

FMC Recommended Storage and Handling Practices for Hydrogen Peroxide Drums

Hydrogen Peroxide is frequently transported and stored in drums. FMC recommends the following practices for storage and handling of Hydrogen Peroxide drums. Adherence to these guidelines is necessary to prevent personnel injury or property damage resulting from incidents with Hydrogen Peroxide. Refer to MSDS for additional information.



Please call FMC Engineering Services for assistance at (716) 879-0494 / (716) 879-0495 or visit the FMC website at www.fmcchemicals.com for more information

FMC Recommended Storage and Handling Practices for Hydrogen Peroxide Drums

Storage:

- A source of water and a safety shower/eye wash station must be located within 7.62M (25 ft) of where Hydrogen Peroxide drums are stored or handled. Access to water and safety devices must be unobstructed.
- H₂O₂ containers shall be properly labeled and hazards identified. The NFPA diamond should be readily visible in the event of a fire.
- Smoking is prohibited in all Hydrogen Peroxide drum storage areas.
- Store H₂O₂ containers away from heat sources, combustibles and incompatible chemicals such as other oxidizing agents, reducing agents, caustic etc. H₂O₂ drums should not be stored in direct sunlight.
- H₂O₂ drums must be equipped with at least one breather vent in its bung openings.
- H₂O₂ drums must be stored in upright position at all times. Never block the drum breather vent(s).
- Drums of 27.5% H₂O₂ or greater must not be stored on wooden pallets (ref. Paragraph 2-4.2 of NFPA 430).
- Storage temperature should be maintained at or below 40°C (104°F). Higher temperatures will accelerate decomposition and reduce product assay.
- Proper container spacing (ref. NFPA 430) and adequate ventilation must be provided for H₂O₂ drum storage areas.
- H₂O₂ drum storage areas shall be provided with adequate secondary containment. This containment should be designed to prevent spilled Peroxide from coming in contact with incompatible materials.

Use:

- Wear personal protective equipment if exposure to H₂O₂ is possible. (e.g. splash proof chemical goggles and faceshield, rubber boots, rubber gloves and chemical resistant raingear or apron.)
- H₂O₂ drums must not be contaminated.
- Unused Peroxide must never be returned to the original drum.
- Equipment used for dispensing/transferring H₂O₂ from the drums must be compatible with H₂O₂; must be dedicated for H₂O₂ use only; and must be thoroughly rinsed with good quality water before and after each use. **Note:** Any stainless steel or aluminum “wetted” components must be properly passivated for H₂O₂ service.
- After usage, the bung caps (i.e. those provided with the H₂O₂ drums) must be returned to the drum openings if any peroxide remains in the H₂O₂ drum.

Please call FMC Engineering Services for assistance at (716) 879-0494 / (716) 879-0495 or visit the FMC website at www.fmcchemicals.com for more information

FMC Recommended Storage and Handling Practices for Hydrogen Peroxide Drums

- All H₂O₂ drum transfer systems must be designed to avoid areas where peroxide can be trapped. Design must ensure that any pressure/gas generated can be safely released.
- Systems must be designed to prevent back flow of process or water streams into the H₂O₂ drum.
- Empty drums must be thoroughly rinsed with water, and disposed of in accordance with all Federal, State and local regulations.
- Use water to respond to all incidents, (e.g. fires, spills, leaks) involving Hydrogen Peroxide.

Drum Filling/Refilling:

1. Initial Inspection

- a) Only DOT drums approved for H₂O₂ service may be used.
- b) Inspect the drum bottom for marking that indicates the month and year of manufacture. Reject any drum that is more than 24 months old. Industry experience is that, beyond 24 months, external UV exposure and/or internal chemical exposure may adversely impact drum integrity.
- c) Reject any drum that has been used for product other than H₂O₂.
- d) Inspect the exterior of each drum completely and carefully. Reject any drum that exhibits any damage that would affect drum integrity.
- e) Inspect the interior of each drum with a light probe or drop light, and reject any drum with interior damage.

2. Drum Preparation

- a) Remove all plugs, gaskets, and vents. Discard, if a reused drum; these fittings must be replaced after each use.
- b) Inspect the threads on each drum opening. If damaged, reject the drum.
- c) Apply the appropriate labels for H₂O₂ grade and concentration to be filled.

Please call FMC Engineering Services for assistance at (716) 879-0494 / (716) 879-0495 or
visit the FMC website at www.fmcchemicals.com for more information

FMC Recommended Storage and Handling Practices for Hydrogen Peroxide Drums

3. Washing of Drums prior to Reuse (not required for “New” drums)
 - a) Ascertain that the drum has only been used in H₂O₂ service. Discard any drums, which have or are suspected to have contained any other material.
 - b) Using an acceptable water source, thoroughly wash the interior of the drum three times; then, completely drain to remove any residual water. **Note:** Acceptable water is defined as water that meets the water quality standards of the specific grade of Hydrogen Peroxide. Reference [H₂O₂ Initial Delivery protocol document](#), [Dilution Water Criteria](#).
 - c) After the triple wash, inspect the interior of the drum using an appropriate light probe to ensure that there are no foreign materials present. Use care not to introduce any contaminants during this washing/inspection process. If there any contaminants that cannot be removed by water rinse alone (e.g. grease, oil), then discard the drum. The use of solvents, detergents, etc., is prohibited, since they will only increase the potential for contamination.
 - d) Re-inspect the exterior of the drum to ensure that there is no physical damage.

