature prior to entering the refrigerator.

[…]

Modify Section 6 as follows. The remainder of Section 6 remains unchanged.

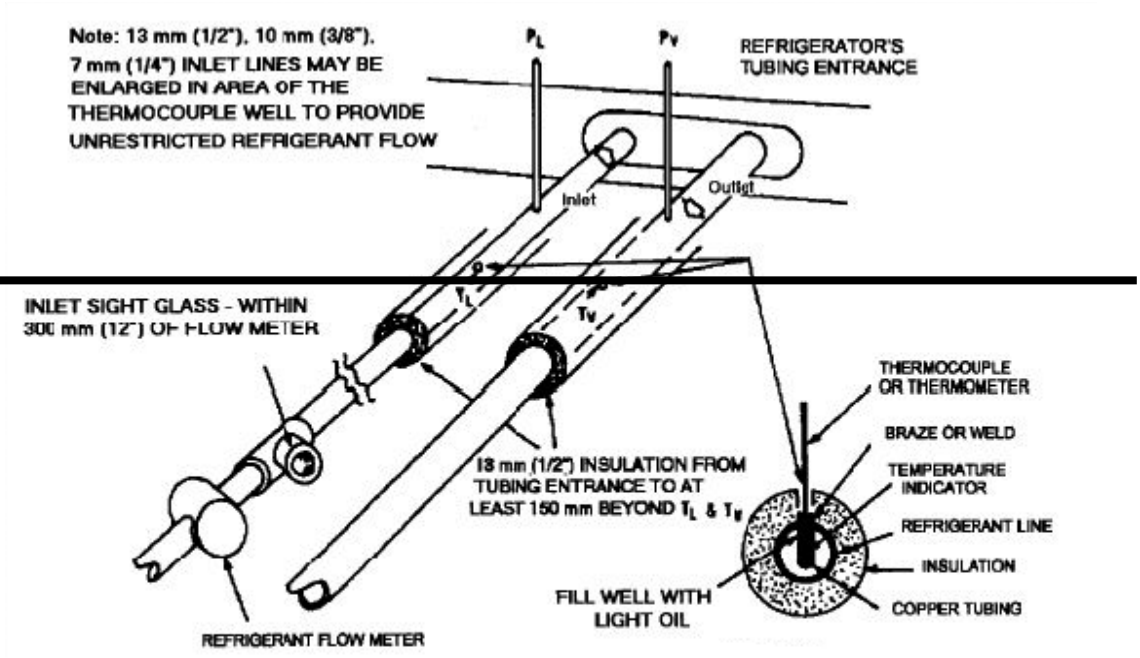
6. TEST CONDITIONS

[…]

6.4.7 R-744 Refrigerator Test Considerations

6.4.7.1 Scope. This method and the measurements specified in Normative Appendix A apply only to direct-expansion refrigerators. It does not apply to refrigerators intended to use R-744 in a liquid overfeed system.

6.4.7.2 Mechanical Subcooler. For direct-expansion remote refrigerators, if a mechanical subcooler is used to maintain the liquid temperatures as specified in Normative Appendix A, it shall be installed upstream of the refrigerant flowmeter.



