

2024 Ohio Mechanical Code

First Printing: November 2023

ISBN: 978-1-962103-22-0 (soft-cover edition)

ISBN: 978-1-962103-23-7 (PDF download)

COPYRIGHT © 2023

by

INTERNATIONAL CODE COUNCIL, INC.

ALL RIGHTS RESERVED. This 2024 *Ohio Mechanical Code* contains substantial copyrighted material from the 2021 *International Mechanical Code*[®], third printing, which is a copyrighted work owned by the International Code Council, Inc. (“ICC”). Without separate written permission from the copyright owner, no part of this publication may be reproduced, distributed or transmitted in any form or by any means, including, without limitation, electronic, optical or mechanical means (by way of example, and not limitation, photocopying or recording by or in an information storage and/or retrieval system). For information on use rights and permissions, please contact: ICC Publications, 4051 Flossmoor Road, Country Club Hills, Illinois 60478; 1-888-ICC-SAFE (422-7233); <https://www.iccsafe.org/about/periodicals-and-newsroom/icc-logo-license/>.

Trademarks: “International Code Council,” the “International Code Council” logo, “ICC,” the “ICC” logo, “International Mechanical Code,” “IMC” and other names and trademarks appearing in this publication are registered trademarks of the International Code Council, Inc., and/or its licensors (as applicable), and may not be used without permission.

PRINTED IN THE USA

PREFACE

Introduction

This 2024 *Ohio Mechanical Code* is based on the 2021 *International Mechanical Code*® (IMC®) with incorporated Ohio changes.

The IMC establishes minimum requirements for mechanical systems using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new mechanical designs. This 2021 edition is fully compatible with all of the International Codes (I-Codes®) published by the International Code Council (ICC), including the *International Building Code*®, *International Energy Conservation Code*®, *International Existing Building Code*®, *International Fire Code*®, *International Fuel Gas Code*®, *International Green Construction Code*®, *International Plumbing Code*®, *International Private Sewage Disposal Code*®, *International Property Maintenance Code*®, *International Residential Code*®, *International Swimming Pool and Spa Code*®, *International Wildland-Urban Interface Code*®, *International Zoning Code*® and *International Code Council Performance Code*®.

The I-Codes, including this *International Mechanical Code*, are used in a variety of ways in both the public and private sectors. Most industry professionals are familiar with the I-Codes as the basis of laws and regulations in communities across the US and in other countries. However, the impact of the codes extends well beyond the regulatory arena, as they are used in a variety of nonregulatory settings, including:

- Voluntary compliance programs such as those promoting sustainability, energy efficiency and disaster resistance.
- The insurance industry, to estimate and manage risk, and as a tool in underwriting and rate decisions.
- Certification and credentialing of individuals involved in the fields of building design, construction and safety.
- Certification of building and construction-related products.
- US federal agencies, to guide construction in an array of government-owned properties.
- Facilities management.
- “Best practices” benchmarks for designers and builders, including those who are engaged in projects in jurisdictions that do not have a formal regulatory system or a governmental enforcement mechanism.
- College, university and professional school textbooks and curricula.
- Reference works related to building design and construction.

In addition to the codes themselves, the code development process brings together building professionals on a regular basis. It provides an international forum for discussion and deliberation about building design, construction methods, safety, performance requirements, technological advances and innovative products.

Development

This 2021 edition presents the code as originally issued, with changes reflected in the 2003 through 2018 editions and further changes approved by the ICC Code Development Process through 2019. A new edition such as this is promulgated every 3 years.

This code is founded on principles intended to establish provisions consistent with the scope of a mechanical code that adequately protects public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

Maintenance

The *International Mechanical Code* is kept up-to-date through the review of proposed changes submitted by code enforcement officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate.

The ICC Code Development Process reflects principles of openness, transparency, balance, due process and consensus, the principles embodied in OMB Circular A-119, which governs the federal government's use of private-sector standards. The ICC process is open to anyone; there is no cost to participate, and people can participate without travel cost through the ICC's cloud-based app, *cdpAccess*[®]. A broad cross-section of interests are represented in the ICC Code Development Process. The codes, which are updated regularly, include safeguards that allow for emergency action when required for health and safety reasons.

In order to ensure that organizations with a direct and material interest in the codes have a voice in the process, the ICC has developed partnerships with key industry segments that support the ICC's important public safety mission. Some code development committee members were nominated by the following industry partners and approved by the ICC Board:

- American Institute of Architects (AIA)
- National Association of Home Builders (NAHB)

The code development committees evaluate and make recommendations regarding proposed changes to the codes. Their recommendations are then subject to public comment and council-wide votes. The ICC's governmental members—public safety officials who have no financial or business interest in the outcome—cast the final votes on proposed changes.

The contents of this work are subject to change through the code development cycles and by any governmental entity that enacts the code into law. For more information regarding the code development process, contact the Codes and Standards Development Department of the International Code Council.

While the I-Code development procedure is thorough and comprehensive, the ICC, its members and those participating in the development of the codes disclaim any liability resulting from the publication or use of the I-Codes, or from compliance or noncompliance with their provisions. The ICC does not have the power or authority to police or enforce compliance with the contents of this code.

