



Fire Safety Codes

Japan • Mexico • Netherlands

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LAW LIBRARY OF CONGRESS**JAPAN****FIRE SAFETY CODES****I. Legislation**

Two laws regulate fire safety for high-rise buildings in Japan: the Fire Service Law¹ and the Building Standard Law.² Under the Fire Service Law, an owner or occupant of a building other than a private house must install and maintain the fire-protection devices, water source, and other facilities necessary for firefighting.³ Under the Building Standard Law, fireproofing of the building structure is required. The government agencies that administer these two laws are the Fire Defense Agency for the Fire Service Law and the Ministry of Land, Infrastructure and Transportation (MLIT) for the Building Standard Law. There is no trade-off between the two laws regarding the fireproofing standards and the fire sprinkler standards.

II. Building Structure Fireproofing

The Building Standard Law provides detailed fireproofing standards based on the scale of the structure, purpose of use, type of framework used in the structure, and its materials. Main structural parts of a high-rise building must be of “fireproof construction” or capable of withstanding catching fire, according to technical standards prescribed in the Enforcement Order of Building Standard Law.⁴ “Fireproof construction” means that walls, pillars, floors, and other parts of the building incorporate specified structural designs and construction methods as set by the MLIT that meet the standards of fireproofing set by the Enforcement Order of Building Standard Law.⁵ Also, openings in the exterior walls must have fire doors or other fire-prevention devices prescribed by the Order.⁶ Such fire-prevention devices must not ignite, other than on the side where directly heated by flame or heat, during the first twenty minutes of a fire.⁷

III. Fire-Protection Devices

An owner, occupant, or administrator of a high-rise building must install and maintain fire-protection devices, a water source, and other facilities necessary for firefighting, which are designated in the Enforcement Order of Fire Service Law, in accordance with the technical standards set by the same Order.⁸ Fire-protection devices include firefighting devices, alarms, and evacuation devices.⁹ One kind

¹ Shōbōhō [Fire Service Law], Law No. 186 of 1948, as amended.

² Kenchiku Kijunhō [Building Standard Law], Law No. 201 of 1950, as amended.

³ Fire Service Law, *supra* note 1, art. 17, para. 1.

⁴ Building Standard Law, *supra* note 2, art. 21, para. 1, art. 2, item 9-2, sub-item 1; Kenchiku kijunhō shikōrei [Enforcement Order of Building Standard Law], Order No. 338 of 1950, as amended, art. 108-3.

⁵ Building Standard Law, *id.* art. 7-2; the Enforcement Order of Building Standard Law, *id.* arts. 107 and 107-2.

⁶ Building Standard Law, *id.* art. 2, item 9-2, sub-item 2; the Enforcement Order of Building Standard Law, *id.* art.109.

⁷ Enforcement Order of Building Standard Law, *id.* art.109-2.

⁸ Fire Service Law, *supra* note 1, art. 17, para. 1; Shōbōhō shikōrei [Enforcement Order of the Fire Service Law], Order No. 37 of 1961.

⁹ Enforcement Order of the Fire Service Law, *id.* art. 7, para. 1.

of firefighting device must be installed in the building. The sprinkler system is listed as one of the firefighting devices.¹⁰

IV. Elevator Use in Fires

There is no national law prohibiting elevator use in fires.¹¹ There are municipal ordinances that require managers of buildings to post signs that prohibit elevator use during fires.¹² The walls and openings of the elevator shaft must be of designed and constructed so that they do not lessen the effectiveness of the building's fire-protection measures.¹³ Walls and doors of an elevator shaft must be made of materials that are fire-resistant.¹⁴ Walls and floors of an emergency elevator's shaft must be of "fireproof construction."¹⁵ Emergency elevators must be installed in buildings more than 31 meters (approximately 33.9 yards) tall, with some exceptions.¹⁶ The purpose of the emergency elevators is not for the use of the normal building occupants to evacuate the building, but for firefighting activities.

V. Stairwells

Stairwells of a high-rise building are subject to detailed regulations under the Enforcement Order of Building Standard Law. The maximum distance from a room to the nearest stairs that are connected to the ground level is specified in the Order.¹⁷ The structure of such stairs of a building with more than four floors is specified as follows:¹⁸

The walls of the stairwell must be of "fireproof construction."

The surface of the stairwell must be made of incombustible materials.

A window or a light with a spare power source must be installed at every level of stairs.

A stairwell's outside window that can be opened must be more than 90 cm. (approximately one yard) from a window on any other part of the building.

A stairwell's window facing inside the building cannot be able to be opened, must be smaller than 1 square meter (approximately 10.76 square feet), and must be reinforced against fire.

