**Cladding Technology Shanxi Co., Ltd**

# HSE Safety Operation Instruction for Loading and Unloading

# Document No.: CLADDING-HSE-PD-28

## 1 Purpose

To standardize the health, safety, and environmental management of the Company's loading and unloading operations (including material loading, unloading, and transfer connection), clarify HSE control requirements for the entire operation process, prevent risks such as falls, collisions, crushing, and hazardous chemical leaks during loading and unloading operations, and avoid health hazards and environmental impacts. This instruction ensures operations comply with laws and regulations such as the *Work Safety Law*, *Regulations on the Safety Management of Hazardous Chemicals*, and *Safety Code for Lifting Appliances* (GB 6067.1), as well as PIPING SYSTEM PTE LTD's HSE requirements. It aims to protect the life and health of operators, the safety of the Company's property, and the environmental compliance of the operation area.

## 2 Scope of Application

### 2.1 Operation Types

• General Material Loading and Unloading: Forklift/manual loading and unloading of palletized materials (bagged rust inhibitors, boxed tools) and small accessories;

• Hazardous Chemical (HC) Loading and Unloading: Specialized loading and unloading of drummed lubricating oils (flash point ≥ 60℃), cleaning agents (non-flammable type), and rust inhibitors (containing corrosive components);

• Heavy Equipment Loading and Unloading: Crane-based loading and unloading of pumps (5-20t), valves (diameter ≥ 1m), compressors, and other heavy equipment;

• Container Loading and Unloading: Hoisting/forklift-assisted loading and unloading of standard containers (20-foot/40-foot);

• Bulk Material Loading and Unloading: Roller/hoisting-based loading and unloading of pipes (steel pipes, PE pipes) and aggregates (temporary construction materials for project departments).

## 2.2 Operation Scenarios

• Warehouse Loading and Unloading: Shelving, deshelving, and short-distance transfer of materials in indoor warehouses;

• Yard Loading and Unloading: Receipt and dispatch loading/unloading of heavy equipment and long-distance transmission pipes in outdoor yards;

• Transportation Connection: Unloading of materials from trucks/containers and securing of loads during loading;

• Project Department Site: Temporary loading/unloading of construction materials and positioning adjustment of large equipment;

• Special Environment Operations: Night loading/unloading and loading/unloading in severe weather (rain, snow, high temperature).

## 2.3 Applicable Personnel

• Loading and Unloading Operators: Personnel qualified through HSE training, responsible for material hooking, unhooking, and handling;

• Loading and Unloading Commanders: Personnel holding valid command qualifications, responsible for on-site operation coordination and signal transmission;

• Machinery Operators: Personnel holding *Special Equipment Operator Certificate*, operating forklifts, cranes, and other equipment;

• On-site Supervisors: Responsible for on-site safety supervision, violation prevention, and abnormal reporting;

• Relevant Management Personnel: Operation supervisors (team leaders/project department supervisors), Equipment Management Department specialists, and Quality, Health, Safety and Environmental (QHSE) Department specialists.

# 3 Terms and Definitions

## 3.1 Loading and Unloading Operations

The entire process of transferring materials from storage locations to transportation vehicles (or vice versa) or short-distance transfer within the operation area using manual labor or equipment, including three links: "loading", "unloading", and "transfer".

## 3.2 Rated Load

The maximum allowable load weight of loading and unloading equipment (forklifts/cranes) or riggings, marked on equipment nameplates or rigging labels. Overload operations are strictly prohibited.

## 3.3 Special Requirements for HC Loading and Unloading

Special control requirements for loading and unloading operations involving flammable, corrosive, or toxic materials, including explosion prevention, static prevention, and leak prevention measures.

## 3.4 Special Environment Operations

Loading and unloading operations under non-routine conditions such as nighttime (19:00 - 6:00 next day) and severe weather (wind force ≥ Level 6, heavy rain, high temperature ≥ 35℃, thunder and lightning), requiring additional protective measures.

