

## Code Parts Forklift Operators Need to Study For OSHA Forklift Certification

By Standard Number 1910.178 - Powered industrial trucks.  
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Part Number Title:Occupational Safety and Health Standards  
Subpart:1910 Subpart N  
Subpart Title:Materials Handling and Storage  
Standard Number: 1910.178  
Title: Powered industrial trucks.  
Appendix:A  
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### 1910.178(a)

General requirements.

#### 1910.178(a)(1)

This section contains safety requirements relating to fire protection, design, maintenance, and use of fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks powered by electric motors or internal combustion engines. This section does not apply to compressed air or nonflammable compressed gas-operated industrial trucks, nor to farm vehicles, nor to vehicles intended primarily for earth moving or over-the-road hauling.

#### 1910.178(a)(2)

All new powered industrial trucks acquired and used by an employer shall meet the design and construction requirements for powered industrial trucks established in the "American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1-1969", which is incorporated by reference as specified in §1910.6, except for vehicles intended primarily for earth moving or over-the-road hauling.

#### 1910.178(a)(3)

Approved trucks shall bear a label or some other identifying mark indicating approval by the testing laboratory. See paragraph (a)(7) of this section and paragraph 405 of "American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1-1969", which is incorporated by reference in paragraph (a)(2) of this section and which provides that if the powered industrial truck is accepted by a nationally recognized testing laboratory it should be so marked.

#### 1910.178(a)(4)

Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without manufacturers prior written approval. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

#### 1910.178(a)(5)

If the truck is equipped with front-end attachments other than factory installed attachments, the user shall request that the truck be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered.

#### 1910.178(a)(6)

The user shall see that all nameplates and markings are in place and are maintained in a legible condition.

1910.178(e)

Safety guards.

1910.178(e)(1)

High Lift Rider trucks shall be fitted with an overhead guard manufactured in accordance with paragraph (a)(2) of this section, unless operating conditions do not permit.

1910.178(e)(2)

If the type of load presents a hazard, the user shall equip fork trucks with a vertical load backrest extension manufactured in accordance with paragraph (a)(2) of this section.

1910.178(f)

Fuel handling and storage.

1910.178(f)(1)

The storage and handling of liquid fuels such as gasoline and diesel fuel shall be in accordance with NFPA Flammable and Combustible Liquids Code (NFPA No. 30-1969), which is incorporated by reference as specified in §1910.6.

1910.178(f)(2)

The storage and handling of liquefied petroleum gas fuel shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No. 58-1969), which is incorporated by reference as specified in §1910.6.

1910.178(g)

Changing and charging storage batteries.

1910.178(g)(1)

Battery charging installations shall be located in areas designated for that purpose.

1910.178(g)(2)

Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries.

1910.178(g)(4)

A conveyor, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries.

1910.178(g)(5)

Reinstalled batteries shall be properly positioned and secured in the truck.

1910.178(g)(6)

A carboy tilter or siphon shall be provided for handling electrolyte.

1910.178(g)(7)

When charging batteries, acid shall be poured into water; water shall not be poured into acid.

1910.178(g)(8)

Trucks shall be properly positioned and brake applied before attempting to change or charge batteries.

1910.178(g)(9)

Care shall be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) shall be open to dissipate heat.

1910.178(g)(10)

Smoking shall be prohibited in the charging area.

1910.178(g)(11)

Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.

1910.178(g)(12)

Tools and other metallic objects shall be kept away from the top of uncovered batteries.

1910.178(h)

Lighting for operating areas.

1910.178(h)(2)

Where general lighting is less than 2 lumens per square foot, auxiliary directional lighting shall be provided on the truck.

1910.178(i)

Control of noxious gases and fumes.

1910.178(i)(1)

Concentration levels of carbon monoxide gas created by powered industrial truck operations shall not exceed the levels specified in §1910.1000.

1910.178(j)

Dockboards (bridge plates). See subpart D of this part.

1910.178(k)

Trucks and railroad cars.

1910.178(k)(1)

The brakes of highway trucks shall be set and wheel chocks placed under the rear wheels to prevent the trucks from rolling while they are boarded with powered industrial trucks.

## 1910.178(k)(2)

Wheel stops or other recognized positive protection shall be provided to prevent railroad cars from moving during loading or unloading operations.

## 1910.178(k)(3)

Fixed jacks may be necessary to support a semitrailer and prevent upending during the loading or unloading when the trailer is not coupled to a tractor.