Marginal Markings

For Digital Codes Basic and Premium services, Ohio amendments to the International Codes are shown in red text. An open arrow (>) in the margin indicates I-Code text has been omitted.

For print and PDF versions of the code, double vertical lines in the margin within the body of the code indicate Ohio amendments. An open arrow (>) in the margin indicates I-Code text has been omitted.

Coordination of the International Codes

The coordination of technical provisions is one of the strengths of the ICC family of model codes. The codes can be used as a complete set of complementary documents, which will provide users with full integration and coordination of technical provisions. Individual codes can also be used in subsets or as stand-alone documents. To make sure that each individual code is as complete as possible, some technical provisions that are relevant to more than one subject area are duplicated in some of the model codes. This allows users maximum flexibility in their application of the I-Codes.

Italicized Terms

Words and terms defined in Chapter 2, Definitions, are italicized where they appear in code text and the Chapter 2 definitions apply. Where such words and terms are not italicized, common-use definitions apply. The words and terms selected have code-specific definitions that the user should read carefully to facilitate better understanding of the code.

Adoption

The International Code Council maintains a copyright in all of its codes and standards. Maintaining copyright allows the ICC to fund its mission through sales of books, in both print and electronic formats. The ICC welcomes adoption of its codes by jurisdictions that recognize and acknowledge the ICC's copyright in the code, and further acknowledge the substantial shared value of the public/private partnership for code development between jurisdictions and the ICC.

The ICC also recognizes the need for jurisdictions to make laws available to the public. All I-Codes and I-Standards, along with the laws of many jurisdictions, are available for free in a nondownloadable form on the ICC's website. Jurisdictions should contact the ICC at adoptions@iccsafe.org to learn how to adopt and distribute laws based on the *International Mechanical Code* in a manner that provides necessary access, while maintaining the ICC's copyright.

Effective Use of the International Mechanical Code

The *International Mechanical Code*[®] (IMC[®]) is a model code that regulates the design and installation of mechanical systems, appliances, appliance venting, duct and ventilation systems, combustion air provisions, hydronic systems and solar systems. The purpose of the code is to establish the minimum acceptable level of safety and to protect life and property from the potential dangers associated with the installation and operation of mechanical systems. The code also protects the personnel that install, maintain, service and replace the systems and appliances addressed by this code.

The IMC is primarily a prescriptive code with some performance text. The code relies heavily on product specifications and listings to provide much of the appliance and equipment installation requirements.

TABLE OF CONTENTS

<p>CHAPTER 1 SCOPE AND ADMINISTRATION .. 1-1</p> <p>Section</p> <p>101 General 1-1</p> <p>CHAPTER 2 DEFINITIONS 2-1</p> <p>Section</p> <p>201 General 2-1</p> <p>202 General Definitions 2-1</p> <p>CHAPTER 3 GENERAL REGULATIONS 3-1</p> <p>Section</p> <p>301 General 3-1</p> <p>302 Protection of Structure 3-2</p> <p>303 Equipment and Appliance Location 3-3</p> <p>304 Installation 3-3</p> <p>305 Piping Support 3-5</p> <p>306 Access and Service Space 3-5</p> <p>307 Condensate Disposal 3-7</p> <p>308 Clearance Reduction 3-8</p> <p>309 Temperature Control 3-10</p> <p>310 Explosion Control 3-10</p> <p>311 Smoke and Heat Vents 3-10</p> <p>312 Heating and Cooling Load Calculations 3-10</p> <p>313 Welding and Brazing 3-10</p> <p>CHAPTER 4 VENTILATION 4-1</p> <p>Section</p> <p>401 General 4-1</p> <p>402 Natural Ventilation 4-1</p> <p>403 Mechanical Ventilation 4-2</p> <p>404 Enclosed Parking Garages 4-5</p> <p>405 Systems Control 4-5</p> <p>406 Ventilation of Uninhabited Spaces 4-5</p> <p>407 Ambulatory Care Facilities and Group I-2 Occupancies 4-5</p> <p>CHAPTER 5 EXHAUST SYSTEMS 5-1</p> <p>Section</p> <p>501 General 5-1</p> <p>502 Required Systems 5-2</p> <p>503 Motors and Fans 5-9</p>	<p>504 Clothes Dryer Exhaust 5-9</p> <p>505 Domestic Cooking Exhaust Equipment 5-11</p> <p>506 Commercial Kitchen Hood Ventilation System Ducts and Exhaust Equipment 5-12</p> <p>507 Commercial Kitchen Hoods 5-17</p> <p>508 Commercial Kitchen Makeup Air 5-20</p> <p>509 Fire Suppression Systems 5-21</p> <p>510 Hazardous Exhaust Systems 5-21</p> <p>511 Dust, Stock and Refuse Conveying Systems 5-23</p> <p>512 Subslab Soil Exhaust Systems 5-24</p> <p>513 Smoke Control Systems 5-24</p> <p>514 Energy Recovery Ventilation Systems 5-28</p> <p>CHAPTER 6 DUCT SYSTEMS 6-1</p> <p>Section</p> <p>601 General 6-1</p> <p>602 Plenums 6-2</p> <p>603 Duct Construction and Installation 6-4</p> <p>604 Insulation 6-6</p> <p>605 Air Filters 6-7</p> <p>606 Smoke Detection Systems Control 6-7</p> <p>607 Duct and Transfer Openings 6-8</p> <p>608 Balancing 6-14</p> <p>CHAPTER 7 COMBUSTION AIR 7-1</p> <p>Section</p> <p>701 General 7-1</p> <p>CHAPTER 8 CHIMNEYS AND VENTS 8-1</p> <p>Section</p> <p>801 General 8-1</p> <p>802 Vents 8-2</p> <p>803 Connectors 8-3</p> <p>804 Direct-Vent, Integral Vent and Mechanical Draft Systems 8-4</p> <p>805 Factory-Built Chimneys 8-6</p> <p>806 Metal Chimneys 8-6</p> <p>CHAPTER 9 SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENT 9-1</p> <p>Section</p> <p>901 General 9-1</p>
--	---