# 4 Responsibility Assignment

## 4.1 Loading and Unloading Operators

• Receive HSE-specific training and pass assessments; be familiar with the characteristics of materials being loaded/unloaded (e.g., corrosiveness of HCs, rollability of pipes);

• Correctly wear personal protective equipment (PPE) and conduct material handling, hooking, and unhooking in accordance with specifications; rough operation is prohibited;

• Inspect material appearance (e.g., package damage, leaks) and immediately report issues to the operation supervisor;

• Clean up on-site tools (straps, wooden blocks) after operations, assist in recycling waste packaging, and sort and dispose of waste.

## 4.2 Loading and Unloading Commanders

• Work with a valid *Lifting Operation Command Certificate*; be familiar with the performance of loading and unloading equipment and operation plans;

• Responsible for unified on-site command and transmission of standard signals (hand gestures/walkie-talkies) to ensure coordination between operators and loaders;

• Supervise the compliance of the operation process and stop violations such as overloading and oblique pulling/lifting;

• Confirm rigging selection and material securing status before operations, and participate in equipment and site inspections after operations.

## 4.3 Machinery Operators

• Work with a valid *Special Equipment Operator Certificate* (for forklifts/cranes); be familiar with equipment operating parameters (rated load, lifting height);

• Inspect equipment status before operations: forklift braking/steering, crane safety devices (limiters, brakes), and integrity of slings and riggings; report abnormalities for repair immediately;

• Strictly operate in accordance with command signals and comply with equipment regulations (forklift speed limits, crane "Ten No-Lifting Rules");

• Pay attention to the surrounding environment (personnel, obstacles) during operations; stop immediately upon receiving a stop signal; operation of faulty equipment is prohibited.

## 4.4 On-site Supervisors

• Inspect the implementation of safety measures before operations: warning zone setup, PPE wearing, and equipment qualifications; operations are prohibited if requirements are not met;

• Conduct on-site supervision throughout the process, focusing on monitoring risks such as load balance, personnel within the operation radius, and HC leaks;

• Stop non-compliant operations (unlicensed operation, operation under the influence of alcohol, risky operations); immediately halt operations if violations are not corrected;

• Record the operation process, fill out the *Loading and Unloading Operation Inspection Record*, and report abnormal situations (e.g., equipment failures, minor leaks).

## 4.5 Operation Supervisors

• Develop loading and unloading plans before operations: clarify personnel assignments for general operations; prepare special plans (including risk analysis and emergency measures) for heavy equipment/HC operations;

• Organize safety technical disclosure covering material characteristics, risk points (e.g., HC corrosion, heavy equipment imbalance), and emergency contact information; all personnel must sign for confirmation;

• Coordinate personnel, equipment, and tool resources to ensure operation conditions are met (e.g., explosion-proof tools for HC loading and unloading);

• Organize acceptance after operations, verify material quantity/quality, and confirm compliance of site cleanup.

## 4.6 Equipment Management Department

• Responsible for regular maintenance of loading and unloading equipment (forklifts/cranes) and riggings: monthly inspections, quarterly maintenance, and annual testing, in compliance with GB 6067.1 requirements;

• Establish equipment files (factory documents, maintenance records, testing certificates); update riggings in accordance with scrap standards (excessive broken wires in steel ropes, aging straps);

• Provide operation tools: explosion-proof tools (for HC loading and unloading), anti-slip mats, and wooden blocks; replenish and replace them regularly;

• Organize skill training for operators (once a quarter); unqualified personnel are prohibited from working.

## 4.7 QHSE Department

• Supervise the implementation of this instruction and investigate non-compliant operations (unlicensed operation, overloading, mixed loading of HCs);

• Review special plans for heavy equipment/HC loading and unloading and verify the compliance of HSE measures;

• Organize emergency drills (once every six months) covering HC leaks, lifted load falls, and other scenarios;

• Investigate operation-related accidents, analyze causes, develop preventive measures, and update this instruction.

# 5 Work Procedures

## 5.1 Pre-operation Preparation

### 5.1.1 Personnel Preparation

• All personnel participate in safety disclosure to clarify operation tasks, risk points, and prevention measures; personnel who have not received disclosure are prohibited from participating;

• Verify personnel qualifications: commanders hold command certificates, operators hold equipment operation certificates; additional assessments are required for HC loading and unloading;

• Confirm personnel physical condition: no fatigue, alcohol consumption, or contraindications (hypertension, epilepsy); maintain good mental state;

• PPE wearing requirements (see Appendix C):

◦ General Operations: Safety helmets, anti-impact safety shoes, reflective vests, anti-slip gloves;

◦ HC Operations: Chemical-resistant goggles, chemical-resistant gloves, anti-static clothing; add chemical-resistant aprons for corrosive materials;

◦ Night/High-Altitude Operations: Reflective vests, safety belts (for high-altitude operations).