A door between a stairwell and another part of the building must block smoke, must be able to be opened directly with the hands, and must open outward toward the evacuation route.

If a building has more than 14 floors, the following requirements are added:¹⁹

The stairwell must be connected to the building via a balcony or a side room with a window that can be opened outward, or have a smoke-discharge device within the stairwell.

¹⁰ *Id.* art. 7, para. 2, item 3.

¹¹ Japan Building Equipment and Elevator Center Foundation, *Ereb□ta~ no hinanji riyō ni kansuru kentou iinkai hōkokusho* (Report by Committee on Elevator Use During Evacuation) (April 2004), <http://beec.or.jp/www/09/ele-hinan.pdf>.

¹² For example, Hitachi-shi kasai yobo jorei [Hitachi City Fire Prevention Ordinance], Hitachi City Ordinance No. 38 of 1973, as amended, art. 42-10, <http://www.hitachi-city.org/reiki/honbun/ae00305981.html>.

¹³ Building Standard Law, *supra* note 2, art. 34, para. 1.

¹⁴ Enforcement Order of Building Standard Law, *supra* note 4, art. 129-7.

¹⁵ *Id.* art. 129-13-3, para. 4.

¹⁶ Building Standard Law, *supra* note 2, art. 34, para. 2.

¹⁷ Enforcement Order of Building Standard Law, *supra* note 4, art. 120.

¹⁸ *Id.* art. 122 and art. 123, para. 1.

¹⁹ *Id.* art. 123, para. 3.

The balcony or the side room must not have a window facing inside the building.

The balcony or the side room must have a door that blocks smoke, can be opened directly by hand, closes automatically, and opens outward toward the evacuation route.

The total area of flat space between the stairs and the balcony or side room on and above the 15th floor must be at least as large as the area that is calculated in the specified way in the standards, depending on the purpose of the use of the floors.

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MEXICO

FIRE SAFETY CODES

I. Applicable Legislation

Mexico is a republic composed of 31 states, plus the Federal District (Mexico City).¹ The Federal Constitution empowers the states to enact laws that govern within their own jurisdictions in matters not federally pre-empted.² Thus, matters regarding fire safety in buildings are governed by the laws of urban development, building regulations, and technical standards of each of the 31 states and the Federal District, respectively.³ The laws of the 31 states usually follow the lead of the laws of the Federal District, although there may be differences. In addition, each state must comply with the requirements imposed by federal technical standards regarding safety conditions in work areas. This report is based on the laws of the Federal District.

The Law on Urban Development of the Federal District⁴ and its Building Regulation⁵ is implemented on matters concerning fire safety by Complementary Technical Standards, known as *Normas Técnicas Complementarias*.

II. Fireproofing and Sprinkler Systems Requirements

The Technical Standards provide specific fireproofing requirements for the various classifications of buildings to meet.⁶ Buildings are classified as those with a high risk of fire, those with a low risk of fire, and those with a medium risk of fire, according to their dimension, use, purpose, and occupancy. There are also specific additional fireproofing requirements according to the type of framework material used in buildings. The Technical Standards provide minimum levels of fireproofing requirements for each component of a building, such as elevators, escalators, arcs, dividing walls, columns, roofs, and chimneys.⁷

For each type of building, there are specific rules regarding the requirement for the installation of a minimum amount of smoke detectors, heat and gas detectors, flame sensors, alarm systems, fire extinguishers, fire hoses, fire hydrants, and sprinklers.⁸

Sprinklers may be installed in buildings to increase the safety provided by a system of fire hydrants, which are obligatory. However, sprinklers may not be installed as a substitute for a fire hydrant system.⁹

¹ Constitución Política de los Estados Unidos Mexicanos (*Diario Oficial* (D.O.), Feb. 5, 1917), as amended, art. 43.

² *Id.* art. 121, § 1.

³ *Id.* art. 130.

⁴ Ley de Desarrollo Urbano del Distrito Federal (*Gaceta Oficial del Distrito Federal* (G.O.) Jan. 29, 1996).

⁵ Reglamento de Construcciones para el Distrito Federal (G.O., Jan. 29, 2004).

⁶ Normas Técnicas Complementarias Sobre Criterios y Acciones para el Diseño Estructural de las Edificaciones (G.O. Oct. 6, 2004), Ch. 4, § 4.5.2.

⁷ *Id.* §§ 4.5.1, 4.5.2, and *supra* note 5, art. 90.

⁸ *Id.* §4.5.5.

