

Regulations (Standards - 29 CFR)

Powered industrial trucks. - 1910.178

- **Part Number:** 1910
 - **Part Title:** Occupational Safety and Health Standards
 - **Subpart:** N
 - **Subpart Title:** Materials Handling and Storage
 - **Standard Number:** [1910.178](#)
 - **Title:** Powered industrial trucks.
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[1910.178\(a\)](#)

General requirements.

1910.178(a)(1)

This section contains safety requirements relating to the operation, design, maintenance, and use of fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks covered by this section. This section does not apply to compact motorized gas-powered industrial trucks, nor to farm vehicles, nor to tractors used primarily for earth moving or over-the-road hauling.

1910.178(a)(2)

All new powered industrial trucks acquired and used by an employer after the effective date specified in paragraph (b) of 1910.182 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 Sec. 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)

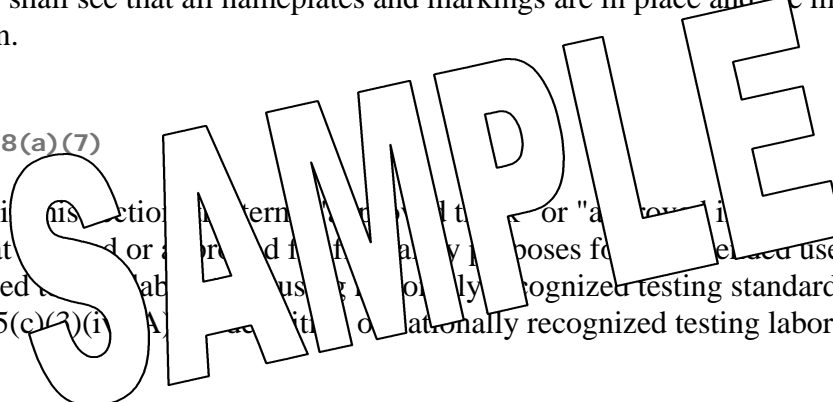
If the truck is equipped with front-end attachments other than factory installed attachments, the user shall request that the truck be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered.

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(a)(7)

As used in this section, the term "truck" or "aerial truck" means a truck that is designed or provided for any purpose for use by a nationally recognized laboratory using nationally recognized testing standards. Refer to 1910.155(c)(2)(i) for information on nationally recognized testing laboratory.



..1910.178(b)

1910.178(b)

Designations. For the purpose of this standard there are eleven different designations of industrial trucks or tractors as follows: D, DS, DY, E, ES, EE, EX, G, GS, LP, and LPS.

1910.178(b)(1)

The D designated units are units similar to the G units except that they are diesel engine powered instead of gasoline engine powered.

1910.178(b)(2)

The DS designated units are diesel powered units that are provided with additional safeguards to the exhaust, fuel and electrical systems. They may be used in some locations where a D unit may not be considered suitable.

1910.178(b)(3)

The DY designated units are diesel powered units that have all the safeguards of the DS units and in addition do not have any electrical equipment including the ignition and are equipped with temperature limitation features.

1910.178(b)(4)

The E designated units are electrically powered units that have minimum acceptable safeguards against inherent fire hazards.

..1910.178(b)(5)

1910.178(b)(5)

The ES designated units are electrically powered units that, in addition to all of the requirements for the E units, are provided with additional safeguards of the electrical system to prevent the emission of sparks or arcs that could ignite flammable vapors or dusts. They may be used in some locations where the use of an E unit may not be considered suitable.

1910.178

The EE designated units are electrically powered units that have, in addition to all of the requirements for the E and ES units, the electric motors and all other electrical equipment completely enclosed. In certain locations the EE unit may be used where the use of an E and ES unit may not be considered suitable.

1910.178(b)(7)

The EX designated units are electrically powered units that differ from the E, ES, or EE units in that the electrical fittings and equipment are so designed, constructed and assembled that the units may be used in certain atmospheres containing flammable vapors or dusts.

1910.178(b)(8)

The G designated units are gasoline powered units having minimum acceptable safeguards against inherent fire hazards.

1910.178(b)(9)

The GS designated units are gasoline powered units that are provided with additional

safeguards to the exhaust, fuel, and electrical systems. They may be used in some locations where the use of a G unit may not be considered suitable.

1910.178(b)(10)

The LP designated unit is similar to the G unit except that liquefied petroleum gas is used for fuel instead of gasoline.

..1910.178(b)(11)

1910.178(b)(11)

The LPS designated units are liquefied petroleum gas powered units that are provided with additional safeguards to the exhaust, fuel, and electrical systems. They may be used in some locations where the use of an LP unit may not be considered suitable.

