

# Chemical Storage & Placarding

2025 California Fire Code — Chapter 50 | Hazardous Materials Identification, Storage & NFPA 704

**Purpose.** Hazardous materials must be stored, identified, and managed so that employees, the public, and emergency responders can quickly recognize hazards and safely respond to a fire, spill, leak, or other emergency. This handout summarizes commonly applicable requirements for chemical storage, Safety Data Sheets, hazardous-material inventory and reporting, NFPA 704 placarding, incompatible-material separation, storage cabinets, ignition control, and emergency-response readiness.

## 1. When Hazardous-Material Requirements Apply

The California Fire Code defines hazardous materials broadly to include chemicals and substances that present physical hazards or health hazards, whether the material is in usable or waste condition. Chapter 50 contains general requirements that apply across hazardous-material categories, while Chapters 51 and 53 through 67 contain additional requirements for specific materials.

- The amount of hazardous material allowed within a control area is limited by the maximum allowable quantity (MAQ) tables in CFC §5003.1.1.
- MAQs vary by material, hazard class, physical state, whether the material is stored or used, and whether use occurs in an open or closed system.
- Exceeding an MAQ can trigger additional fire protection, control-area, construction, or Group H high-hazard occupancy requirements.
- Operational and construction permits may be required based on the material, quantity, process, equipment, and applicable CFC chapter.

*Code references: 2025 CFC Chapter 50; §§5001, 5003.1.1, 105.5.22 and 105.6.13; specific-material Chapters 51 and 53–67*

## 2. Hazardous-Material Inventory, HMMP/HMIS & CERS

Depending on the quantities and hazards present, the fire code official may require a Hazardous Materials Management Plan (HMMP), Hazardous Materials Inventory Statement (HMIS), or equivalent information showing what chemicals are present, where they are located, and how they are stored and used.

- CFC §5001.5.1 addresses Hazardous Materials Management Plans; CFC §5001.5.2 addresses Hazardous Materials Inventory Statements.
- California law coordinates the fire-code HMMP/HMIS program with the Hazardous Materials Business Plan (HMBP) program. A business that files the applicable annual inventory information under Health and Safety Code Chapter 6.95 is deemed to have met the CFC hazardous-material inventory-statement requirement, subject to applicable additional information requirements.
- The fire chief may require additional information needed for fire-code purposes and may require HMMP/HMIS information below state HMBP reporting thresholds when necessary for occupancy, permit, or fire-code review.
- California Unified Program electronic reporting is performed through the California Environmental Reporting System (CERS).

*Code references: 2025 CFC §§5001.5.1–5001.5.2 and Appendix H; California Health & Safety Code §13143.9; CAL FIRE–OSFM HMMP/HMIS program*

## 3. Safety Data Sheets & Container Identification

Safety Data Sheets (SDS) and accurate container identification are fundamental parts of hazardous-material safety and emergency response.

- Safety Data Sheets for hazardous materials regulated by Chapter 50 must be readily available on the premises. The CFC provides a limited exception for designated hazardous waste.
- Individual containers, cartons, and packages must be conspicuously marked or labeled in an approved manner.
- Rooms or cabinets containing compressed gases must be conspicuously labeled “COMPRESSED GAS.”
- Container labels should remain legible and must accurately identify the contents; secondary workplace labeling must also comply with applicable occupational-safety requirements.

*Code references: 2025 CFC §§5003.4 and 5003.5.1; OSHA Hazard Communication Standard, 29 CFR 1910.1200, where applicable*

## 4. NFPA 704 Hazard Identification Placards — Where Required

CFC §5003.5 uses the NFPA 704 emergency-response marking system for visible hazard identification. Unless exempted by the fire code official, NFPA 704 signs for the material present are required at specified locations when hazardous materials are present in quantities requiring a permit.

- Stationary containers containing hazardous materials.
- Above-ground tanks containing hazardous materials.
- Entrances to locations where hazardous materials are stored, dispensed, used, or handled in quantities requiring a permit.
- Other specific entrances or locations designated by the fire code official.

Required signs and markings must not be obscured or removed. They must use English as the primary language or code-permitted symbols, be durable, and have an approved size, color, and lettering arrangement.

*Code references: 2025 CFC §§5003.5 and 5003.6; NFPA 704, Standard System for the Identification of the Hazards of Materials for Emergency Response*

## 5. Reading the NFPA 704 “Fire Diamond”

NFPA 704 is intended primarily for emergency responders. It communicates the relative severity of short-term hazards likely to be encountered during a fire, spill, or similar emergency.

| Diamond Area   | Hazard Shown    | How It Is Read                                                                                                |
|----------------|-----------------|---------------------------------------------------------------------------------------------------------------|
| Blue / left    | Health          | Numerical rating from 0 to 4.                                                                                 |
| Red / top      | Flammability    | Numerical rating from 0 to 4.                                                                                 |
| Yellow / right | Instability     | Numerical rating from 0 to 4.                                                                                 |
| White / bottom | Special hazards | NFPA-recognized symbols may include OX (oxidizer), W with a bar (water-reactive), and SA (simple asphyxiant). |

**NFPA 704 severity scale:** 0 represents the least severe rating and 4 represents the most severe rating within the applicable NFPA 704 category.

