

FIREPROOFING SAFETY MANUAL

A Comprehensive Guide to OSHA Compliance
Cementitious | Intumescent | Board Fireproofing



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REGULATORY BASIS: 29 CFR Part 1926 (OSHA Construction Standards)

Scope: All employees engaged in mixing, spraying, troweling, board installation, and cleanup of fireproofing materials.

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PART 1 **Fall Protection**

Training Schedule: Weeks 1–4 | OSHA Standard: 29 CFR 1926.502

1.1 Full-Body Harnesses

OSHA Standard: 1926.502(d) & 1926.502(e)

RULE Employees working at heights of 6 feet or more above a lower level must be protected by a personal fall arrest system (PFAS) or guardrail system.

Harness Requirements

- Full-body harnesses must meet ANSI Z359 standards
- Webbing must have a minimum tensile strength of 5,000 pounds
- Hardware (D-rings, buckles) must be corrosion-resistant
- Chest strap must be positioned at mid-sternum (never at neck or belly)
- Leg straps must be snug — able to slide only two fingers between strap and thigh

Daily Inspection Checklist

Inspection Item	Remove from Service If...
Webbing condition	Cut, burned, frayed, or chemically damaged
Intumescent solvent exposure	Stiffness or discoloration detected
Keeper loops	Missing or damaged
Hardware	Corrosion, deformation, or missing components

ALERT Suspension Trauma: Blood pools in legs after a fall — unconsciousness in 5–15 minutes. Worker must pump legs and call for rescue immediately. Rescue within 15 minutes is critical.

1.2 Anchor Points

OSHA Standards: 1926.502(d)(15) & 1926.502(e)(2)

System Type	Minimum Load	Requirement
Fall Arrest (non-certified)	5,000 lbs per worker	Structural steel W8 or larger
Certified Anchorage	Safety factor of 2	Must be engineered
Positioning Systems	3,000 lbs minimum	Engineer-designed system

Acceptable vs. Unacceptable Anchors

ACCEPTABLE	UNACCEPTABLE
Structural steel beams (W8 or larger)	Rebar, conduit, or pipe
Columns	Decking edges
Engineered lifelines	Guardrails
Wrench-tightened beam clamps	Hand-tight connections

1.3 Boom Lifts (Aerial Lifts)

OSHA Standard: 1926.453(b)(2)(v)

- Workers in boom lifts (not scissor lifts) must be tied off at all times
- Either a fall restraint system OR a fall arrest system is permitted
- Use the manufacturer's designated anchor point — NOT the guardrail

System	Definition	Key Requirement
Fall Restraint	Lanyard short enough worker cannot reach edge	No fall hazard created
Fall Arrest	Worker can reach the edge; system stops fall	Must stop fall within 6 feet

PART 2 Respiratory Protection

Training Schedule: Weeks 5–8 | OSHA Standard: 29 CFR 1926.1153 & 1910.134

2.1 Silica Dust (Cementitious Fireproofing)

OSHA Standard: 1926.1153 (Respirable Crystalline Silica)

PEL 50 µg/m³ as an 8-hour time-weighted average (TWA)

Exposure Control Methods

Required Method	Details
HEPA-filtered vacuum attachment	Required on all sanding tools
Wet methods	Spray water while sanding or sweeping
Prohibited: Dry sweeping	Never dry sweep silica-containing dust
Prohibited: Compressed air	Never use to clean dust off clothing/surfaces

Respirator Requirements

- When wet methods and vacuums are not feasible: use N100 or P100 respirators
- Medical surveillance required for workers using respirators 30+ days/year
- Medical surveillance includes: chest X-ray and lung function test (spirometry)

2.2 Cartridge Change Schedules (Intumescent Solvents)

OSHA Standard: 1910.134

Solvent	Flash Point	Primary Hazard
Xylene	77–90°F	CNS depression, skin absorption
Toluene	40°F	CNS depression, hearing loss
Acetone	-4°F	Eye irritation, headache

Cartridge Management Protocol

1. Use End of Service Life Indicator (ESLI) if available on cartridge
2. If no ESLI: use a written change schedule based on worst-case conditions
3. Label each cartridge with date and time opened
4. Store cartridges in sealed plastic bags between uses

2.3 Supplied Air vs. Negative Pressure

OSHA Standard: 1910.134

Respirator Type	Use When...	Application
Supplied Air (SAR)	Confined spaces, unknown contaminants, isocyanates	Two-part intumescent systems
PAPR	High dust + moderate VOC; bearded workers	Hot conditions, comfort fit
Half-mask (neg. pressure)	Open areas with known, low-moderate VOC only	Standard spraying operations

