

OTHER
RECOGNIZED
DOCUMENT

ULC/ORD-C441.3-1998

GAS VENT CONNECTORS



Underwriters' Laboratories of Canada

Copyright Underwriters' Laboratories of Canada
Provided by IHS Markit under license with ULC
No reproduction or networking permitted without license from IHS
Full document details: ULC C441.3-1998 1998

Licensee=/, User=,
Not for Resale,



Documents

Document Sharing Hub

UNDERWRITERS' LABORATORIES OF CANADA (ULC) is a not-for-profit organization incorporated in 1920 by letters patent issued by the Canadian Government. It maintains and operates laboratories, certification services, and a quality system registration programme for the examination, testing and classification of devices, constructions, materials and systems to determine their relation to life, fire and property hazards. Underwriters' Laboratories of Canada also develops and publishes standards, classifications and other recognized documents for products having a bearing on fire, accident, or property hazards.

Underwriters' Laboratories of Canada is accredited by the Standards Council of Canada as a Certification Organization, a Testing Organization, a Quality System Registration Organization and a Standards Development Organization, under the National Standards System of Canada.

Other Recognized Documents developed by Underwriters' Laboratories of Canada are developed in accordance with the procedure outlined in the document CAN-P-3 "Criteria and Procedures for Accreditation of Certification Organizations" published by the Standards Council of Canada.

The headquarters of Underwriters' Laboratories of Canada is located in Scarborough, Ontario and, in addition, ULC is represented across Canada as well as in the United States of America, Britain, Europe, Japan, and China.

Underwriters' Laboratories of Canada
7 Crouse Road
Scarborough, Ontario
M1R 3A9

Telephone: (416) 757-3611
Fax: (416) 757-8915

THE STANDARDS COUNCIL OF CANADA is the coordinating body of the National Standards System, a federation of independent autonomous organizations working towards the further development and improvement of voluntary standardization in the national interest.

The principal objects of the Council are to foster and promote voluntary standardization as a means of advancing the national economy, benefitting the health, safety and welfare of the public, assisting and protecting the consumer, facilitating domestic and international trade, and furthering international cooperation in the field of standards.

The National Standards System of Canada accepts the use of Other Recognized Documents (ORD's) as defined in CAN-P-3 "Criteria and Procedures for Accreditation of Certification Organizations" published by the Standards Council of Canada.

The Standards Council of Canada is located at

1200 - 45 O'Connor
Ottawa, Ontario
K1P 6N7

NOTE: It is important to note that it is the responsibility of the user of this document to judge its suitability for the particular application.

GAS VENT
CONNECTORS

FIRST EDITION JUNE, 1998

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior permission of Underwriters' Laboratories of Canada.

TABLE OF CONTENTS

	<u>PAGE</u>
FOREWORD	
PREFACE	1
1. SCOPE	2
2. GLOSSARY	2
3. CONSTRUCTION	2
3.1 Materials	2
3.2 Assembly	4
3.3 Joints	4
4. PERFORMANCE	5
4.1 General	5
4.2 Test Installation	6
4.3 Test No. 1 - Temperature Structure	8
4.3.1 General	8
4.3.2 Test Gas Vent Connector, Test Structure Form I	8
4.4 Test No. 2 - Support	9
4.5 Test No. 3 - Corrosion Resistance	9
4.6 Test No. 4 - Vibration (for Loose Fill Insulted Connectors) ..	10
4.7 Test No. 5 - Flexibility (Flexible Connectors Only)	11
4.8 Test No. 6 - Torsion (Flexible Connectors Only)	11
4.9 Test No. 7 - Puncture	11
4.10 Test No. 8 - Liquid Penetration	11
4.11 Test No. 9 - Pull Test	12
5. INSTALLATION INSTRUCTIONS	12
6. MARKING	13
APPENDIX A - TEMPERATURE TEST ROOM	14
FIGURES	15



UNDERWRITERS' LABORATORIES OF CANADA

FOREWORD

Certification organizations are periodically called upon to respond promptly to a need to provide a certification service for devices, constructions, materials and systems for which no recognized standards of acceptance are available. Accordingly, the certification agency draws upon its experience, existing specifications and requirements in related areas, together with assistance from its advisory councils to develop and prepare an "Other Recognized Document" (ORD) for use in conducting the necessary tests and evaluation investigation.

Underwriters' Laboratories of Canada has over the years prepared many ORD's in response to requests from, and in conjunction with, industry, code writing bodies, regulatory agencies and others prior to inaugurating a certification programme. In many instances such documents have become published ULC Standards and subsequently National Standards of Canada. It is the intention of Underwriters' Laboratories of Canada to continue this practice, as appropriate.

