Cladding Technology Shanxi Co., Ltd

HSE Safety Operation Instruction for Hazardous Chemical Warehouse Keepers

Document No.: CLADDING-HSE-PD-27

1 Purpose

To standardize the operation behavior of the Company's hazardous chemical (hereinafter referred to as "HC") warehouse keepers, clarify HSE requirements for HC receipt, storage, issuance, inventory checking, and emergency response, and ensure operations comply with national regulations (Regulations on the Safety Management of Hazardous Chemicals, GB 15562.2 - General Rules for Storage of Hazardous Chemicals, GB 15603), PIPING SYSTEM PTE LTD HSE requirements, and the Company's equipment maintenance and material protection business needs. This instruction aims to prevent accidents such as HC leakage, fire, poisoning, and explosion, protect the life and health of keepers and surrounding personnel, the safety of warehouse property, and the environmental compliance of the operation area.

2 Scope of Application

2.1 Applicable Scenarios

• HC Receipt: Acceptance and unloading of procured materials such as rust inhibitors, cleaning agents, and lubricating oils upon arrival at the warehouse;

• HC Storage: Zoned storage of HCs, temperature and humidity monitoring, and daily patrol inspection;

• HC Issuance: Distribution of HCs to workshops and project departments according to issuance applications;

• HC Inventory Checking: Regular verification of HC inventory quantity and quality status;

• Emergency Response: Preliminary handling of minor/major HC leakage, small - scale fires, and minor personnel contact poisoning.

2.2 Applicable Materials

• Flammable Liquids: Rust oil (flash point ≤ 60℃), solvent - based cleaning agents (ethanol content ≥ 70%);

• Corrosive Substances: Acidic cleaning agents (pH ≤ 2), alkaline rust removers (pH ≥ 12);

• Flammable Solids: Solid rust inhibitors (containing flammable components such as paraffin - based);

• Others: Lubricating oils (not highly hazardous but managed in accordance with HC requirements);

• HCs involving major hazard installations (identified in accordance with GB 18218) shall be subject to additional special control.

2.3 Applicable Objects

• Full - time HC Warehouse Keepers (holding valid Hazardous Chemical Safety Operation Certificate);

• Warehouse Auxiliary Operation Personnel (qualified through HSE training, assisting in loading/unloading and organizing materials);

• HC Receiving Personnel (material receivers from workshops/project departments, qualified through HSE training);

• Warehouse Management Department (Newly Added): Responsible for daily warehouse management, training organization, and facility maintenance;

• Quality, Health, Safety and Environmental Department (QHSE Department): Responsible for safety supervision, emergency drills, and qualification handling;

• Equipment Management Department: Responsible for safety facility maintenance and emergency material replenishment.

3 Terms and Definitions (1 Item Supplemented)

3.6 Major Hazard Installations

Refers to units that produce, handle, use, or store hazardous substances on a long - term or temporary basis, where the quantity of hazardous substances is equal to or exceeds the critical quantity (e.g., single tank storage of flammable liquids ≥ 50t). Special control shall be implemented in accordance with GB 18218 - Identification of Major Hazard Installations.

4 Responsibility Assignment (Responsibilities of Warehouse Management Department Supplemented)

4.1 HC Warehouse Keepers

• Work with a valid Hazardous Chemical Safety Operation Certificate; no operation without a certificate or with an expired certificate is allowed;

• Strictly implement this instruction and be responsible for the full - process operations of HC receipt, storage, issuance, and inventory checking;

• Conduct HSE patrols in the warehouse every 2 hours (Newly Added frequency requirement), and immediately handle and report any abnormalities found;

• Correctly use personal protective equipment (PPE) and master the preliminary emergency response skills for HC leakage (classified into minor/major) and fires;

• Maintain warehouse safety facilities (fire - fighting equipment, leakage collection devices, ventilation systems) to ensure they are in good and effective condition;

• Establish HC management ledgers (warehousing, ex - warehouse, inventory) to ensure consistency between physical inventory and ledgers, and retain MSDS (Material Safety Data Sheet) files;

• Attend pre - shift safety meetings (Newly Added) to clarify the day's operation tasks and risk points.

4.2 Warehouse Management Department (Newly Added)

• Be responsible for the daily management of the HC warehouse and formulate warehouse operation scheduling plans;

• Organize professional training for keepers (including HC characteristics and operation skills) once a quarter, with a 100% assessment pass rate;

• Be responsible for the daily maintenance of warehouse facilities (shelves, storage tanks, leak - proof bunds) and conduct inspections once a month;

• Supervise the implementation of operation specifications by keepers, conduct on - site inspections once a week, and investigate non - compliant operations;

• Coordinate to solve resource issues in warehouse operations (such as scheduling of explosion - proof forklifts and replenishment of emergency materials).