## 1910.178(k)(4)

Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

## 1910.178(l)

Operator training.

## 1910.178(l)(1)

Safe operation.

## 1910.178(l)(1)(i)

The employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this paragraph (l).

## 1910.178(l)(1)(ii)

Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer shall ensure that each operator has successfully completed the training required by this paragraph (l), except as permitted by paragraph (l)(5).

## 1910.178(l)(2)

Training program implementation.

## 1910.178(l)(2)(i)

Trainees may operate a powered industrial truck only:

## 1910.178(l)(2)(i)(A)

Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and

## 1910.178(l)(2)(i)(B)

Where such operation does not endanger the trainee or other employees.

## 1910.178(l)(2)(ii)

Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and

practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

1910.178(l)(2)(iii)

All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence.

1910.178(l)(3)

Training program content. Powered industrial truck operators shall receive initial training in the following topics, except in topics which the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace.

1910.178(l)(3)(i)

Truck-related topics:

1910.178(l)(3)(i)(A)

Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;

1910.178(l)(3)(i)(B)

Differences between the truck and the automobile;

1910.178(l)(3)(i)(C)

Truck controls and instrumentation: where they are located, what they do, and how they work;

1910.178(l)(3)(i)(D)

Engine or motor operation;

1910.178(l)(3)(i)(E)

Steering and maneuvering;

1910.178(l)(3)(i)(F)

Visibility (including restrictions due to loading);

1910.178(l)(3)(i)(G)

Fork and attachment adaptation, operation, and use limitations;

1910.178(l)(3)(i)(H)

Vehicle capacity;

1910.178(l)(3)(i)(I)

Vehicle stability;

1910.178(l)(3)(i)(J)

Any vehicle inspection and maintenance that the operator will be required to perform;

1910.178(l)(3)(i)(K)

Refueling and/or charging and recharging of batteries;

1910.178(l)(3)(i)(L)

Operating limitations;

1910.178(l)(3)(i)(M)

Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

1910.178(l)(3)(ii)

Workplace-related topics:

1910.178(l)(3)(ii)(A)

Surface conditions where the vehicle will be operated;

1910.178(l)(3)(ii)(B)

Composition of loads to be carried and load stability;

1910.178(l)(3)(ii)(C)

Load manipulation, stacking, and unstacking;

1910.178(l)(3)(ii)(D)

Pedestrian traffic in areas where the vehicle will be operated;

1910.178(l)(3)(ii)(E)

Narrow aisles and other restricted places where the vehicle will be operated;

1910.178(l)(3)(ii)(F)

Hazardous (classified) locations where the vehicle will be operated;

1910.178(l)(3)(ii)(G)

Ramps and other sloped surfaces that could affect the vehicle's stability;

1910.178(l)(3)(ii)(H)

Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;

1910.178(l)(3)(ii)(I)

Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

1910.178(l)(3)(iii)

The requirements of this section.

1910.178(l)(4)

Refresher training and evaluation.

1910.178(l)(4)(i)

Refresher training, including an evaluation of the effectiveness of that training, shall be conducted as required by paragraph (l)(4)(ii) to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely.

1910.178(l)(4)(ii)

Refresher training in relevant topics shall be provided to the operator when:

1910.178(l)(4)(ii)(A)

The operator has been observed to operate the vehicle in an unsafe manner;

1910.178(l)(4)(ii)(B)

The operator has been involved in an accident or near-miss incident;

1910.178(l)(4)(ii)(C)

The operator has received an evaluation that reveals that the operator is not operating the truck safely;

1910.178(l)(4)(ii)(D)

The operator is assigned to drive a different type of truck; or

1910.178(l)(4)(ii)(E)

A condition in the workplace changes in a manner that could affect safe operation of the truck.

1910.178(l)(4)(iii)

An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.

1910.178(l)(5)

Avoidance of duplicative training. If an operator has previously received training in a topic specified in paragraph (l)(3) of this section, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely.

1910.178(l)(6)

Certification. The employer shall certify that each operator has been trained and evaluated as required by this paragraph (l). The certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

1910.178(l)(7)

Dates. The employer shall ensure that operators of powered industrial trucks are trained, as appropriate, by the dates shown in the following table.

<b>If the employee was hired:</b>	<b>Initial training and evaluation of the employee must be completed:</b>
Before December 1, 1999.	By December 1, 1999.
After December 1, 1999.	Before the employee is assigned to operate a powered industrial truck.