1910.178

The atmosphere in any location shall be classified as to whether it is hazardous or nonhazardous prior to the admission of industrial trucks being used therein and the type of industrial trucks that may be used therein shall be provided in paragraph (d) of this section for such location.

1910.178(c)

Designated locations.

1910.178(c)(1)

The industrial trucks specified under subparagraph (2) of this paragraph are the minimum types required but industrial trucks having greater safeguards may be used if desired.

1910.178(c)(2)

For specific areas of use see Table N-1 which tabulates the information contained in this section. References are to the corresponding classification as used in subpart S of this part.

1910.178(c)(2)(i)

Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentration of acetylene, butadiene, ethylene oxide, hydrogen (or gases or vapors equivalent in hazard to hydrogen, such as manufactured gas), propylene oxide, acetaldehyde,

cyclopropane, diethyl ether, ethylene, isoprene, or unsymmetrical dimethyl hydrazine (UDMH).

..1910.178(c)(2)(ii)

1910.178(c)(2)(ii)

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1910.178(c)(2)(ii)(a)

Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentrations of metal dust, including aluminum, magnesium, and commercial alloys, other metals of similarly hazardous character; in atmospheres containing carbon black, coal or coke dust except approved power-operated industrial trucks designated as EX may be used in such atmospheres.

1910.178(c)(2)(ii)(b)

In atmospheres where dust or aluminum, aluminum or aluminum bronze may be present, fuses, switches, controllers, and circuit breakers of trucks shall have enclosures specifically approved for such locations.

1910.178(c)(2)(iii)

Only approved power-operated industrial trucks designated as EX may be used in atmospheres containing acetone, acrylonitrile, alcohol, ammonia, benzene, benzol, butane, ethylene dichloride, gasoline, hexane, lacquer solvent vapors, naphtha, natural gas, propane, propylene, styrene, vinyl acetate, vinyl chloride, or xylenes in quantities sufficient to produce explosive or ignitable mixtures and where such concentrations of these gases or vapors exist continuously, intermittently or periodically under normal operating conditions or may exist frequently because of repair, maintenance operations, leakage, breakdown or faulty operation of equipment.

..1910.178(c)(2)(iv)

1910.178(c)(2)(iv)

Power-operated industrial trucks designated as DY, EE, or EX may be used in locations where volatile flammable liquids or flammable gases are handled, processed or used, but in which the hazardous liquids, vapors or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of

such containers or systems, or in the case of abnormal operation of equipment; also in locations in which hazardous concentrations of gases or vapors are normally prevented by positive mechanical ventilation but which might become hazardous through failure or abnormal operation of the ventilating equipment; or in locations which are adjacent to Class I, Division 1 locations, and to which hazardous concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clear air, and effective safeguards against ventilation failure are provided.

TABLE N-1. -- SUMMARY TABLE ON USE OF INDUSTRIAL TRUCKS
IN VARIOUS LOCATIONS

Classes	Unclassified	Class I locations	Class II locations	Class III locations	
Description of classes.	Locations not possessing atmospheres as described in other columns.	Locations in which flammable gases or vapors are present in concentrations above the lower explosive or ignitable limits.	Locations which are hazardous because of the presence of flammable or ignitable liquids, solids, or dusts.	Locations where ignitable fibers or dusts are present in quantities sufficient to produce ignitable mixtures.	
Groups in classes	None	A	B	C	D
Examples of locations or atmospheres in classes and groups.	Piers and wharves inside and outside general storage, general industrial	Acetylene	Hydrogen	Ethyl ether	Gasoline Naphtha Alcohols Acetone Lacquer solvent Benzene

or
commercial
properties.

(Continued)

E	F	G	None
Metal dust	Carbon black coal dust, coke dust	Grain dust, flour dust, starch dust, organic dust.	Baled waste, cocoa fiber, cotton, ... or, ... tle, ... , kapok, ... isal, Sp... moss, syn... etic fibers, tow...
		1	2

SAMPLE

Divisions (nature of hazardous conditions)	None	Above condition exists continuously, intermittently, or periodically under normal operating conditions.	Above condition may occur accidentally as due to a puncture of a storage drum.
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(Continued)

1	2	1	2
Explosive mixture may be present under normal operating conditions, or where	Explosive mixture not normally present, but where deposits of dust may	Locations in which easily ignitable fibers or materials producing combustible	Locations in which easily ignitable fibers are stored or handled (except in

failure of equipment may cause the condition to exist simultaneously with arcing or sparking of electrical equipment, or where dusts of an electrically conducting nature may be present.

cause heat rise in electrical equipment, or where such deposits may be ignited by arcs or sparks from electrical equipment.

flyings are handled, manufactured, or used.

the process of manufacture).