### 5.1.2 Equipment and Tool Inspection

• Equipment Inspection (led by machinery operators):

| Equipment Type | Inspection Items | Standard Requirements |
| --- | --- | --- |
| Forklift | Braking system, steering system, forks, lighting | Sensitive braking without deviation; no cracks on forks; normal lighting |

| | | |
|---|---|---|
| Crane | Lifting mechanism, braking/limiting devices, steel ropes, riggings | Effective limiters; ≤ 5 broken wires per 10m of steel rope; no cracks on riggings |
| Roller | Operating speed, roller surface flatness, braking | Speed ≤ 0.5m/s; no protrusions on roller surface; effective braking |

• Tool Inspection (led by loading and unloading operators):

◦ Hand Tools: Wrenches and push rods without damage; explosion-proof tools (for HC operations) without oil contamination;

◦ Slings and Riggings: Steel ropes without rust/wear; straps without cracks (service life ≤ 50 uses); complete shackle pins;

◦ Auxiliary Tools: Wooden blocks without fractures; anti-slip mats with clear textures; prepare oil-absorbent pads and neutralizers for HC loading and unloading.

### 5.1.3 Operation Environment Confirmation (led by on-site supervisors)

• Site: Flat ground (slope ≤ 3°) without ponding/oil stains; ground bearing capacity for crane operations ≥ equipment ground pressure (marked on the ground);

• Lighting: ≥ 30lux for general operations; ≥ 50lux for night/indoor operations; explosion-proof lamps for HC loading and unloading;

• Aisles: Main aisle width ≥ 2.5m (for forklifts); no obstacles (telephone poles, stacks) within the operation radius; unobstructed fire-fighting aisles;

• Weather: For outdoor operations, wind force ≤ Level 5, no heavy rain (rainfall < 10mm/h); operations are prohibited during thunder and lightning; set up sunshades when temperature ≥ 35℃.

## 5.2 General Material Loading and Unloading Operations

### 5.2.1 Manual Loading and Unloading (single weight ≤ 50kg)

• Handling Posture: Bend knees and straighten waist; avoid bending over to lift heavy objects to prevent waist strain;

• Multi-person Cooperation: 2-3 people collaborate in handling; use unified commands (e.g., "Lift - Move - Place"); single-person handling of overweight materials is prohibited;

• Gentle Handling: Prohibit throwing, impacting, or overturning materials; avoid inverting boxed materials (follow package labels);

• Stacking Requirements: Stack by type/specification; stacking height ≤ 1.5m (for bagged materials); place cardboard between layers for moisture prevention; keep ≥ 1m distance from fire-fighting equipment.

### 5.2.2 Mechanical Loading and Unloading (single weight > 50kg)

• Forklift Loading and Unloading: Refer to the forklift process for general materials; fork insertion depth ≥ 2/3 of pallet length; lifting height ≤ 30cm during transfer;

• Crane Loading and Unloading: Consolidate small materials on pallets; select riggings matching pallets; test lifting height of 10-20cm to confirm balance;

• Stacking Control: For shelf storage, keep ≥ 5cm distance between materials and shelf beams; overloading of shelves is prohibited (marked on shelves).

## 5.3 Hazardous Chemical Loading and Unloading Operations (Special Control)

### 5.3.1 Pre-operation Confirmation

• Document Verification: Confirm HC name, specification, and quantity; verify Material Safety Data Sheet (MSDS) and product inspection report;

• Material Inspection: Intact and sealed packaging (no leaks, drum bulging); clear labels (including product name, hazard symbols, manufacturer, and emergency phone number);

• Emergency Preparation: Prepare oil-absorbent pads, neutralizers (sodium carbonate for acids, citric acid for alkalis), first-aid kits, and gas masks; place within 5m of the operation point;

• Warning Setup: Set up warning tape (radius ≥ 5m); hang "HC Operation, No Entry" signs; unauthorized personnel are prohibited from approaching.