4.3 Quality, Health, Safety and Environmental Department (QHSE Department) (Qualification Handling Supplemented)

• Supervise the implementation of this instruction and investigate non - compliant operations (such as mixed storage and operation without a certificate);

• Organize special HSE training for keepers (HC regulations and emergency response) once a quarter;

• Conduct regular inspections of the HC warehouse (once a month) to verify the compliance of storage and the effectiveness of safety facilities;

• Formulate HC accident emergency plans and organize emergency drills (once every six months);

• Be responsible for handling HC - related qualifications (such as Hazardous Chemical Business License) and annual inspections;

• Investigate HC - related accidents, analyze causes, formulate preventive measures, and update this instruction.

4.4 Procurement Department (Retained Original, Supplemented with Transport Vehicle Inspection)

• Require suppliers to provide compliant MSDS and product inspection reports when procuring HCs;

• Ensure HC packaging complies with national standards (e.g., using explosion - proof containers for flammable liquids);

• Notify keepers of the arrival time of HCs, coordinate for unloading vehicles to enter the warehouse area via designated routes, and inspect the vehicles' spark arresters and braking performance (Newly Added).

4.5 Equipment Management Department (Retained Original, Supplemented with Emergency Equipment Maintenance)

• Be responsible for the regular maintenance (once a quarter) of warehouse safety facilities (explosion - proof lamps, ventilation systems, leak - proof bunds);

• Repair HC storage equipment in the warehouse (such as shelves and storage tanks) to ensure no deformation or damage;

• Provide HC leakage handling tools (oil - absorbent pads, neutralizers), emergency materials (first - aid kits, respirators), and replenish them regularly (once a month);

• Maintain emergency washing facilities (eye wash stations, emergency showers) to ensure normal water pressure and up - to - standard water quality (Newly Added).

5 Operation Process (HSE Full - Link Control, Supplemented and Detailed)

5.1 Pre - operation Preparation (HSE Pre - control, Pre - shift Meeting Supplemented)

5.1.1 Personnel Preparation (Led by Keepers, Pre - shift Meeting Newly Added)

1. PPE Wearing (Retained Original, Supplemented with Special Protection):

◦ Head: Wear impact - resistant safety helmets (to prevent injury from falling goods);

◦ Face: Wear chemical - resistant goggles when operating corrosive HCs, and add respirators when contacting toxic substances (Newly Added);

◦ Hands: Wear oil - resistant/acid - and alkali - resistant gloves (selected according to HC types, e.g., nitrile gloves for solvent protection);

◦ Body: Wear anti - static work clothes, add chemical - resistant aprons when operating flammable liquids, and wear corrosion - resistant clothing when handling corrosive substances (Newly Added);

◦ Feet: Wear impact - and puncture - resistant safety shoes (with steel toes and steel plates).

2. PPE Inspection (Retained Original):

◦ Check that gloves are free from damage, goggles are free from scratches, and safety helmet straps are secure;

◦ Check that anti - static work clothes are free from oil stains and damage, and ensure good grounding;

◦ Check that items in the first - aid kit (band - aids, neutralizers, eye wash fluid) are complete and within the validity period.

3. Pre - shift Meeting (Newly Added):

◦ Organized by the Warehouse Management Department to clarify the day's operation tasks (e.g., "Receiving 50 barrels of rust oil");

◦ Emphasize risk points (e.g., "Rust oil is flammable, open flames are prohibited") and control measures;

◦ Confirm the physical condition of personnel (no fatigue or illness) and record the meeting content.

5.1.2 Warehouse Environment and Facility Inspection (Led by Keepers, Supplemented with Safety Signs and Emergency Washing)

1. Environment Inspection (Retained Original, Supplemented with Aisle Width):

◦ Warehouse Ventilation: Turn on the ventilation system (ventilation ≥ 6 times per hour) and check that air outlets are not blocked;

◦ Temperature and Humidity: Measure with a thermohygrometer; the temperature in the flammable liquid storage area shall be ≤ 30℃ and humidity ≤ 65%; turn on air conditioners or dehumidifiers when the range is exceeded;

◦ Ground: No oil stains or ponding; the width of the main aisle ≥ 1.8m and secondary aisle ≥ 1.2m, with no obstacles (such as waste packaging and tools) (Newly Added width standards);

◦ Lighting: Explosion - proof lamps are in good condition, with brightness ≥ 50lux; emergency lighting (automatically activated when power is off) is normal;

◦ Safety Signs: Clear safety warning signs (e.g., "Flammable Liquid Area, No Open Flames", "Corrosive Substances, Wear Goggles") are hung at the warehouse entrance and storage areas, with no damage or obstruction (Newly Added).