TABLE OF CONTENTS

902 Masonry Fireplaces 9-1

903 Factory-Built Fireplaces 9-1

904 Pellet Fuel-Burning Appliances 9-1

905 Fireplace Stoves and Room Heaters 9-1

906 Factory-Built Barbecue Appliances 9-1

907 Incinerators and Crematories 9-2

908 Cooling Towers, Evaporative
Condensers and Fluid Coolers 9-2

909 Vented Wall Furnaces 9-2

910 Floor Furnaces 9-2

911 Duct Furnaces 9-3

912 Infrared Radiant Heaters 9-3

913 Clothes Dryers 9-3

914 Sauna Heaters 9-3

915 Engine and Gas Turbine-Powered
Equipment and Appliances 9-4

916 Pool and Spa Heaters 9-4

917 Cooking Appliances 9-4

918 Forced-Air Warm-Air Furnaces 9-4

919 Conversion Burners 9-4

920 Unit Heaters 9-5

921 Vented Room Heaters 9-5

922 Kerosene and Oil-Fired Stoves 9-5

923 Small Ceramic Kilns 9-5

924 Stationary Fuel Cell Power Systems 9-5

925 Masonry Heaters 9-5

926 Gaseous Hydrogen Systems 9-5

927 Radiant Heating Systems 9-5

928 Evaporative Cooling Equipment 9-6

929 Unvented Alcohol Fuel-Burning
Decorative Appliances 9-6

930 Large-Diameter Ceiling Fans 9-6

**CHAPTER 10 BOILERS, WATER HEATERS
AND PRESSURE VESSELS 10-1**

Section

1001 General 10-1

1002 Water Heaters 10-1

1003 Pressure Vessels 10-1

1004 Boilers 10-2

1005 Boiler Connections 10-3

1006 Safety and Pressure Relief Valves
and Controls 10-3

1007 Boiler Low-Water Cutoff 10-3

1008 Bottom Blowoff Valve 10-3

1009 Hot Water Boiler Expansion Tank 10-4

1010 Gauges 10-4

1011 Tests 10-4

CHAPTER 11 REFRIGERATION 11-1

Section

1101 General 11-1

1102 System Requirements 11-1

1103 Refrigeration System Classification 11-2

1104 System Application Requirements 11-3

1105 Machinery Room, General Requirements 11-10

1106 Machinery Room, Special Requirements 11-11

1107 Piping Material 11-12

1108 Joints and Connections 11-13

1109 Refrigerant Pipe Installation 11-14

1110 Refrigeration Piping System Test 11-16

1111 Periodic Testing 11-17

CHAPTER 12 HYDRONIC PIPING 12-1

Section

1201 General 12-1

1202 Material 12-1

1203 Joints and Connections 12-2

1204 Pipe Insulation 12-4

1205 Valves 12-4

1206 Piping Installation 12-4

1207 Transfer Fluid 12-5

1208 Tests 12-5

1209 Embedded Piping 12-5

1210 Plastic Pipe Ground-Source Heat Pump
Loop Systems 12-5

**CHAPTER 13 FUEL OIL PIPING
AND STORAGE 13-1**

Section

1301 General 13-1

1302 Material 13-1

1303 Joints and Connections 13-1

1304 Piping Support 13-2

1305 Fuel Oil System Installation 13-2

1306 Oil Gauging 13-3

1307 Fuel Oil Valves 13-3

1308 Fuel Oil and Diesel Oil Storage 13-3

1309 Testing 13-4

CHAPTER 14 SOLAR THERMAL SYSTEMS ... 14-1
Section
1401 General 14-1
1402 Design and Installation 14-1
1403 Heat Transfer Fluids 14-3
1404 Labeling 14-3

CHAPTER 15 REFERENCED STANDARDS 15-1

**APPENDIX A CHIMNEY CONNECTOR
PASS-THROUGHS
(Deleted)..... APPENDIX A-1**

**APPENDIX B RECOMMENDED PERMIT
FEE SCHEDULE
(Deleted)..... APPENDIX B-1**

**APPENDIX C BOARD OF APPEALS
(Deleted)..... APPENDIX C-1**

INDEXINDEX-1