Comments on the content of this ORD should be directed to the Head Office of Underwriters' Laboratories of Canada, 7 Crouse Road, Scarborough, Ontario, CANADA, M1R 3A9.

NOTE: These Recognized Documents are accepted under the National Standards System of Canada. Reference may be made to the Document CAN-P-3, "Criteria and Procedures for Accreditation of Certification Organization" published by the Standards Council of Canada located at 45 O'Connor Street, Suite 1200, Ottawa, Ontario, CANADA, K1P 6N7.



INCORPORATED 1920

UNDERWRITERS' LABORATORIES OF CANADA

In Reply
Please Refer to

ULC/ORD-C441.3-1998

REQUIREMENTS FOR GAS VENT CONNECTORS

PREFACE

This is the First Edition of ULC/ORD-C441.3 entitled Gas Vent Connectors.

A product which complies with these requirements will not necessarily be acceptable if, when examined and tested, it is found to have features not covered by this Document which may impair the result contemplated by these requirements.

A product employing materials or having forms of construction differing from those detailed in these requirements may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be given recognition.

A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions contained below cannot be judged to comply with these requirements. Where considered appropriate, revision of requirements may be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this Document.

Units of measurement used in this Document are Metric SI.

- 2 -

1. SCOPE

1.1 These requirements cover gas vent connectors intended for use with gas-fired appliances equipped with draft hoods that produce flue gas temperatures not exceeding 245°C. Gas vent connectors are intended for use inside buildings to form a connection to suitable vents or chimneys as detailed in the Installation Codes for Gas Burning Equipment, CAN/CGA-B149.1 and CAN/CGA-B149.2. The connectors are intended to be installed in accordance with the National Building Code of Canada, the aforementioned installation codes or the acts or regulations of the authority having jurisdiction.

1.2 Gas vent connectors are also intended to be used with gas-fired appliances, without draft hoods or diverters, which meet all of the following requirements:

- A The appliance is certified for use with a Type B gas vent;
- B Flue-gas temperatures normally exceed 135°C but do not exceed 245°C;
- C The vent normally operates below atmospheric pressure; and
- D Condensation of flue-gas products is not normally expected within the vent.

1.3 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this Document, and that involve a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of these requirements.

2. GLOSSARY

2.1 The definitions contained in the Installation Code for Natural Gas Burning Appliances and Equipment, CAN/CGA-B149.1 shall apply throughout this Document.

3. CONSTRUCTION

3.1 MATERIALS

3.1.1 A gas vent connector part shall be made of non-combustible corrosion-resistant materials. Materials employed in the construction shall be of such quality and shall possess properties and characteristics which may be expected to provide the almost unlimited service life expected of a permanent portion of a building. Metals shall not be used in combinations such as to cause detrimental galvanic action which will adversely affect any part of the assembly.

3.1.2 The minimum thickness of sheet metal, including any coatings shall, unless otherwise specified, be as follows:

Aluminum Alloys (1100, 3003) - inner pipe	0.30 mm
Aluminum Alloys (1100, 3003) - other use	0.40 mm
Uncoated Steel	0.40 mm
Zinc-Coated Steel (Refer to Cluse 3.1.7)	0.46 mm
Aluminum-Coated Steel (122 g/m ² and where the bond between the steel and the aluminum is an iron-aluminum alloy)	0.46 mm
Stainless Steel (Type 430)	0.30 mm

3.1.3 Aluminum alloys containing more than 1.0% magnesium are not to be used if the reflectivity of the material is utilized to reduce fire hazard.

3.1.4 A flue-gas conveying conduit shall be of a material having durability and resistance to corrosion and heat equivalent to that of Type 1100 aluminum, Type 430 stainless steel, or porcelain-coated steel conforming with the requirements contained herein. Other parts in contact with the flue gases or subject to condensation shall be of material having durability and resistance to corrosion and heat equivalent to Type 1100 aluminum or aluminum-coated steel.

3.1.5 Ceramic material and porcelain-enamelled steel shall conform to the requirements of the applicable tests described for the material.

3.1.6 An outer casing, if provided, shall conform to the minimum material thickness as shown above.

3.1.7 Thermal insulation material shall be of a metal or mineral base.

3.1.8 Thermal insulation as employed shall comply with the following conditions when the gas connector is tested in accordance with these requirements:

- A The products resulting from the combustion or volatilization of any combustible binder shall be discharged to the gas vent terminus outside of the building;
- B Insulating material shall retain sufficient physical strength to remain in its intended position;
- C The thermal conductivity of insulating materials shall not be increased; and