Authorized uses of trucks by type and class of divisions

Groups in classes No. 1 2 3 4 5 6 7 8 9 10

Type of truck authorized:

Diesel:

Type D	.....	D**	...	.....	.....	.....	.....	.....	.....
Type DS	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type DY	.....	.....	.....	.....	.....	.....	.....	.....	.....

Electric:

Type E	.....	E**	...	.....	.....	.....	.....	.....	.....
Type ES	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type EE	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type EX	.....	.....	.....	.....	.....	EX	.....	.....	.....

Gasoline:

Type G	.....	G**	...	.....	.....	.....	.....	.....	.....
Type GS	.....	.....	.....	.....	.....	.....	.....	.....	.....

LP-Gas:

Type LP	.....	LP**	..	.....	.....	.....	.....	.....	.....
Type LPS	.....	.....	.....	.....	.....	.....	.....	.....	.....

Paragraph	210.211	201	203	209
Ref. in		(a)	(a)	(a)
No. 505.				

(Continued)

Authorized uses of trucks by types in groups of classes and divisions

Groups in classes	D	E	F	G	E	F	G	None	None
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Type of truck
authorized:

Diesel:

Type D
Type DS	DS	DS	DS
Type DY	DY	DY .	DY .	DY

Electric:

Type E	.....	.....	.....	.....	.....	.....	.....	.....	E
Type ES	.....	ES .	.....	.....	.....	.....	ES .	.....	ES
Type EE	.....	EE .	.....	.....	.....	.....	EE .	EE .	EE
Type EX	.....	EX .	.....	EX .	EX .	.....	EX .	EX .	EX

Gasoline:

Type G	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type GS	.....	GS .	.....	.....	.....	.....	GS .	.....	GS

LP-Gas:

Type LP	.....	.....	.....	.....	.....	.....	.....	.....	.....
Type LPS	.....	LPS .	.....	.....	.....	.....	LPS .	.....	LPS

Paragraph	194	204	205	206	207	208
Ref. in	(a)	(a)	(a)	(a)	(a)	(a)
No. 505.				(b)		

** Trucks conforming to these types may also be used
-- see subdivision (c)(2)(x) and (c)(2)(xii) of this section.

1910.178(c)(2)(v)

In locations used for the storage of hazardous liquids in sealed containers or liquified or compressed gases in containers, approved power-operated industrial trucks designated as DS, ES, GS, or LPS may be used. This classification includes locations where volatile flammable liquids or flammable gases or vapors are used, but which, would become hazardous only in case of an accident or of some unusual operating condition. The quantity of hazardous material that might escape in case of accident, the adequacy of ventilating equipment, the total area involved, and the record of the industry or business with respect to explosions or fires are all factors that should receive consideration in determining whether or not the DS or DY, ES, EE, GS, LPS designated truck possesses sufficient safeguards for the location. Piping without valves, checks, meters and similar devices would not ordinarily be deemed to introduce a

hazardous condition even though used for hazardous liquids or gases. Locations used for the storage of hazardous liquids or of liquified or compressed gases in sealed containers would not normally be considered hazardous unless subject to other hazardous conditions also.

..1910.178(c)(2)(vi)

1910.178(c)(2)(vi)

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1910.178(c)(2)(vi)(a)

Only approved power operated industrial trucks designated as EX shall be used in atmospheres in which combustible dust is or may be in suspension continuously, intermittently, or periodically under normal operating conditions, in quantities sufficient to produce explosive or ignitable mixtures, or where mechanical failure or normal operation of machinery or equipment might cause such mixtures to be produced.

1910.178(c)(2)(vi)(b)

The EX classification usually includes the following: all storage plants, room containing all pulverizing machinery, scales, open conveyors or spouts, open bins or hoppers, elevators, hopper scales, packing machinery, elevator heads and stock distributors, dust and stock collectors (except all-metal collectors vented to the outside), and all similar dust producing machinery and equipment in grain processing plants, starch plants, sugar pulverizing plants, malting plants, hay grinding plants, and other occupancies of similar nature; coal pulverizing plants (except where the pulverizing equipment is essentially dust tight); all working areas where metal dusts and powders are produced, processed, handled, packed, or stored (except in tight containers); and other similar locations where combustible dust may, under normal operating conditions, be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

..1910.178(c)(2)(vii)

1910.178(c)(2)(vii)

Only approved power-operated industrial trucks designated as DY, EE, or EX shall be used in atmospheres in which combustible dust will not normally be in suspension in the air or will not be likely to be thrown into suspension by the normal operation of equipment or apparatus in quantities sufficient to produce explosive or ignitable mixtures but where deposits or accumulations of such dust may be ignited by arcs or sparks originating in the truck.