### 5.3.2 Safety Protection

• Equipment Requirements: Use explosion-proof forklifts/cranes; connect static grounding clamps before operations (grounding resistance ≤ 10Ω);

• PPE Wearing: Chemical-resistant goggles, acid-alkali resistant gloves, anti-static clothing, chemical-resistant boots; add gas masks (half-face/full-face) for inhalable HCs;

• Ventilation Requirements: Turn on explosion-proof ventilators for indoor operations (ventilation ≥ 6 times per hour); select upwind operation points for outdoor operations.

### 5.3.3 Operation Requirements

• Loading/Unloading Control: Handle gently; prohibit impacting or rolling packages; place rubber pads between forklift forks and drum bodies (to prevent scratching);

• Prohibit Mixed Loading: Separate loading/unloading of different types of HCs (e.g., acids and alkalis); mixed loading with general materials is prohibited;

• Leak Handling: Cover minor leaks with oil-absorbent pads; activate emergency plans for major leaks; evacuate personnel and report to the QHSE Department;

• Post-operation Cleaning: Clean and disinfect PPE separately; rinse tools with water (for corrosive HCs); dispose of waste oil-absorbent pads as hazardous waste.

## 5.4 Heavy Equipment Loading and Unloading Operations (single weight ≥ 5t)

### 5.4.1 Plan Development

• Special Plan Content: Equipment weight/dimensions, crane selection (rated load ≥ 1.2 times equipment weight), lifting point position (after stress calculation), securing method, foundation treatment measures, emergency plan;

• Risk Analysis: Identify risks such as imbalance, collision, and foundation collapse; develop prevention measures (e.g., adding steel plates to reinforce foundations);

• Plan Review: Reviewed by the Equipment Management Department and QHSE Department; reported to company leaders for approval for major operations (≥ 20t).

### 5.4.2 On-site Preparation

• Site Cleaning: Remove obstacles in the operation area; place steel plates under crane outriggers (thickness ≥ 20mm, area ≥ 2 times outrigger base);

• Riggings Selection: Use special lifting beams (matching equipment lifting lugs) or steel ropes (diameter ≥ 20mm); strap strength ≥ 1.5 times equipment weight;

• Auxiliary Measures: Prepare traction ropes (to control equipment rotation) and wooden blocks (for support during unloading); assign 2 dedicated personnel to hold traction ropes.

### 5.4.3 Operation Control

• Test Lifting Inspection: Slowly lift equipment to 10-20cm above the ground; stop for 10 seconds; inspect rigging stress, equipment balance (tilt ≤ 3°), and foundation settlement;

• Lifting and Transfer: Lifting speed ≤ 3m/min; keep ≥ 0.5m distance between equipment and obstacles during transfer; control rotation angle ≤ 15° with traction ropes;

• Unloading and Positioning: Lower equipment to 20-30cm above the target position; adjust position and lower slowly; place anti-slip pads at the bottom (friction coefficient ≥ 0.8);

• Securing and Acceptance: Secure equipment with straps (at least 4 points) after positioning; unhook riggings only after passing acceptance.

## 5.5 Special Environment Loading and Unloading Operations

### 5.5.1 Night Operations

• Lighting Configuration: Install temporary lighting (explosion-proof type) in the operation area; brightness ≥ 50lux; add spotlights at key points (lifting points, aisles);

• Signal Transmission: Use luminous command gestures or explosion-proof walkie-talkies to ensure clear and interference-free signals;

• Operation Control: Reduce equipment speed (forklift ≤ 3km/h, crane lifting speed ≤ 2m/min); increase on-site supervisors (≥ 2 people);

• Work Schedule: Rest for 15 minutes every hour to avoid fatigue; equip with emergency lighting (automatically activated during power failure).

### 5.5.2 Severe Weather Operations

• Wind Force ≥ Level 6: Stop outdoor crane operations; immediately lower lifted loads to the ground;

• Rain and Snow Weather: Lay anti-slip pads on the ground (friction coefficient ≥ 0.6); install anti-slip chains on forklift/crane tires; clean snow/water from equipment after operations;

• High Temperature ≥ 35℃: Avoid operations between 11:00-15:00; provide drinking water and heatstroke prevention medicine (Huoxiang Zhengqi Shui); rest for 10 minutes every 40 minutes;

• Thunder and Lightning Weather: Immediately stop all operations; cut off equipment power; evacuate personnel to indoor safe areas.