1910.178(l)(8)

Appendix A to this section provides non-mandatory guidance to assist employers in implementing this paragraph (l). This appendix does not add to, alter, or reduce the requirements of this section.

1910.178(m)

Truck operations.

1910.178(m)(1)

Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.

1910.178(m)(2)

No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.

1910.178(m)(3)

Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.

1910.178(m)(4)

The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.

1910.178(m)(5)(i)

When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline.

1910.178(m)(5)(ii)

A powered industrial truck is unattended when the operator is 25 ft. or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle and it is not in his view.

1910.178(m)(5)(iii)

When the operator of an industrial truck is dismounted and within 25 ft. of the truck still in his view, the load engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement.

1910.178(m)(6)

A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, or platform or freight car. Trucks shall not be used for opening or closing freight doors.

## 1910.178(m)(7)

Brakes shall be set and wheel blocks shall be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weakness before they are driven onto.

## 1910.178(m)(8)

There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.

## 1910.178(m)(9)

An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.

## 1910.178(m)(10)

A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.

## 1910.178(m)(11)

Only approved industrial trucks shall be used in hazardous locations.

## 1910.178(m)(14)

Fire aisles, access to stairways, and fire equipment shall be kept clear.

## 1910.178(n)

Traveling.

## 1910.178(n)(1)

All traffic regulations shall be observed, including authorized plant speed limits. A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times.

## 1910.178(n)(2)

The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.

## 1910.178(n)(3)

Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.

## 1910.178(n)(4)

The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.

## 1910.178(n)(5)

Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.

1910.178(n)(6)

The driver shall be required to look in the direction of, and keep a clear view of the path of travel.

1910.178(n)(7)

Grades shall be ascended or descended slowly.

1910.178(n)(7)(i)

When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.

1910.178(n)(7)(iii)

On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.

1910.178(n)(8)

Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.

1910.178(n)(9)

Stunt driving and horseplay shall not be permitted.

1910.178(n)(10)

The driver shall be required to slow down for wet and slippery floors.

1910.178(n)(11)

Dockboard or bridgeplates, shall be properly secured before they are driven over. Dockboard or bridgeplates shall be driven over carefully and slowly and their rated capacity never exceeded.

1910.178(n)(12)

Elevators shall be approached slowly, and then entered squarely after the elevator car is properly leveled. Once on the elevator, the controls shall be neutralized, power shut off, and the brakes set.

1910.178(n)(13)

Motorized hand trucks must enter elevator or other confined areas with load end forward.

1910.178(n)(14)

Running over loose objects on the roadway surface shall be avoided.

1910.178(n)(15)

While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

1910.178(o)

Loading.

1910.178(o)(1)

Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.

1910.178(o)(2)

Only loads within the rated capacity of the truck shall be handled.

1910.178(o)(3)

The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.

1910.178(o)(4)

Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.

1910.178(o)(5)

A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.

1910.178(o)(6)

Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

1910.178(p)

Operation of the truck.

1910.178(p)(1)

If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.

1910.178(p)(2)

Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.

1910.178(p)(3)

Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.

1910.178(p)(4)

No truck shall be operated with a leak in the fuel system until the leak has been corrected.

1910.178(p)(5)

Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.

1910.178(q)

Maintenance of industrial trucks.

1910.178(q)(1)

Any power-operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.

1910.178(q)(2)

No repairs shall be made in Class I, II, and III locations.

1910.178(q)(3)

Those repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated for such repairs.

1910.178(q)(4)

Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.

1910.178(q)(5)

All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.

1910.178(q)(6)

Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts, except as provided in paragraph (q)(12) of this section. Additional counterweighting of fork trucks shall not be done unless approved by the truck manufacturer.

1910.178(q)(7)

Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily.

Where industrial trucks are used on a round-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected.

1910.178(q)(8)

Water mufflers shall be filled daily or as frequently as is necessary to prevent depletion of the supply of water below 75 percent of the filled capacity. Vehicles with mufflers having screens or other parts that may become clogged shall not be operated while such screens or parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service, and not returned to service until the cause for the emission of such sparks and flames has been eliminated.

## 1910.178(q)(9)

When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.

## 1910.178(q)(10)

Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100 °F.) solvents shall not be used. High flash point (at or above 100 °F.) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard shall be consonant with the agent or solvent used.

## 1910.178(q)(12)

Industrial trucks originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a truck which embodies the features specified for LP or LPS designated trucks. Such conversion equipment shall be approved. The description of the component parts of this conversion system and the recommended method of installation on specific trucks are contained in the "Listed by Report."