4. Filling/Refilling of Drums
 - a) New and reused drums should be filled in the same manner, taking every precaution to avoid spilling.
 - b) Install new plugs, gaskets and approved breather vent(s).
 - c) After filling, operator should be especially alert for any reaction inside the drum. If there is any indication of decomposition, the filling operation should be discontinued and all personnel should evacuate the area. As soon as a safe plan is developed to remediate the problem and it is safe to reenter the area, dispose of the product in the drum, triple wash the drum, and then discard the drum.
 - d) Analyze each drum lot for product stability. The peroxide stability in the drum should be at least 90% when tested at 100°C (212° F) for 24 hours. For stability test methods, please refer to [H₂O₂ Technical Bulletin #59](#) located on this website.
 - e) Filled drums should be set-aside for 24 hours prior to placement in inventory or shipment. After 24 hours, they should be checked for leakage or accelerated decomposition (e.g. bulging drum). Drums, which are leaking or bulging should be emptied (i.e. with contents properly disposed of), and then rejected.

5. Reject Drum Disposal
 - a) Drums rejected for any of the reasons indicated above should be triple rinsed and disposed of in accordance with Federal, State and local regulations.

Please call FMC Engineering Services for assistance at (716) 879-0494 / (716) 879-0495 or
visit the FMC website at www.fmcchemicals.com for more information

FMC Recommended Storage and Handling Practices for Hydrogen Peroxide Drums

NFPA Requirements:

Compliance with the applicable National Fire Prevention Association (NFPA) Codes is mandatory. NFPA 430 “Code for the Storage of Liquid and Solid Oxidizers” has primary applicability to the storage and handling of Hydrogen Peroxide. 8% to 27.5% H₂O₂ is a Class 1 Oxidizer; 27.5% to 52% H₂O₂ is a Class 2 Oxidizer; 52% to 91% H₂O₂ is a Class 3 Oxidizer; and greater than 91% H₂O₂ is a Class 4 Oxidizer. Other NFPA codes may also apply.

Please call FMC Engineering Services for assistance at (716) 879-0494 / (716) 879-0495 or visit the FMC website at www.fmcchemicals.com for more information

Storage & Handling Checklist for Concentrated (<52%) H₂O₂ Less-Than-Bulk Quantities

Customer _____ Location _____
 Customer Contact _____ Phone Number _____
 Application _____ Approved Application (Y / N) _____
 H₂O₂ Grade and % _____ FMC Rep. _____ Approved for Delivery (Y / N) _____

| System Requirement | Yes/No |
|--|--------|
| 1. Any new or significantly modified hydrogen peroxide (H ₂ O ₂) storage facility has been reviewed and approved by the local authority having jurisdiction (e.g. Fire Marshal, Building Inspector, etc.) | |
| 2. The LEPC, SERC and fire department has/will be provided a MSDS if storing ≥10,000 pounds of H ₂ O ₂ per 40 CFR 370. <u>Note:</u> Must also include on next annual report. | |
| 3. The H ₂ O ₂ storage facility has appropriate security measures are in place. | |
| 4. The H ₂ O ₂ storage facility has a suitable emergency plan in place. | |
| 5. Personnel involved in the handling of H ₂ O ₂ drums have received appropriate H ₂ O ₂ safety training | |
| 6. A clean water source is readily available where H ₂ O ₂ drums are stored; additionally, a safety shower/eye wash station is available wherever H ₂ O ₂ is used. | |
| 7. H ₂ O ₂ drum storage areas are conspicuously identified by the words "Class _ Oxidizers." (insert "2" for 27.5% to 52%) | |
| 8. Smoking is prohibited in all H ₂ O ₂ storage areas; "No Smoking" signs are conspicuously posted. | |
| 9. H ₂ O ₂ drums are stored away from heat sources, combustibles and incompatible chemicals such as other oxidizing agents, reducing agents, caustic etc.; and are stored out of direct sunlight. Note: Storage of H₂O₂ drums on wooden pallets is prohibited | |
| 10. H ₂ O ₂ drums are stored in upright position at all times, and drum breather vent(s) are not blocked. | |
| 11. Temperature of H ₂ O ₂ drum storage area is maintained at or below 52°C (125°F). | |
| 12. H ₂ O ₂ drum storage areas are well ventilated. | |
| 13. H ₂ O ₂ drum storage area is provided with adequate secondary containment. | |
| 14. All H ₂ O ₂ "wetted" equipment is compatible with H ₂ O ₂ , and is dedicated for H ₂ O ₂ use only. | |
| 15. Any stainless steel or aluminum wetted H ₂ O ₂ components have been properly passivated for H ₂ O ₂ service. | |
| 16. Equipment used for dispensing/transferring H ₂ O ₂ from the drums is thoroughly flushed with clean water and properly secured (i.e. to prevent introduction of contaminants) before and after each use. | |
| 17. All H ₂ O ₂ transfer systems are designed to avoid areas where peroxide can be trapped. Design ensures that any pressure/gas generated can be safely released. All H ₂ O ₂ valves are properly vented. | |
| 18. H ₂ O ₂ transfer systems are designed to prevent back flow of process or water streams into the H ₂ O ₂ drum. | |
| 19. H ₂ O ₂ drums should not be transferred to other containers for shipping without checking with FMC on approved containers. | |

| Inspected by | Customer Representative (if applicable) | Date |
|--------------------------------------|---|------|
| Comments (note number of deficiency) | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

FAX COMPLETED FORM TO FMC – ATTN RALPH MIKIDA 215-299-5954