Do not copy OSHA/GHS category numbers into an NFPA 704 diamond. OSHA Hazard Communication category numbers use a different classification system and generally run in the opposite direction, with Category 1 representing the most severe hazard. NFPA 704 ratings must be determined using NFPA 704 criteria, not by transferring the number shown in Section 2 of an SDS.

*Reference: NFPA 704; OSHA 3678, Comparison of NFPA 704 and HazCom Labels*

## 6. General Chemical Storage Requirements

Hazardous materials must be stored in a manner compatible with the material and the container, and in accordance with the applicable MAQ, control-area, fire protection, spill-control, ventilation, and material-specific requirements.

- Storage locations, containers, tanks, piping, valves, and fittings must be maintained to prevent leaks, damage, and unsafe releases.
- Where required by CFC §§5004 or 5005, spill control and/or secondary containment must be provided for hazardous-material liquids.
- Indoor storage areas may require mechanical ventilation depending on the material and quantity involved.
- Outdoor hazardous-material storage areas or tanks subject to CFC §5004 must be kept clear of combustible materials and vegetation for at least 25 feet, unless another specific provision governs.
- The specific material chapters may impose additional separation distances, container limitations, fire protection, gas detection, ventilation, or emergency-control requirements.

*Code references: 2025 CFC §§5003, 5004 and 5005; specific-material Chapters 51 and 53–67*

## 7. Separation of Incompatible Chemicals

Incompatible chemicals can react violently when mixed or when one chemical leaks into another storage area. The CFC requires separation where incompatible materials are stored in containers larger than 5 pounds, 0.5 gallon, or in any amount of compressed gas.

Approved separation can be accomplished by one of the following methods:

- Separate incompatible materials by at least 20 feet.
- Separate them with a noncombustible partition extending at least 18 inches above and to the sides of the stored material.
- Store liquid and solid materials in compliant hazardous-material storage cabinets.
- Store compressed gases in compliant gas cabinets or exhausted enclosures, where applicable.

Incompatible materials must not be stored in the same cabinet or exhausted enclosure.

*Code reference: 2025 CFC §5003.9.8*

## 8. Shelving & Hazardous-Material Storage Cabinets

Hazardous-material shelving and storage cabinets are safety equipment and must be appropriate for the chemical being stored.

**Shelf storage:** Shelving must be substantial, braced and anchored for applicable seismic requirements, compatible with the chemicals stored, and provided with a lip or guard when used for individual containers. Storage must remain orderly.

Hazardous-material storage cabinets used to increase MAQs or to comply with Chapter 50 must meet CFC §5003.8.7. Key cabinet requirements include:

- The cabinet interior must be nonreactive with the hazardous material stored.
- The cabinet must be listed to UL 1275 for the intended storage or constructed in accordance with the CFC construction requirements.
- Code-constructed steel cabinets use not less than 0.0478-inch (No. 18 gage) steel and double-wall construction with a 1 1/2-inch airspace; joints must be tight fitting.
- Cabinets used for liquids must have a liquid-tight bottom to a minimum height of 2 inches.
- Doors must be well fitted, self-closing, and self-latching.
- Electrical equipment inside cabinets used for hazardous gases or liquids must comply with the California Electrical Code / NFPA 70.
- Cabinets must be clearly marked with red letters on a contrasting background: "HAZARDOUS—KEEP FIRE AWAY."

*Code references: 2025 CFC §§5003.8.7 and 5003.9.9; UL 1275; California Electrical Code / NFPA 70*

## 9. Ignition Sources & "NO SMOKING" Requirements

Ignition sources must be controlled around hazardous materials. Smoking is prohibited and "NO SMOKING" signs are required in the situations identified by CFC §5003.7.1, including:

- Rooms or areas where hazardous materials are stored, dispensed, or used in open systems in permit-level quantities.
- Within 25 feet of outdoor hazardous-material storage, dispensing, or open-use areas.
- At entrances to facilities or areas designated entirely as no-smoking areas.
- Rooms or areas where flammable or combustible hazardous materials are stored, dispensed, or used.

Open flames and high-temperature devices cannot be used in a way that creates a hazardous condition and must be suitable for the hazardous materials present.