2. Safety Facility Inspection (Retained Original, Supplemented with Emergency Washing):

◦ Fire - fighting Equipment: Dry powder fire extinguishers (1 unit per 50 ㎡) have normal pressure (pointer in the green zone), are within the validity period, and are placed in a prominent position;

◦ Leak - proof Facilities: Leak - proof bunds have no cracks, leak collection troughs have no residual liquid, and there is an adequate supply of oil - absorbent pads and neutralizers (sodium carbonate for acids, citric acid for alkalis);

◦ Detection Equipment: Combustible gas detectors (in flammable liquid storage areas) and toxic gas detectors (in corrosive substance storage areas) are normally powered on with no alarms;

◦ Emergency Facilities: Eye wash stations and emergency showers (within ≤ 10m from corrosive HC storage areas) have normal water pressure and uniform water output; first - aid kits and respirators (half - face/full - face masks) are immediately available (Newly Added water output requirement);

◦ Explosion - proof Electrical Equipment: Switches, lamps, and exhaust fans are explosion - proof type, with no damaged or exposed wires and good grounding (Newly Added).

5.1.3 Document and Ledger Preparation (Led by Keepers, Retained Original)

1. Review the HC Warehousing Plan to confirm whether the name, quantity, and MSDS of the materials arriving on the day have been obtained in advance;
2. Prepare the HC Warehousing Acceptance Record and blank HC Issuance Application Form, and check whether the inventory ledger has been updated to the latest version;
3. Verify the list of incompatible HC categories (refer to Appendix A) and clarify the storage area for newly arrived materials to avoid mixed storage.

5.2 HC Receipt Operation (HSE Process Control, Supplemented with Acceptance Area and Vehicle Inspection)

5.2.1 Arrival Acceptance (Supplemented with Acceptance Area and Vehicle Safety)

1. Vehicle Guidance (Retained Original, Supplemented with Vehicle Inspection):

◦ Guide the delivery vehicle to park in the warehouse's designated acceptance area (hardened ground, away from fire sources/power distribution boxes, with isolation tape set up) (Newly Added acceptance area);

◦ Require the driver to turn off the engine, pull the handbrake tightly, and inspect the vehicle's spark arresters (for transporting flammable liquids) and braking performance; ensure no smoking or carrying of kindling in the carriage (Newly Added vehicle inspection);

◦ Prohibit vehicles from driving directly into the warehouse interior; loading and unloading operations shall be conducted in the outdoor acceptance area (Newly Added).

2. Document Verification (Retained Original):

◦ Verify the delivery note, MSDS, and product inspection report provided by the supplier, and confirm that the name, specification, and quantity of the materials are consistent with the warehousing plan;

◦ Check the completeness of MSDS content (shall include physical and chemical properties, protection measures, and emergency response) and refuse to accept materials without MSDS.

3. Visual Inspection (Retained Original, Supplemented with Characteristic Verification):

◦ Package Inspection: Flammable liquids shall be packed in explosion - proof steel drums or anti - static plastic drums, with no damage or leakage and tightly sealed drum lids;

◦ Label Inspection: Clear HC safety labels (including product name, hazard symbol, manufacturer, and emergency telephone number) shall be attached to the packages; re - attach labels if they are blurred or missing;

◦ Quality Inspection: Check for no drum bulging (which may be caused by gas generated from internal reactions) or rusting (for steel drums); open samples for random inspection (e.g., check that cleaning agents have no stratification or peculiar smell) and confirm that the characteristics are consistent with MSDS (Newly Added characteristic verification).

5.2.2 Unloading and Warehousing (Supplemented with Stacking Standards)

1. Unloading Operation (Retained Original, Supplemented with Prohibited Behaviors):

◦ Use explosion - proof forklifts (or manual hydraulic trucks) for unloading; prohibit rough handling (such as throwing, impacting, and rolling packaging containers) (Newly Added rolling prohibition);

◦ Handle corrosive HCs with care to avoid liquid splashing; use pallets for isolation if necessary;

◦ Auxiliary personnel shall operate under the supervision of keepers and are prohibited from contacting HCs alone.

2. Zoned Warehousing (Retained Original, Supplemented with Stacking Details):

◦ Store HCs in zones according to their categories: flammable liquid area (equipped with explosion - proof lamps), corrosive substance area (with anti - corrosion treatment on the ground), and flammable solid area, with clear zone signs;

◦ Isolation of Incompatible Categories: Refer to Appendix A; the distance between acidic cleaning agents and alkaline rust removers shall be ≥ 2m, or they shall be isolated by concrete walls;

◦ Stacking Requirements: The height of single - layer stacking ≤ 1.5m (for steel drums); the distance from walls ≥ 0.5m, from columns ≥ 0.3m, from the ceiling ≥ 0.5m; when storing on shelves, the load - bearing capacity of each layer ≥ the weight of the materials; the distance between stacks ≥ 1m; over - stacking is prohibited (Newly Added stacking spacing);

◦ Record and Enter into Ledger: Fill in the HC Warehousing Acceptance Record, indicating the warehousing time, quantity, and storage location, and update the inventory ledger and management system (Newly Added system entry).