## 5.6 Post-operation Closure

### 5.6.1 Equipment and Tool Return

• Equipment Inspection: Clean oil stains from forklift forks and crane steel ropes; inspect equipment for leaks or abnormal noise; fill out the *Equipment Daily Inspection Record*;

• Equipment Return: Park forklifts in designated areas (apply handbrake); retract crane outriggers/booms; store riggings on dedicated brackets (avoid folding);

• Tool Cleaning: Store straps and wooden blocks in the tool room by category; store explosion-proof tools separately (prevent oil contamination); mark damaged tools as "Forbidden" and report for repair.

### 5.6.2 Site Cleaning and Acceptance

• Site Cleaning: Recycle waste packaging (cardboard, plastic film); place recyclables in dedicated bins; place hazardous waste (oil-absorbent pads, damaged chemical-resistant clothing) in hazardous waste bins;

• Pollution Handling: If oil leaks occur, clean with oil-absorbent pads; rinse the ground with neutral detergent; treat wastewater through an oil separator;

• Material Acceptance: Operation supervisors and receivers verify material quantity/quality; sign and confirm the *Loading and Unloading Operation Acceptance Record*;

• Record Archiving: Organize the *Loading and Unloading Operation Inspection Record* and *Equipment Daily Inspection Record*; archive in the Equipment Management Department.

# 6 HSE Special Safety Requirements

## 6.1 Health Protection Requirements

• Occupational Health Monitoring: Loading and unloading operators and HC operation personnel undergo annual physical examinations, including hearing tests (for noise), skin tests (for corrosion), and lung function tests (for dust); transfer personnel immediately if abnormalities are found;

• Noise Control: Operators wear earplugs (noise reduction value ≥ 20dB) when crane operation noise ≥ 85dB; install mufflers on equipment;

• Dust Prevention: Spray water to reduce dust during bulk material loading and unloading (frequency ≥ once per hour); operators wear dust masks (filtration efficiency ≥ 95%);

• Work Schedule: Continuous operation ≤ 2 hours; rest for 15 minutes to avoid health risks caused by fatigue (e.g., waist strain, inattention).

## 6.2 Safety Prohibition Clauses (implemented in accordance with Appendix D)

### 6.2.1 Personnel Prohibitions

• Prohibit unlicensed operation of equipment (forklifts/cranes) and unlicensed command of operations;

• Prohibit participating in operations while under the influence of alcohol, fatigued, or affected by medication;

• Prohibit staying/passing under lifted loads and crossing operation warning zones;

• Prohibit risky operations (e.g., holding lifted loads, forced lifting of stuck materials).

### 6.2.2 Equipment Prohibitions

• Prohibit overloading operations (including equipment and riggings);

• Prohibit operation of faulty equipment (failed braking, damaged safety devices);

• Prohibit unauthorized modification of equipment (e.g., removing crane limiters);

• Prohibit operation of equipment by non-specialized personnel (equipment keys kept by dedicated personnel).

### 6.2.3 Operation Prohibitions

• Prohibit non-compliant command (e.g., forcing operations in severe weather or overloading);

• Prohibit rough loading and unloading (throwing, impacting, dragging materials);

• Prohibit mixed loading of incompatible HCs (acids and alkalis, oxidizers and reducers);

• Prohibit blocking fire-fighting aisles and emergency exits, and covering safety signs.

## 6.3 Environmental Compliance Requirements

• Waste Disposal: Hand over recyclable waste (cardboard, metal packaging) to waste recycling units; arrange for qualified entities to transport hazardous waste (waste oil, oil-absorbent pads); random disposal is prohibited;

• Noise Control: Operation noise ≤ 70dB during daytime and ≤ 55dB at night; install sound insulation barriers if exceeding limits;

• Pollution Prevention: Install leak-proof bunds in HC loading and unloading areas (capacity ≥ 1.2 times the maximum container volume) to prevent soil/water pollution from leaks;

• Energy Conservation: Reasonably plan operation routes to reduce unnecessary equipment travel; prioritize repair and reuse of waste riggings/tools.