PART 3 Chemical & Material Hazards

Training Schedule: Weeks 9–12 | OSHA Standards: 1926.152 & 1910.151

3.1 Flammable & Combustible Liquids

OSHA Standard: 1926.152 (Flammable Liquids)

Storage Limits (Inside Buildings)

Without flammable cabinet	Maximum 25 gallons
With approved flammable cabinet	Up to 120 gallons
Minimum distance from ignition sources	50 feet
Container requirement	Keep closed when not in use

Grounding & Bonding Requirements

RULE When transferring flammable liquids between containers, containers must be electrically interconnected (bonded) to prevent static discharge.

- Metal containers: Attach bonding wire between source and receiving container, then ground
- Plastic containers CANNOT be grounded — use metal containers for flammable solvents

CITE Citation Example: A \$3,741 fine was issued for transferring flammable reducer into an ungrounded, unbonded plastic bucket.

3.2 Alkaline Burns (Cementitious Fireproofing)

OSHA Standard: 1910.151 | Wet cementitious pH = 12–13 (same as oven cleaner)

First Aid for Cementitious Burns

5. Remove contaminated clothing immediately
6. Flush with cool water for 15 minutes minimum
7. Do NOT use neutralizing agents (vinegar, baking soda) — they cause heat reaction
8. Seek medical attention for burns on face, hands, feet, or large areas

Prevention Measures

- Wear chemical-resistant gloves (nitrile, 8+ mil, extended cuff)
- Duct tape pants to boots and gloves to sleeves
- Remove wet Tyvek immediately — do not wait for a break

PART 4 Personal Protective Equipment (PPE)

Training Schedule: Weeks 13–16 | OSHA Standards: 1926.95–1926.104

4.1 Eye & Face Protection

OSHA Standard: 1926.102

Protection Type	Use For	Notes
Safety glasses	Impact only (flying objects)	Minimal protection
Goggles – Direct vent	Dust only	Not for liquids
Goggles – Indirect vent	Dust and splash	Recommended for mixing
Goggles – Non-vented	Liquids and vapors	Use anti-fog coating
Face shield + goggles	Severe splash (mixing, pouring)	Always combine with goggles

4.2 Hand Protection

OSHA Standard: 1926.95 — Match glove material to chemical hazard

Task	Glove Material	Why
Solvent-based intumescent	Nitrile (8+ mil)	Xylene/toluene resistance
Cementitious (wet)	Nitrile or neoprene	Alkali resistance
Board cutting	Cut-resistant A3–A4 + nitrile over	Sharp edges + chemicals
General labor	Leather with reinforced palm	Abrasion resistance

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Do NOT use latex gloves with solvents — latex dissolves on contact with xylene and toluene.

4.3 Foot Protection

OSHA Standard: 1926.96 | Must meet ASTM F2413 standard

- Steel or composite toe required (dropped bags, pails, boards)
- Slip-resistant sole (deep lugs, oil and chemical resistant)
- Minimum 6-inch height (prevents slurry entry)
- Waterproof or water-resistant construction
- Duct tape pants to boots when spraying overhead

4.4 Coveralls (Chemical Protective Clothing)

Guidance: OSHA 1910.132 (Hazard Assessment)

Material	Suitable For	NOT Suitable For
Paper (SMS)	Dry dust only	Any liquids
Tyvek (standard)	Liquid splash, dust, fibers	Solvent-based chemicals
Tychem/Tyvek 800	Solvent-based chemicals (intumescent)	General dry work (overkill)

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Doffing: Remove suit by rolling inside out to contain contaminants. Never shake the suit — this puts dust and fibers in the air.

PART 5 Electrical Safety

Training Schedule: Weeks 25–26 | OSHA Standard: 1926.404 & 1926.302

5.1 Extension Cords & GFCI

RU
LE All 120V, single-phase 15- and 20-ampere receptacle outlets on construction sites must have GFCI protection. Test GFCI before each use (press TEST, then RESET).