5.3 HC Storage Operation (HSE Core Control, Supplemented with High - Frequency Patrol and Temperature/Humidity Recording)

5.3.1 Daily Storage Management (Supplemented with Patrol Frequency and Stacking Labels)

1. Zoned Labeling (Retained Original, Supplemented with Inventory Cards):

◦ Post the HC storage zone map and storage incompatibility table (Appendix A) at the warehouse entrance; hang identification plates (e.g., "Flammable Liquid Area, No Open Flames") in each storage area;

◦ Mark each row of shelves with HC name, specification, incompatible category, MSDS storage location, and inventory quantity (inventory card) for easy quick reference (Newly Added inventory card).

2. Temperature and Humidity Monitoring (Retained Original, Supplemented with Recording Requirements):

◦ Record the temperature and humidity at 8:00, 10:00, 14:00, 16:00, and 20:00 every day (Newly Added frequency) and fill in the Temperature and Humidity Record Form (Appendix B);

◦ Turn on the air conditioner when the temperature exceeds 30℃ and turn on the dehumidifier when the humidity exceeds 65%, and record the adjustment measures;

◦ During high temperatures in summer (outdoor temperature ≥ 35℃), increase the ventilation frequency (≥ 8 times per hour) to avoid excessive concentration of volatile flammable liquid vapors.

3. Regular Patrol Inspection (Frequency Adjusted, Supplemented with Inspection Content):

◦ Conduct patrols once every 2 hours (originally twice a day, adjusted according to new content); conduct patrols once every hour in abnormal weather (heavy rain, high temperature); fill in the HC Warehouse Patrol Record (Appendix C);

◦ Inspection Content:

▪ Packages: No leakage, no bulging, no damage, and no blurred labels;

▪ Storage: No mixed storage, no over - storage, no blocked aisles, and stable stacking;

▪ Facilities: Fire - fighting equipment, detectors, ventilation systems, and emergency washing facilities are in good condition;

▪ Environment: No abnormal odor, normal temperature and humidity, and no unauthorized personnel entering;

◦ Immediately handle any problems found (e.g., cover minor leaks with oil - absorbent pads); immediately report major problems (e.g., major leaks) to the Warehouse Management Department and QHSE Department.

5.3.2 Prohibited Storage Clauses (Red - line Clauses, Supplemented with Prohibited Behaviors)

1. Strictly prohibit mixed storage of incompatible HC categories (e.g., acids and alkalis, oxidizers and reducers, refer to Appendix A);
2. Strictly prohibit smoking, using open flames (e.g., lighters, electric welding), or carrying kindling in the warehouse;
3. Strictly prohibit using non - explosion - proof electrical appliances (e.g., ordinary electric fans, mobile phone chargers); mobile phones shall be stored in explosion - proof cabinets at the entrance;
4. Strictly prohibit eating or storing personal items (e.g., water cups, clothes) in the warehouse;
5. Strictly prohibit over - storage (the storage quantity in a single area ≤ 80% of the design capacity);
6. Strictly prohibit blocking fire exits, emergency exits, and eye wash stations/showers;
7. Strictly prohibit unauthorized personnel (who have not received training) from entering the warehouse (material receivers shall be accompanied by keepers);
8. Strictly prohibit rolling or throwing HC packaging containers, and strictly prohibit striking containers with iron tools (Newly Added).

5.4 HC Issuance Operation (HSE Closed - loop Control, Supplemented with First - in - First - out and Loading Supervision)

5.4.1 Issuance Approval (Retained Original, Supplemented with Receiver Qualification)

1. Receive the HC Issuance Application Form submitted by the receiving unit and review the following contents:

◦ The application form is signed by the person in charge of the receiving unit and approved by the QHSE Department (when the issuance quantity ≥ 50kg);

◦ The receiver holds a valid HSE training certificate (Newly Added qualification review);

◦ The name, specification, and quantity of the applied HCs match the inventory, and the purpose is compliant (e.g., rust inhibitors for equipment maintenance, no private issuance is allowed).

2. Explain to the receiver the safety characteristics of the issued HCs (e.g., "Flammable, keep away from fire sources", "Corrosive, avoid skin contact") and emergency response methods, and confirm that the receiver has understood and signed for confirmation.

5.4.2 Ex - warehouse Operation (Supplemented with First - in - First - out and Loading Supervision)

1. Take HCs from the corresponding storage area in accordance with the first - in - first - out (FIFO) principle (Newly Added) and check the integrity of the packages and the clarity of the labels;
2. Assist the receiver in loading: Use explosion - proof forklifts or manual hydraulic trucks, handle with care to avoid impact, supervise the loading process (Newly Added), and ensure no overloading or mixed loading;
3. Fill in the HC Ex - warehouse Record, indicating the ex - warehouse time, receiving unit, receiver, and quantity, and update the inventory ledger and management system;
4. Remind the receiver of transportation precautions (e.g., avoid direct sunlight for flammable liquids, store corrosive substances separately, and transport vehicles shall be equipped with spark arresters);
5. Recycle empty drums (if any): Check that the empty drums have no residues or damage, store them uniformly in the hazardous waste area, and hand them over to qualified entities for disposal (Newly Added).