# 7 Emergency Disposal

## 7.1 Accident Reporting Process

1. Immediately stop operations, protect the accident site, and evacuate unauthorized personnel;
2. Report to the on-site supervisor and QHSE Department (see Appendix E for contact information); specify accident type (leak, collision, personal injury), location, and severity;
3. Minor injuries/minor leaks: Fill out the *Accident Report Record* after on-site disposal;
4. Severe injuries/major leaks/fires: Activate the company emergency plan; call 120 (first aid) and 119 (firefighting); cooperate with professional rescue.

## 7.2 Typical Accident Disposal

### 7.2.1 Hazardous Chemical Leaks

• Minor Leaks: Wear chemical-resistant PPE; absorb leaks with oil-absorbent pads; treat contaminated areas with neutralizers; place absorbents in hazardous waste bins;

• Major Leaks: Evacuate personnel to upwind areas; set up warning zones; block leaks with sandbags; transfer HCs to spare containers using corrosion-resistant pumps; report to the QHSE Department.

### 7.2.2 Lifted Load Falls/Tilting

• Immediately stop equipment operation; prohibit personnel from approaching;

• Minor Tilting: Adjust balance with traction ropes; slowly lower to the ground; inspect rigging/material damage;

• Fall Accidents: Prioritize first aid if personnel are injured; protect the site; cooperate with accident investigation.

### 7.2.3 Personal Injuries

• Minor Abrasions/Sprains: Disinfect, bandage, and apply cold compresses using first-aid kits; observe during rest;

• Fractures/Crushing Injuries: Prohibit moving the injured; fix injuries with splints; call 120 and wait for professional treatment;

• HC Exposure: Rinse skin with plenty of water for ≥ 15 minutes; rinse eyes with eye wash stations; transfer inhalational poisoning victims to ventilated areas; provide oxygen if necessary.

## 7.3 Emergency Drills

• Organize emergency drills once every six months, covering HC leaks, lifted load falls, and personal injury disposal;

• Evaluate drill effectiveness (disposal time, measure validity) after drills; optimize emergency plans; fill out the *Emergency Drill Record*;

• All personnel must be familiar with emergency contact information (Appendix E) and master the use of first-aid tools (eye wash stations, fire extinguishers).

# 8 Supplementary Provisions

## 8.1 This instruction shall take effect from the date of issuance. In case of any inconsistency between existing loading and unloading operation regulations and this instruction, this instruction shall prevail.

## 8.2 This instruction shall be revised under the leadership of the Equipment Management Department, with the cooperation of the QHSE Department. The revision cycle is 2 years; timely revision is required if laws and regulations are updated or accidents occur.

## 8.3 For matters not covered in this instruction, refer to the *Work Safety Law*, *Regulations on the Safety Management of Hazardous Chemicals*, *Safety Code for Lifting Appliances* (GB

**6067.1), and 's *Safety Management Measures for Loading and Unloading Operations*.**

**8.4 This instruction shall be distributed to all personnel involved in loading and unloading operations and management departments. The electronic version shall be uploaded to the HSE column on the Company's intranet.**

## 9 Appendices

### Appendix A: Loading and Unloading Operation Safety Checklist

| Inspection Item | Inspection Content | Inspection Standard | Inspection Result | Handling Measures |
|---|---|---|---|---|
| Personnel Qualifications | Operation certificates, command certificates, training records | All personnel hold valid certificates; training passed | □Qualified □Unqualified | |
| PPE Wearing | Safety helmets, anti-impact shoes, chemical-resistant equipment (for HCs) | Correctly worn; no damage | □Qualified □Unqualified | |
| Equipment Status | Braking, limiting devices, slings and riggings | Sensitive and effective; no cracks/broken wires | □Qualified □Unqualified | |
| Operation Environment | Site, lighting, weather | Flat/≥50lux/wind force ≤ Level 5 | □Qualified □Unqualified | |
| Safety Measures | Warning zones, static grounding | Clear signs; grounding | □Qualified □Unqualified | |

| | | | | |
|---|---|---|---|---|
| | (for HCs) | resistance ≤ 10Ω | | |
| Emergency Preparation | Oil-absorbent pads, first-aid kits, fire extinguishers | Complete and valid; within validity period | □Qualified □Unqualified | |
| Inspector: | | Inspection Date: Year Month Day | | |

# Appendix B: Loading and Unloading Operation Risk Control Measures

## B1 Fall Risk Control

• Wear safety belts (high-hanging and low-using) for high-altitude operations (≥2m); install protective railings (height ≥1.2m) on platforms;

• Confirm secure material securing before lifting; test lifting to check balance; prohibit over-height lifting;

• Keep materials ≥10cm from shelf edges during shelf storage; prohibit overloading of shelves.

