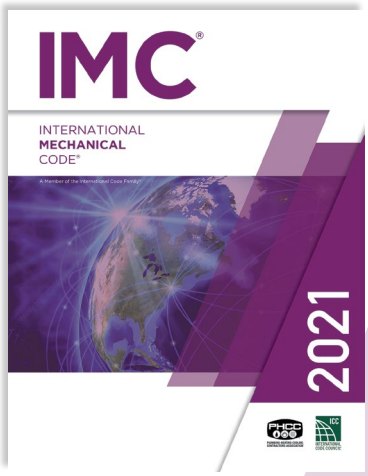
INTERNATIONAL CODE COUNCIL®

Building Confidence, Building Community.

The 2021 International Mechanical Code (IMC)®

Why is the IMC the most resilient mechanical code around?



Extreme weather and other hazardous events can have devastating and costly impacts on the built environment. Ensuring that homes and buildings are resilient requires a comprehensive set of modern construction codes. The Federal Emergency Management Agency (FEMA) recognizes the International Code Council's Family of Codes (or I-Codes) within its Consensus-Based Codes, Specifications and Standards for Public Assistance (CBCSS) document for the construction of homes and buildings that are hazard-resilient. The International Mechanical Code® (IMC) is the only mechanical code recognized.[1] Given its benefits, the IMC is the most widely adopted mechanical code across the country—47 states, the District of Columbia, New York City, Guam, Puerto Rico and the U.S. Virgin Islands adopt it, approximately 87% of the U.S. population. Beyond FEMA, the General Services Administration, Department of Defense, Architect of the Capitol, Indian Health Service, National Aeronautics and Space Administration, and Smithsonian Institution utilize it. Common hazards that the IMC addresses are detailed below.

FIRE

- Regulates ducts, system controls, exhaust, equipment, fire protection systems, smoke control systems, and related components.
- Requires fire-resistant ratings for penetrations in floor/ceiling assemblies.
- Assures fire safety through exhaust air systems, including kitchen exhaust.
- Requires effective fire suppression systems for cooking surfaces and within the hood and exhaust systems.
- HVAC materials must be noncombustible, mitigating smoke and flame spread.
- Air distribution systems must be equipped with smoke detectors and cannot undermine required fire protection.
- Refrigerant detectors must be provided in machinery rooms for leak detection.

FLOOD/WATER INTRUSION

- In flood hazard areas, mechanical systems, including HVAC, intake air, and exhaust openings, associated equipment, and appliances must be elevated.
- Duct systems and piping in flood hazard areas must be elevated or constructed of flood damage-resistant materials and designed to resist hydrostatic and hydrodynamic loads.

[1] FEMA, Consensus-Based Codes, Specifications and Standards for Public Assistance (FEMA Recovery Interim Policy FP- 104-009-11 Version 2.1).

MECHANICAL

SEISMIC

- Mechanical system supports, anchorage, and bracing for mechanical equipment, piping, and ducts must withstand seismic forces.
- Pollution-control, cooling towers, evaporative condensers, fluid coolers, and unit bracing and supports must be designed to carry gravity and seismic loads.
- Piping must be protected from structural damage and building loads as well as strains and stresses, including from a seismic event, which exceed the pipe's structural strength.

WIND and RAIN

- Mechanical equipment, cooling towers, evaporative condensers, fluid coolers, appliances, and supports must resist wind pressures.
- Air intake and exhaust openings must prevent wind/rain entry.
- Wind effects cannot adversely affect smoke control systems.
- Ducts, including linings, coverings, and vibration isolation connectors installed on the exterior of buildings must be protected from the elements, including wind, rain, sunlight, and debris.

SNOW and ICE

- Appliances installed outdoors must be designed for external exposure and temperature fluctuations.
- Air intake and exhaust openings must be protected against snow and other local weather conditions and be located to prevent snow or ice blockage.
- The design of smoke control systems must consider the effects of low temperatures on systems, property, and occupants.
- Insulated exterior ducts must have a weatherproof covering to prevent the outdoor elements from deteriorating the materials.

MOLD and MILDEW

- Auxiliary protection systems are required to prevent damage from condensate overflow from a fuel-burning appliance or mechanical system.
- A water-level monitoring device is required on HVAC equipment that does not have a secondary drain pan.
- Return air for heating, ventilation, and air-conditioning systems cannot be taken from bathrooms or unconditioned attics.
- Ducts must be constructed of materials that are resistant to mold growth.
- Prevents the formation of condensation on the exterior of any mechanical duct.
- Clothes dryer exhaust systems must convey moisture and any products of combustion to the outside of the building or structure. Dryer exhaust ducts cannot terminate in attics or crawlspaces.
- Uninhabited spaces, such as crawl spaces and attics, must be provided with natural ventilation openings or be provided with a mechanical exhaust and supply air system.

INDOOR AIR QUALITY

- The IMC protects the health of building occupants by controlling the quality of indoor air through, for example, automatic exhaust fan activation and integration of building-wide ventilation, air quality, and duct construction standards.
- Mechanical ventilation systems must operate effectively, both at normal operating and emergency conditions.

MECHANICAL

GRID RESILIENCY

- HVAC systems and equipment must be designed and installed to efficiently utilize energy in accordance with the International Energy Conservation Code (IECC).
- Enables the use of ventilation systems equipped with energy recovery ventilators that are designed to efficiently extract heat from exhaust air and use that heat to preheat the incoming outdoor makeup air.
- HVAC system design loads must track peak cooling and heating calculations.
- Allows for the use of hydrogen to generate electricity for fuel cell appliances.
- To maintain energy efficiency, thermal continuity must be maintained where a duct liner has been interrupted.

For more information contact one of our experts at Mechanical@iccsafe.org or www.iccsafe.org/products-and-services/i-codes/pmg-technical-team/

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