5.5 HC Inventory Checking Operation (HSE Traceability Control, Supplemented with System Verification)

1. Regular Inventory Checking (Retained Original, Supplemented with System Verification):

◦ Conduct a comprehensive inventory check at the end of each month, verify the consistency between the inventory ledger, management system data, and actual quantity, and ensure consistency between physical inventory and ledgers, and between different ledgers (Newly Added system verification);

◦ Check the quality status of HCs: Check for expiration (check production date and shelf life), deterioration (e.g., discoloration, stratification), and package damage;

◦ For expired or deteriorated HCs, store them separately in the hazardous waste area, post "Prohibited Use" labels, and report to the QHSE Department for hazardous waste disposal.

2. Inventory Record (Retained Original):

◦ Fill in the HC Inventory Checking Record, indicate the inventory results, and analyze the causes of discrepancies (e.g., missing ex - warehouse records, loss due to package damage);

◦ The inventory record shall be reviewed by the person in charge of the Warehouse Management Department and archived as the basis for HC management review.

6 HSE Special Safety Requirements (Supplemented and Detailed)

6.1 Health Protection Requirements (Retained Original, Supplemented with Protection Guide)

1. Occupational Health Monitoring (Retained Original):

◦ Keepers shall participate in occupational health examinations every year, including blood routine, liver and kidney function, skin examination (for those contacting corrosive substances), and lung function (for those contacting volatile substances);

◦ If abnormalities are found in the examination (e.g., skin allergies, liver damage), immediately transfer the keeper from the HC warehouse position and arrange for treatment.

2. Health Protection Measures (Supplemented with PPE Selection):

◦ Maintain ventilation during operations to reduce inhalation of volatile substances; wear respirators when contacting toxic substances (refer to Appendix D);

◦ After contacting HCs, wash hands and face with neutral hand sanitizer in a timely manner, change work clothes, and wash work clothes separately;

◦ Set up a rest room in the warehouse, equipped with drinking water; take a 15 - minute rest every 2 hours of operation to avoid fatigue;

◦ Select suitable PPE in accordance with Appendix D (PPE Selection Guide for Warehouse Keepers); mixed use or substitution is prohibited.

6.2 Safety Operation Requirements (Supplemented with Loading/Unloading Specifications and Fire Management)

1. Leakage Handling Operation (Classified into Minor/Major, Optimized according to New Content):

◦ Minor Leakage (e.g., drum mouth seepage, dripping):

ⅰ. Immediately evacuate unauthorized personnel and set up warning signs;

ⅱ. Wear chemical - resistant gloves and goggles, cover the leakage point with oil - absorbent pads, and replace the gasket;

ⅲ. Transfer the leaking drum to the leak - proof area and collect the leaked material into a dedicated hazardous waste drum;

ⅳ. Treat the contaminated ground with neutralizers (use 5% sodium carbonate solution for acids, 5% citric acid solution for alkalis);

◦ Major Leakage (e.g., drum damage, pipeline burst):

ⅰ. Immediately stop operations, wear respirators and corrosion - resistant clothing, and turn on the ventilation system;

ii. Report to the Warehouse Management Department and QHSE Department, and activate the emergency plan;

iii. Block the leakage area with sandbags or leak - proof barriers to prevent spread to drainage ditches;

iv. Use corrosion - resistant pumps to transfer HCs to spare containers, and absorb the leaked material with oil - absorbent pads;

v. After handling, clean the PPE, disinfect the operation area, and record the handling process.

2. Fire and Explosion Prevention Requirements (Supplemented with Fire Management):

◦ Prohibit using mobile phones in the warehouse; use explosion - proof walkie - talkies for communication;

◦ Regularly clean up flammable debris (e.g., waste packaging, oil - absorbent pads) in the warehouse once a week; accumulation is prohibited;

◦ Electrical equipment (switches, lamps) shall be explosion - proof type; inspect the wires for no damage or exposure once a month;

◦ Keepers shall be proficient in the use of fire - fighting equipment (dry powder fire extinguishers, fire sand) and conduct practical exercises once a month;

◦ Strictly prohibit setting off fireworks and firecrackers within 50m around the warehouse; unauthorized hot work is prohibited (a Hot Work Permit shall be obtained).

6.3 Environmental Compliance Requirements (Retained Original, Supplemented with Empty Drum Disposal)

1. Waste Disposal (Supplemented with Empty Drum Handling):

◦ Waste HC packaging (e.g., steel drums, plastic drums) shall be cleaned thoroughly, labeled with "Hazardous Waste", and handed over to qualified entities for recycling; random discarding is prohibited;

◦ Oil - absorbent pads and neutralizer residues after leakage handling shall be managed as hazardous waste, placed in dedicated hazardous waste collection drums, and transported by hazardous waste disposal entities regularly;

◦ For expired/deteriorated HCs, the QHSE Department shall contact qualified entities for disposal and fill in the Hazardous Waste Transfer Manifest.