## B2 Collision Risk Control

• Set up warning tape in the operation area; forklifts sound horns when moving; speed ≤3km/h at turns;

• Assign dedicated personnel to direct vehicle reversing (holding command flags); install anti-collision pads at truck compartment edges;

• Keep ≥0.5m distance between heavy equipment and obstacles during transfer; control rotation with traction ropes.

## B3 Pinch Risk Control

• Install protective devices on moving parts of equipment (forklift forks, crane booms);

• Prohibit operators from inserting hands into equipment gaps (e.g., between forklift forks);

• Use dedicated tools (push rods, clamps); prohibit manual contact with moving materials.

# Appendix C: Personal Protective Equipment Usage Requirements

| Protection Category | Applicable Scenarios | Protective Equipment | Usage Standards |
|---|---|---|---|
| Head Protection | All operations | Safety helmets | Securely fastened with chin straps; no cracks/deformation |
| Body Protection | General operations | Reflective vests, work clothes | Neatly worn; no oil stains |
| | HC operations | Anti-static clothing, chemical-resistant aprons (for corrosives) | Full coverage; no damage |
| | High-temperature operations | Breathable work clothes | Sweat-absorbent and breathable; light-colored for sun protection |
| Hand and Foot Protection | General operations | Anti-impact safety shoes, anti-slip gloves | No deformation of shoe toes; no damage to gloves |
| | HC operations | Chemical-resistant boots, acid-alkali resistant gloves | Boot height ≥30cm; gloves fit palms |
| Face/Respiratory Protection | HC operations | Chemical-resistant goggles, gas masks | No scratches on goggles; good mask sealing |
| | Dust operations | Dust masks | Fit face; filtration efficiency ≥95% |

# Appendix D: Loading and Unloading Operation Prohibitions

## D1 Personnel Prohibitions

1. Prohibit unlicensed operation of forklifts, cranes, and unlicensed command of lifting operations;
2. Prohibit participating in operations while under the influence of alcohol, taking medication (sedatives/stimulants), or fatigued;

3. Prohibit standing/passing under lifted loads or staying in operation warning zones;
4. Prohibit direct manual contact with HCs and sharp materials (e.g., pipe ports); prohibit holding lifted loads.

### D2 Equipment Prohibitions

1. Prohibit overloading operations exceeding equipment rated load and rigging bearing capacity;
2. Prohibit operations when crane safety devices (limiters, load moment limiters) fail;
3. Prohibit carrying personnel on forklift forks and crane booms;
4. Prohibit unauthorized modification of equipment (e.g., removing forklift speed limiters, extending crane outriggers).

### D3 Operation Prohibitions

1. Prohibit non-compliant command (e.g., forcing operations in severe weather or overloading);
2. Prohibit rough loading and unloading (throwing, impacting, dragging materials, rolling HC drums);
3. Prohibit mixed loading of HCs with general materials and mixed loading of acids with alkalis, oxidizers with reducers;
4. Prohibit blocking fire-fighting aisles (width ≥4m) and emergency exits; prohibit covering safety signs.

## Appendix E: Emergency Contact Information

| Contact Object | Contact Number | Responsibilities |
|---|---|---|
| Company Emergency Office | 0316-2074048 | Emergency command and plan coordination |
| QHSE Department | 0316-2375059 | Safety supervision and accident reporting |
| Equipment Management Department | 0316-2076402 | Equipment fault repair |
| Medical Emergency | 120 | First aid for injured personnel |

| | | |
|---|---|---|
| Fire Rescue | 119 | Rescue for fires and HC leaks |
| Local Emergency Management Bureau | 0316-2380850 | External coordination for major accidents |