*Code references: 2025 CFC §§5003.7.1–5003.7.2 and 310*

## 10. Security, Vehicle Impact, Static, Light & Shock Protection

- Hazardous-material storage, dispensing, use, and handling areas must be secured against unauthorized entry in an approved manner.
- Storage tanks, piping, valves, fittings, dispensing areas, and use areas exposed to vehicle impact must be protected by approved barriers or other means in accordance with CFC §312.
- Electrical wiring and equipment in hazardous-material areas must comply with the California Electrical Code.
- Where static electricity could ignite a flammable mixture, means must be provided to prevent hazardous static accumulation.
- Light-sensitive chemicals must be stored in containers designed to protect them from light exposure.
- Shock-sensitive materials must be padded, suspended, or otherwise protected from accidental dislodgement and seismic movement.

*Code references: 2025 CFC §§5003.9.2–5003.9.7 and 312; California Electrical Code / NFPA 70*

## 11. Personnel Training, Emergency Procedures & Fire Department Liaison

Persons responsible for hazardous-material areas must understand the chemical hazards and know what actions are necessary in the event of a fire, leak, spill, or other release.

- Responsible personnel must be familiar with the chemical nature of the materials and appropriate mitigation actions.
- One or more responsible persons must be designated and trained to serve as fire-department liaison personnel.
- The liaison must be able to help responders identify hazardous-material locations, obtain Safety Data Sheets, and understand site emergency-response procedures.
- Unauthorized hazardous-material releases must be managed in accordance with the CFC and all applicable state/local reporting and cleanup requirements.

*Code references: 2025 CFC §§5003.3, 5003.9.1 and 5003.9.1.1*

## 12. Additional CFC Chapters for Specific Chemical Hazards

Chapter 50 provides the general rules. A chemical may also be regulated by one or more specific hazardous-material chapters based on its properties.

| Material / Hazard                                        | Primary CFC Chapter |
|----------------------------------------------------------|---------------------|
| Aerosols                                                 | Chapter 51          |
| Compressed gases                                         | Chapter 53          |
| Corrosive materials                                      | Chapter 54          |
| Cryogenic fluids                                         | Chapter 55          |
| Explosives and fireworks                                 | Chapter 56          |
| Flammable and combustible liquids                        | Chapter 57          |
| Flammable gases / flammable cryogenic fluids             | Chapter 58          |
| Flammable solids                                         | Chapter 59          |
| Highly toxic and toxic materials                         | Chapter 60          |
| Liquefied petroleum gas (LP-Gas)                         | Chapter 61          |
| Organic peroxides                                        | Chapter 62          |
| Oxidizers / oxidizing gases / oxidizing cryogenic fluids | Chapter 63          |
| Pyrophoric materials                                     | Chapter 64          |
| Pyroxylin (cellulose nitrate) plastics                   | Chapter 65          |
| Unstable (reactive) materials                            | Chapter 66          |
| Water-reactive solids and liquids                        | Chapter 67          |

A material with more than one hazard classification must be evaluated for all applicable hazards; compliance with one chapter does not eliminate requirements associated with another hazard.

## 13. Chemical Storage & Placarding Compliance Check

- ☐ Chemical inventory is current and required permits have been obtained.
- ☐ HMMP/HMIS/HMBP and CERS reporting requirements have been addressed where applicable.
- ☐ Current Safety Data Sheets are readily available on site.
- ☐ Containers, cartons, packages, tanks, and compressed-gas areas are properly identified.
- ☐ Required NFPA 704 placards are visible at tanks, stationary containers, entrances, and other required locations.
- ☐ NFPA 704 ratings were determined using NFPA criteria—not copied from OSHA/GHS category numbers.
- ☐ Incompatible chemicals are properly separated and are not stored together in the same cabinet.
- ☐ Shelving is compatible, secure, orderly, and protected against container displacement where required.
- ☐ Hazardous-material storage cabinets are compliant, self-closing/self-latching, and properly marked.
- ☐ Required “NO SMOKING” signs are posted and ignition sources are controlled.
- ☐ Outdoor storage areas maintain required separation from combustible materials/vegetation where applicable.
- ☐ Storage areas are secured and protected from vehicle damage, static, light, shock, leaks, and spills as applicable.
- ☐ Responsible personnel are trained and a fire-department liaison can provide SDS and location information during an emergency.

## Applicable Code & Standard References

- 2025 California Fire Code, Title 24, Part 9 — Chapter 50, Hazardous Materials—General Provisions
- 2025 California Fire Code — §§5001.5, 5003, 5004 and 5005; Chapters 51 and 53–67
- 2025 California Fire Code — §§105.5.22 and 105.6.13, hazardous-material permit provisions
- NFPA 704 — Standard System for the Identification of the Hazards of Materials for Emergency Response
- California Electrical Code, Title 24, Part 3 / NFPA 70 — electrical installations in hazardous-material areas
- California Health & Safety Code §§13143.4 and 13143.9
- CAL FIRE—Office of the State Fire Marshal — Hazardous Materials Management Plan and Inventory Statement program / CERS coordination
- OSHA Hazard Communication Standard, 29 CFR 1910.1200 — workplace labels and Safety Data Sheets, where applicable