2. Pollution Prevention and Control (Retained Original):

◦ When cleaning the warehouse floor, use neutral detergents; the wastewater shall be discharged after treatment by an oil separation tank; direct discharge of wastewater containing HCs is prohibited;

◦ Set up rain shelters in outdoor storage areas (e.g., large storage tanks) to prevent HC spread caused by rain washing.

7 Emergency Response (HSE Risk Response, Detailed by Type)

7.1 Common Accident Handling (Classified into Minor/Major, Optimized according to New Content)

7.1.1 HC Leakage (Classified into Minor/Major, Refer to Appendix E)

1. Minor Leakage (e.g., Drum Mouth Seepage):

◦ Immediately stop operations, wear chemical - resistant gloves and goggles, and evacuate surrounding personnel;

◦ Cover the leakage point with oil - absorbent pads (or adsorbents) and replace the drum lid gasket;

◦ Transfer the leaking drum to the leak - proof area and mark it as "Leaking to be Handled";

◦ Treat the contaminated ground with neutralizers (sodium carbonate for acids, citric acid for alkalis), and return the tools to their original positions after cleaning;

◦ Record the cause of the leakage (e.g., aging gasket) and report to the Warehouse Management Department.

2. Major Leakage (e.g., Drum Damage, Pipeline Rupture):

◦ Immediately wear respirators and corrosion - resistant clothing, turn on the warehouse ventilation system, and close relevant valves (if any);

◦ Report to the Company Fire Emergency Team (Tel: 0316 - 2073723) and QHSE Department, and activate the emergency plan;

◦ Set up a warning zone (radius ≥ 10m), prohibit unauthorized personnel/vehicles from entering, and guide rescue vehicles to enter;

◦ Block the leakage area with sandbags to prevent spread to drainage ditches and soil;

◦ Use corrosion - resistant pumps to transfer HCs to spare containers, absorb the leaked material with oil - absorbent pads, and put it into hazardous waste drums;

◦ After the Fire Emergency Team arrives, provide MSDS and assist in formulating the handling plan;

◦ After handling, test whether the soil/water quality is polluted; entrust a third - party for treatment if necessary.

7.1.2 HC Fire (Classified into Incipient/Expanded, Optimized according to New Content)

1. Incipient Fire (e.g., Small - scale Liquid Combustion, Package Ignition):

◦ Immediately call the Company Fire Emergency Tel (0316 - 2073723) and activate the warehouse fire alarm;

◦ Wear respirators, use dry powder fire extinguishers (aim at the root of the flame) or fire sand to put out the fire; water is prohibited (to prevent flammable liquids from floating on the water surface);

◦ Transfer HCs that have not caught fire around and cool adjacent containers (with water mist) to prevent fire spread;

◦ After the fire is extinguished, check for the possibility of re - ignition, clean up the remaining fire, and record the cause of the fire.

2. Expanded Fire (e.g., Large - scale Combustion, Thick Smoke):

◦ Immediately evacuate the warehouse, close the fire door, and guide surrounding personnel to evacuate to a safe area upwind;

◦ Report the fire location and HC type (e.g., "Flammable liquid rust oil fire") to the Fire Emergency Team;

◦ After the fire - fighting personnel arrive, provide the HC MSDS and warehouse layout plan, and assist in fire - fighting;

◦ After the fire is extinguished, cooperate in investigating the cause of the fire and formulate preventive measures (e.g., "Strengthen inspection of explosion - proof electrical equipment").

7.1.3 Personnel Contact Poisoning (Classified into Skin/Eye/Inhalation, Retained Original)

1. Skin Contact: Immediately take off contaminated clothes, rinse the contact area with a large amount of flowing water (for at least 15 minutes); if it is a corrosive substance, apply neutralizing ointment after rinsing (alkaline ointment for acid contact, acidic ointment for alkali contact); send to the hospital for severe cases;
2. Eye Contact: Immediately turn on the eye wash station and rinse the eyes continuously (for at least 15 minutes); rotate the eyes to ensure all parts are rinsed; avoid rubbing the eyes; send to the hospital for examination;
3. Inhalation Poisoning (e.g., Volatile Gas): Immediately transfer the person to a ventilated place, keep the respiratory tract unobstructed, and unbutton the collar; if breathing is difficult, immediately call 120 and give oxygen;
4. Record the HC Personnel Contact Incident Record after handling, report to the QHSE Department, analyze the cause, and make improvements (e.g., "Strengthen PPE wearing inspection").