~~**Figure 11 Illustration of pressure and temperature locations.**~~

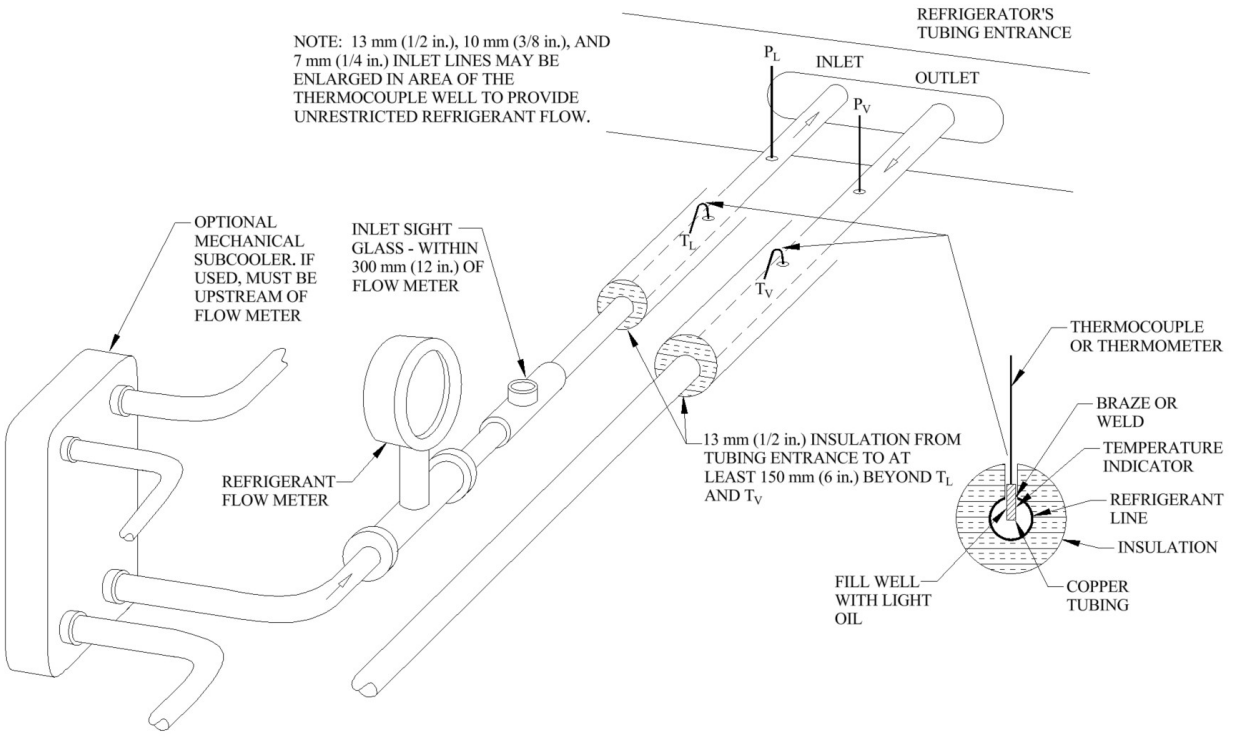


Figure 13 Illustration of pressure and temperature locations.

[…]

Modify Normative Appendix A as follows. The remainder of Normative Appendix A remains unchanged.

(This is a normative appendix and is part of the standard.)

NORMATIVE APPENDIX A—MEASUREMENT LOCATIONS, TOLERANCES, ACCURACIES, AND OTHER CHARACTERISTICS

Note to Reviewers: **All references to "Figure 11" are replaced by reference to "Figure 13".**

Table A-1 Measurement Locations, Tolerances, Accuracies, and Other Characteristics

Measured Quantity and Measurement Standard	Location	Period of Time Measurement is Taken	Required Accuracy	Required Value(s)
		[…]		
Compartment Temperature				
Test simulator temperature	See Section 5.4 ~~Section 4~~	At least once every 3 min throughout Test A and Test B	±0.8°C (±1.4°F)	N/A
Refrigerant Measurements for Direct-Expansion Remote Units				
Liquid refrigerant temperature for refrigerants other than R-744	Inlet line at a distance not greater than 155 mm (6.1 in.) from the refrigerator. (See Section 6.4.3 and Figure 13 ~~Figure 11~~)	At least once every 3 min during running cycles throughout Test A and Test B	±0.8°C (±1.4°F)	Individual measurements: 26.7°C ± 5.6°C (80.0°F ± 10.0°F) Average over test period: 26.7°C ± 2.8°C (80.0°F ± 5.0°F)
Liquid refrigerant temperature for R-744	Inlet line at a distance not greater than 155 mm (6.1 in.) from the refrigerator. (See Section 6.4.3 and Figure 13)	At least once every 3 min during running cycles throughout Test A and Test B	±0.8°C (±1.4°F)	Value used to calculate liquid refrigerant subcooling
Liquid refrigerant pressure for refrigerants other than R-744	Inlet line at a distance not greater than 155 mm (6.1 in.) from the refrigerator. (See Section 6.4.3 and Figure 13 ~~Figure 11~~)	At least once every 3 min during running cycles throughout Test A and Test B	±35.0 kPa (±5.1 psi)	Average over test period: Saturated liquid pressure corresponding to a condensing temperature (bubble point) in the range of 32°C to 49°C (89.6°F to 120.2°F)
Liquid refrigerant pressure for R-744	Inlet line at a distance not greater than 155 mm (6.1 in.) from the refrigerator. (See Section 6.4.3 and Figure 13)	At least once every 3 min during running cycles throughout Test A and Test B	±35.0 kPa (±5.1 psi)	Average over test period: Saturated liquid pressure corresponding to a condensing temperature (bubble point) in the range of 0.0°C to 3.3°C (32.0°F to 38.0°F)

Table A-1 Measurement Locations, Tolerances, Accuracies, and Other Characteristics

Measured Quantity and Measurement Standard	Location	Period of Time Measurement is Taken	Required Accuracy	Required Value(s)
Liquid refrigerant subcooling for refrigerants other than R-744	Calculated from measured temperature and pressure	At least once every 3 min during running cycles throughout Test A and Test B	N/A	Average over test period: >0K (>0°R)
Liquid refrigerant subcooling	Calculated from measured temperature and pressure. Temperature measured at inlet line at a distance not greater than 155 mm (6.1 in.) from the refrigerator.	At least once every 3 minutes, starting 5 minutes after the end of each defrost period, during running cycles throughout Test A and Test B.	N/A	Individual measurements: 1.0 to 6.0K (1.8 to 10.8°R) Average over test period: 1.0 to 3.0K (1.8 to 5.4°R)

[…]