III. Elevators

Elevators and electric escalators must not be considered part of the escape routes. Elevators for use by the public in all buildings, regardless of having a high, low, or medium risk of fire, must have signs warning, “In case of an earthquake or a fire, do not use the elevator, use the escalator.” In public buildings, these signs must also be written in the Braille system at a height of 1.2 meters above the floor.¹⁰ The doors leading to an elevator must comply with specific requirements for fire resistance. In addition, the shaft of the elevator must be constructed of incombustible materials with a minimum fire resistance of two hours.¹¹

In addition, to the local Technical Standards cited in this report, there are two very extensive federal technical standards covering elevators.¹²

IV. Stairwells

Stairwells must be fireproof.¹³ The Technical Standards provide three tables for the different categories of buildings. They contain the dimensions that escalators of each category of building must have and the types of escalators for each kind of building usage.¹⁴ Stairwells in buildings where there are no elevators must be modified for the use of persons with disabilities.¹⁵

The doors of stairwells that are part of an escape route in each level, as well as those at the terrace level, must have a “panic closure system” and be able to close automatically. They must have a sign reading, “This door must remain closed.” The structure of those buildings classified as having a high or medium risk of fire must guarantee that the time the occupants need to escape must not exceed ten minutes.¹⁶ All escape routes must have access to the public road and have permanently lit signs reading, “Emergency Exit,”¹⁷ and doors must be fireproof.¹⁸

At each level, stairwells must have natural ventilation and light from the outside, through a window. The Standards provide the formula to determine the size of the window. If natural ventilation and are not possible, stairwells must have artificial ventilation and light that comply with the requirements provided in the Technical Standards.¹⁹

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⁹ *Id.* §§ 4.5.5.3, 4.5.5.3.2.

¹⁰ *Id.* § 4.2.1.

¹¹ *Id.* § 4.5.2 and Informative Appendix “A” to NOM—053-SCIFI-2000.

¹² NOM-053-SCFI-2000 and NOM-001-SEDE-1999.

¹³ Normas Técnicas Complementarias *supra* note 6, § 4.5.2, Table 4.6.

¹⁴ *Id.* § 4.1.3, Table 4.3.

¹⁵ *Id.*

¹⁶ *Id.* § 4.2.1.

¹⁷ *Id.* §§ 4.2, 4.2.2.

¹⁸ *Id.* § 4.5.3.

¹⁹ *Id.* §§ 3.4.2.1 (VII), 3.4.4.

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THE NETHERLANDS

FIRE SAFETY CODES

New regulations for the construction industry officially came into force on January 1, 2003. They include the Building Decree (the Decree),¹ the Housing Law,² and the Building Decree Regulation 2003.³ The Decree contains extensive rules setting minimum standards for existing structures and for structures yet to be built, with respect to safety, health, usability, energy efficiency, and the environment. Altogether, the new regulations are spread over one thousand pages.

In the Decree, extensive provisions deal with the curtailment of a fire hazard, the spread of a fire, and the spread of smoke. Tables and calculations are provided in the Decree, depending on the function of the building, for materials that must meet certain prescribed norms in order to fireproof the structure.

The Decree deals with instructions for smoke-free escape routes. The escape routes must give access to the public road without having to pass through doors that can only be opened with a key. The escape routes must be of certain minimum measurements. Special provisions are given for the lighting and for the supply of electricity in emergency situations.

Structures are required to have the necessary provisions for the fighting of fires so that a fire can be fought within a reasonable time frame. Depending on the size and height of the structure, specific rules are given for the installation of fire extinguisher lines and fire hoses that must be extendable to at least every corner of the area in which they are located. There is no trade-off between the two.

For certain structures, the installation of a special elevator for firefighters is required in order to help them to reach the upper floors of a high-rise safely. All elevators must be periodically inspected for safety, and subsequently certified. Elevators may not be used in case of a fire. Special requirements must be met, such as emergency lighting and fire-resistant cables, and shafts must meet certain fire-resistance requirements.

The Decree lists only the minimum requirements. In addition, all municipalities require, by way of building ordinances, much stricter measures to be taken, such as the installation of sprinklers, automatic fire-reporting systems, and additional requirements for fire safety of the elevators. The fire department plays an instrumental role in recommending these stricter requirements.⁴ The municipal regulations are not available in the Library of Congress.

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¹ Decree of Aug. 7, 2001, STAATBLAD [official law gazette of the Netherlands, Stb.] 410, as amended.

² Law of Aug. 29, 1991, Stb. 439, as amended.

³ Regulation of Nov. 22, 2002, STAATSCOURANT [official daily paper of the Netherlands] 241, as amended.

⁴ See, e.g., the web site of Eurlicon, an independent elevator-safety advisory board, available at: <http://www.eurlicon.nl/vakinformatie/liften.htm>.