7.2 Emergency Contact and Drills (Retained Original, Supplemented with Drill Content)

1. Emergency Contact List:

Contact Object	Contact Number	Responsibilities
Company Fire Emergency Team	0316 - 2073723	HC fire fighting and leakage handling
Emergency Medical Center	120	Emergency rescue for poisoned/injured personnel
QHSE Department	0316 - 2075059	Accident reporting, investigation, and qualification handling
Warehouse Management Department	0316 - 2373062	Warehouse operation coordination and facility maintenance
Equipment Management Department	0316 - 2076402	Provision of leakage handling equipment and emergency material replenishment

1. Emergency Drills:

◦ The Company organizes HC emergency drills once every six months, including handling of minor leakage, incipient fire, and personnel first aid; all keepers must participate;

◦ Hold a summary meeting after the drill to evaluate the handling effect (e.g., "Long time for leakage blocking", "Unskilled operation of fire extinguishers") and optimize the emergency plan (e.g., "Increase the quantity of leakage handling tools", "Strengthen fire - fighting practical training");

◦ Keep the drill records (photos, videos, summary reports) as the basis for HSE management review.

8 Supplementary Provisions

8.1 This instruction shall take effect from the date of issuance. In case of any inconsistency between the existing HC warehouse management regulations and this instruction, this instruction shall prevail.

8.2 This instruction shall be revised under the leadership of the Company's QHSE Department, with the cooperation of the

Warehouse Management Department, Equipment Management Department, and Procurement Department. The revision cycle is 2 years; timely revision is required if national regulations or Group requirements are updated, or if HC accidents occur.

8.3 For matters not covered in this instruction, refer to Regulations on the Safety Management of Hazardous Chemicals, GB 15562.2 - General Rules for Storage of Hazardous Chemicals, GB 15603, GB 18218 - Identification of Major Hazard Installations for Hazardous Chemicals, and 's Hazardous Chemical Warehouse Safety Management Measures.

8.4 This instruction shall be distributed to all HC warehouse keepers, auxiliary personnel, Warehouse Management Department, and relevant management departments. The electronic version shall be uploaded to the HSE column on the Company's intranet for easy access and learning.

9 Appendices (Newly Added/Integrated, Supplemented with New Content)

Appendix A: Hazardous Chemical Storage Incompatibility Table (Newly Added, Refer to New Content)

HC Category	Incompatible Substance Category	Isolation Requirement	Typical Examples (Related to Company Business)
Flammable Liquids	Oxidizers, Acids, Alkalis	Store in separate warehouses, distance ≥ 5m	Rust oil (flammable liquid) separated from hydrogen peroxide (oxidizer)
Acidic Substances	Alkaline Substances, Metal	Store in dedicated warehouses,	Acidic cleaning agents (pH ≤ 2)

	Powders	isolated by concrete walls	separated from alkaline rust removers (pH ≥ 12)
Alkaline Substances	Acidic Substances, Ammonium Salts	Store in dedicated warehouses, distance ≥ 3m	Alkaline rust removers separated from ammonium chloride (fertilizer, if any)
Flammable Solids	Oxidizers, Strong Acids	Store in zoned areas, distance ≥ 2m	Paraffin - based solid rust inhibitors separated from nitric acid (strong acid)
Lubricating Oils	Strong Oxidizers	Store in zoned areas, distance ≥ 1m	Lubricating oils separated from potassium permanganate (oxidizer)

Appendix B: Temperature and Humidity Record Form (Newly Added, Refer to New Content)

Date	Time	Temperature (℃)	Humidity (%)	Adjustment Measures (e.g., Turn on Air Conditioner)	Recorder	Remarks
2026.XX.XX	8:00	25	55	-	Zhang San	-
2025.XX.XX	10:00	27	58	-	Zhang San	-
2025.XX.XX	14:00	31	60	Turn on air conditioner (26℃)	Zhang San	High temperature

2025.XX.XX	16:00	28	59	Air conditioner in operation	Zhang San	-
2025.XX.XX	20:00	24	56	Turn off air conditioner	Zhang San	-

Appendix C: HC Warehouse Patrol Record (Integrated Original, Supplemented with New Content)

Record No.	HSE - CHK - 2025001	Patrol Date	2025.XX.XX	Patrol Person	Zhang San
Patrol Time	8:00	Weather	Sunny, 28℃	Patrol Area	Flammable Liquid Area, Corrosive Substance Area
Patrol Content	No.	Inspection Item	Inspection Standard	Inspection Result	Handling Measure
	1	Packaging Containers	No leakage, no bulging, no damage	Qualified	-
	2	Storage Status	No mixed storage, stable stacking, unobstructed aisles	Qualified	-
	3	Fire - fighting Equipment	Normal pressure, within validity period	Qualified	-
	4	Ventilation System	Normal operation,	Qualified	-

			unobstructed air outlets		
	5	Emergency Washing Facilities	Normal water pressure, uniform water output	Qualified	-
	6	Temperature and Humidity	Temperature 25℃, Humidity 55%	Qualified	-
	7	Safety Signs	Clear, no damage, no obstruction	Qualified	-
Abnormal Situation	None	Reporting Status	None		
Next Patrol	10:00	Patrol Person's Signature	Zhang San		