Extension Cord Selection Guide

AWG Gauge	Max Amps	Recommended Use
16 AWG	10–13 amps	Lights and small tools only
14 AWG	15 amps	Small tools, short runs
12 AWG	20 amps	Spray rigs, mixers — 100 ft runs
10 AWG	30 amps	Long runs 150+ ft, heavy equipment

5.2 Power-Operated Hand Tools (Spray Rigs)

OSHA Standard: 1926.302 — Pneumatic Tool Safety Requirements

- Hoses must be secured to the tool by a positive means to prevent accidental disconnection
- Safety clips or whip checks must be installed on all connections
- Never exceed the manufacturer's safe operating pressure
- Hoses exceeding 1/2-inch inside diameter must have a safety device at the source

PART 6 Housekeeping & Waste Disposal

Training Schedule: Weeks 27–28 | OSHA Standard: 1926.25

6.1 Daily Housekeeping Requirements

REQUIRED	PROHIBITED
HEPA vacuum for silica-containing dust	Dry sweeping of cementitious dust
Daily cleaning of dust from steel surfaces	Compressed air to clean surfaces or clothing
Remove combustible waste regularly	Leaving bags/pails on steel decks
Clear debris creating slip/trip hazards	Indoor storage of solvent-residue pails

6.2 Waste Disposal Procedures

Empty Cement Bags

- Contain residual silica — handle to minimize dust generation
- Fold or flatten; place in covered container
- Do not leave on steel decks (trip hazard / wind hazard)

Empty Intumescent Pails

- Solvent-based pails contain flammable residue
- Air-dry outdoors (3–7 days) away from ignition sources before disposal
- Do not store indoors
- Remove lids before disposal to prevent vapor trapping

PART 7 Emergency Response

Training Schedule: Weeks 37–39 | OSHA Standard: 1926.35 & 1910.151

7.1 Emergency Action Plan

RU
LE For workplaces with 10+ employees, a written emergency action plan is required. For smaller workplaces, communicate the plan orally.

Required Plan Elements

9. Means of reporting emergencies (fire, medical, chemical release)
10. Evacuation procedures and clearly marked exit routes
11. Assembly point locations (identified in advance)
12. Procedures for accounting for all employees after evacuation
13. Assigned first aid and rescue duties

7.2 First Aid — Chemical Splash

OSHA Standard: 1910.151 | Cementitious material (pH 12–13) meets corrosive definition

Exposure Type	Immediate Action	Follow-Up
Eye exposure	Flush with clean water 15 min minimum; hold eyelids open	Seek medical attention
Skin exposure	Remove clothing; wash with soap and water 15 min	Seek medical attention for burns
High-pressure injection	Go to emergency room immediately — do not wait for pain	Tell doctor 'high-pressure injection'

PART 8 Recordkeeping & Training

OSHA Standards: 1926.21 & 1904

8.1 Required Training Topics

Training Topic	Key Elements
Fall protection	Harness, anchor points, swing fall hazards
Respiratory protection	Fit testing, cartridge change schedules
Hazard communication	SDS review, container labeling
PPE selection & use	Selection, inspection, maintenance, doffing
Emergency action plan	Evacuation routes, assembly points, duties

RULE

Training must be provided at no cost to employees and must be in a language and vocabulary the employee understands.

8.2 Recordkeeping Requirements

OSHA Form 300 & 301	Record all work-related fatalities, injuries, and illnesses
Fatality reporting deadline	Report to OSHA within 8 hours
Hospitalization / amputation / eye loss	Report to OSHA within 24 hours
Respirator medical evaluations	Required before fit testing; re-evaluate if symptoms arise
Silica medical surveillance	Required for workers wearing respirator 30+ days/year

**APPENDI
X A****Quick Reference — OSHA Standards**

Topic	OSHA Standard
Fall Protection	1926.502
Scaffolds	1926.451
Ladders	1926.1053
Silica	1926.1153
Flammable Liquids	1926.152
Electrical (GFCI)	1926.404
Hand Tools / Spray Rigs	1926.302
Personal Protective Equipment	1926.95–1926.104
First Aid	1910.151
Hazard Communication	1926.59
Respiratory Protection	1910.134
Housekeeping	1926.25
Emergency Action Plan	1926.35
Recordkeeping	1904

**APPENDI
X B****Medical Requirements****Respiratory Protection — 1910.134**

- Medical evaluation required before fit testing and initial respirator use
- Re-evaluation required if worker shows signs of respiratory or cardiovascular issues

Silica Medical Surveillance — 1926.1153

- Required for workers who wear a respirator for 30 or more days per year
- Includes chest X-ray interpreted by a B-reader
- Includes lung function test (spirometry)

Last Reviewed	Next Review Date	Safety Officer
[Date]	[Date]	[Name / Title]

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