
Chemical Storage Segregation By Hazard Class

1.0 Objective & Intent

The objective of this Safe Operating Procedure (SOP) is to establish mandatory protocols for the segregation of hazardous chemicals by hazard class within the cabinet and millwork manufacturing facility. This procedure is designed to prevent dangerous chemical reactions, fires, explosions, toxic gas releases, and personal injury resulting from the accidental mixing of incompatible substances. Compliance with this SOP ensures adherence to WorkSafeBC regulations (OHS Regulation Part 5: Chemical Agents and Biological Agents) and the Workplace Hazardous Materials Information System (WHMIS) 2015 requirements.

2.0 Operational Scope

This procedure applies to all personnel involved in the receipt, handling, storage, and disposal of hazardous chemicals at the facility. It covers all storage areas including the main chemical warehouse, satellite storage cabinets in finishing and assembly departments, and any temporary staging areas. This SOP is mandatory for all maintenance, production, and supervisory staff who interact with chemical containers. It does not apply to consumer-grade products in original packaging intended for immediate use (e.g., a single spray can of lubricant) unless otherwise directed by the Safety Officer.

3.0 Hazard Identification & Mandatory PPE

- Incompatible Chemical Reactions: Mixing oxidizers with flammables can cause immediate fire or explosion. Acids and bases react violently, generating heat and splashing corrosive liquids. Water-reactive chemicals (e.g., sodium hydroxide) can ignite or release toxic gases when exposed to moisture.
- Flammable Vapors: Accumulation of vapors from solvents, thinners, and adhesives in confined storage areas poses a fire and explosion hazard.
- Corrosive Exposure: Skin or eye contact with acids, bases, or oxidizers can cause severe chemical burns and permanent injury.
- Toxic Inhalation: Mixing certain chemicals (e.g., bleach with ammonia) can release deadly gases like chloramine. Incomplete segregation can lead to accidental mixing during spills or leaks.
- CSA-Approved Safety Glasses or Goggles (with side shields) – mandatory when handling any open chemical container.
- Chemical-Resistant Gloves (e.g., nitrile, neoprene, or butyl rubber – select based on the specific chemical's Safety Data Sheet).
- Chemical-Resistant Apron or Lab Coat (when transferring or decanting chemicals).
- CSA-Approved Steel Toed Boots with chemical-resistant soles.
- Face Shield (when handling large volumes of corrosives or during decanting).

4.0 Required Safety Equipment & Tools

- WHMIS 2015 Compliant Labels and Safety Data Sheets (SDS) for all stored chemicals.
- Segregation Storage Cabinets: Flammable liquid storage cabinets (meeting CSA B620 or NFPA 30), corrosive storage cabinets (polyethylene or coated steel), and dedicated oxidizer cabinets.
- Secondary Containment Spill Pallets or Trays (for liquid chemicals stored on shelves or floors).

- Spill Response Kit (containing absorbent pads, neutralizers for acids and bases, disposal bags, and personal protective equipment).
- Chemical Storage Compatibility Chart (poster or digital reference) showing approved segregation groups.
- Lockable Storage Cabinets (to prevent unauthorized access).
- Ventilation System (mechanical exhaust in storage rooms to maintain air quality and prevent vapor accumulation).
- Fire Extinguisher (Class B for flammable liquids) located within 10 meters of storage areas.

5.0 Step-by-Step Safety Procedure

1. Review the Safety Data Sheet (SDS) for each chemical to identify its primary hazard class (e.g., flammable, corrosive, oxidizer, toxic, water-reactive) and any specific incompatibilities listed in Section 10 (Stability and Reactivity).
2. Verify that all chemical containers are properly labeled with a WHMIS 2015 compliant label. Do not proceed with storage of any unlabeled or illegible container; report it to the supervisor immediately.
3. Consult the facility's Chemical Storage Compatibility Chart to determine the correct segregation group for each chemical. Group chemicals into the following primary categories: Flammables/Combustibles, Corrosives (Acids), Corrosives (Bases), Oxidizers, Toxins, and Water-Reactive substances.
4. Place each chemical container into its designated storage cabinet or area. Ensure that incompatible groups are physically separated by a minimum distance of 3 meters (10 feet) or by a fire-rated barrier. For example, oxidizers must not be stored within the same cabinet or adjacent shelf as flammables.
5. Use secondary containment (spill pallets or trays) for all liquid chemicals, regardless of container size. Ensure the containment can hold at least 110% of the volume of the largest container stored within it.
6. Store all chemicals below eye level where possible. Do not store heavy containers on high shelves. Ensure that no chemical containers are stored on the floor unless they are on an approved spill pallet and in a designated area.
7. Lock all storage cabinets after each use. Only authorized personnel (trained in this SOP) shall have access to the keys or combination. Maintain an inventory log of all chemicals stored, including quantities and dates of receipt.
8. Inspect storage areas weekly for leaks, corrosion, damaged containers, or signs of chemical reaction (e.g., bulging containers, discoloration, odors). Document findings on the Chemical Storage Inspection Checklist and report any issues to the Safety Officer immediately.
9. In the event of a spill or suspected incompatible mixing, evacuate the immediate area, activate the facility alarm if necessary, and follow the Spill Response Procedure. Do not attempt to clean up a spill without proper PPE and training.
10. At the end of each shift, verify that all chemical containers are closed tightly, storage cabinets are locked, and the area is free of clutter or obstructions that could lead to accidental contact or tipping.

Regulatory Disclaimer: This document is a generic safety template provided for educational and informational purposes only. It does not constitute professional engineering, legal, or regulatory compliance advice. The end-user assumes all liability for validating all safety protocols against specific machinery manufacturer manuals and local occupational health and safety regulations (e.g., WorkSafeBC, CSA standards) before deployment.