Appendix D: PPE Selection Guide for Warehouse Keepers (Newly Added, Refer to New Content)

Type of HC Contacted	Head Protection	Face Protection	Body Protection	Hand Protection	Foot Protection	Respiratory Protection
Flammable Liquids (Rust Oil)	Safety Helmet	Chemical - resistant Goggles	Anti - static Work Clothes + Apron	Oil - resistant Gloves	Impact - and Puncture - Resistant Safety Shoes	Generally not required (good ventilation)
Acidic Cleaning Agents	Safety Helmet	Chemical - resistant Goggles	Corrosion - resistant Clothing + Apron	Acid - resistant Gloves	Impact - and Puncture - Resistant	Half - face Respirator

		+ Face Shield			Safety Shoes	
Alkaline Rust Removers	Safety Helmet	Chemical - resistant Goggles + Face Shield	Corrosion - resistant Clothing + Apron	Alkali - resistant Gloves	Impact - and Puncture - Resistant Safety Shoes	Half - face Respirator
Toxic Volatile Substances	Safety Helmet	Chemical - resistant Goggles	Anti - static Work Clothes	Solvent - resistant Gloves	Impact - and Puncture - Resistant Safety Shoes	Full - face Respirator
Emergency Handling (Major Leakage)	Safety Helmet	Chemical - resistant Face Shield	Fully Enclosed Corrosion - resistant Clothing	Thick Chemical - resistant Gloves	Chemical - resistant Boots	Positive Pressure Air Breathing Apparatus

Appendix E: Emergency Handling Procedures (Newly Added, Refer to New Content)

E1 Leakage Emergency Handling Flowchart

```
flowchart TD
    A[Detect Leakage] --> B{Leakage Volume}
    B -->|Minor| C[Wear Basic PPE (Gloves, Goggles)]
    C --> D[Absorb Leaked Material + Transfer Leaking Drum]
    D --> E[Neutralize Contaminated Area]
    E --> F[Record and Report]
    B -->|Major| G[Wear Full Protection (Corrosion - resistant Clothing, Respirator)]
    G --> H[Activate Emergency Plan + Report to Fire Emergency Team]
    H --> I[Set Up Warning Zone + Block Leakage]
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    I --> J[Transfer HCs + Absorb Leaked Material]
    J --> K[Cooperate with Professional Handling + Test Pollution]
    K --> L[Summarize and Improve]
```

E2 Fire Emergency Handling Flowchart

```
flowchart TD
    A[Detect Fire] --> B{Fire Scale}
    B -->|Incipient| C[Call Fire Emergency Tel + Activate Alarm]
    C --> D[Wear Respirator + Extinguish Fire with Dry Powder Extinguisher]
    D --> E[Transfer Surrounding HCs + Cool Containers]
    E --> F[Clean Up Remaining Fire + Record Cause]
    B -->|Expanded| G[Evacuate Immediately + Close Fire Door]
    G --> H[Guide Personnel to Evacuate to Upwind Area]
    H --> I[Report HC Type to Fire Team]
    I --> J[Cooperate with Fire - fighting + Provide MSDS]
    J --> K[Investigate Cause + Formulate Preventive Measures]
```

Appendix F: Competence Requirements for Warehouse Keepers (Newly Added, Refer to New Content)

F1 Professional Knowledge

1. Be familiar with the physical and chemical properties and hazardous characteristics of common HCs (rust inhibitors, cleaning agents, etc.) used by the Company;
2. Master regulations and standards such as Regulations on the Safety Management of Hazardous Chemicals, GB 15562.2, GB 15603, and GB 18218;
3. Understand HC storage incompatibilities (Appendix A) and leakage/fire emergency handling processes (Appendix E);
4. Be familiar with the working principles of warehouse safety facilities (fire - fighting equipment, detectors, emergency washing facilities).

F2 Operation Skills

1. Proficiently operate explosion - proof forklifts and manual hydraulic trucks, and standardly load/unload HCs;

2. Correctly use PPE (Appendix D) and master the operation methods of respirators and eye wash stations;
3. Proficiently fill in various records (temperature and humidity, patrol, warehousing/ex - warehouse) and operate the management system;
4. Have practical ability in handling minor leakages and extinguishing incipient fires.

F3 Professional Quality

1. Strong sense of responsibility, careful work, and ability to promptly identify risks in storage/operation;
2. Strictly comply with this instruction and the Company's HSE system, and no non - compliant operation is allowed;
3. Have calm judgment in emergency handling, no panic or delay;
4. Continuously learn new knowledge of HC management (e.g., regulation updates, new material characteristics) and participate in at least 40 hours of training annually.