Regulatory Applicability Matrix for E10+ and Biodiesel

REG/CODE / EQUIPMENT	OSHA	NFPA 30	NFPA 30A	CA SWRCB	40 CFR 280	IFC	OTHERS
Dispensing Equipment	E10+ (**L**)[1]	E10+/Biodiesel (**L** – Flexible Connectors Only)[4]	E10+/Biodiesel (**L**, **A**)[7]	n/a	n/a	≤E15/Biodiesel (**L**, **ES**, **A**)[14] >E15 (**L**, **ES**, **A**)[15]	NCWM **(A)**
UST	E10+/Biodiesel (**ES**, **C**)[2]	E10+/Biodiesel (**L**, **ES**, **C**)[5]	E10+/Biodiesel (**L**, **ES**, **C**)[8]	E10+/Biodiesel (**L**, **ES**, **C**, **W**)[12]	E10+/Biodiesel (**ES**, **C**)[13]	E10+/Biodiesel (**L**, **ES**, **C**, **A**)[16]	n/a
Piping	E10+/Biodiesel (**ES**)[3]	E10+/Biodiesel (**L**, **ES**, **C**)[6]	E10+/Biodiesel (**L**, **ES**, **C**)[9]	E10+/Biodiesel (**L**, **ES**, **C**, **W**)[12]	E10+/Biodiesel (**ES**, **C**)[13]	E10+/Biodiesel (**L**, **ES**, **C**, **A**)[17]	n/a
Release Detection Equipment	n/a	n/a	E10+/Biodiesel (**L**)[10]	Biodiesel (VPH – **C**)[12]	E10+/Biodiesel (**ES**, **C**)[13]	E10+/Biodiesel (**L** , **A**)[18]	TCEQ **(A)**
Vapor Recovery Equipment	n/a	n/a	E10+/Biodiesel (**L**)[11]	n/a	E10+/Biodiesel (**ES**, **C**)[13]	≤E15/Biodiesel (**L**)[19] >E15 (**L** or **A**)[15]	CARB, TCEQ, MOTEP **(A)**

Key:

L – Listing Requirement, **ES** – Good/Recognized Engineering Standards Requirement, **C** – Compatibility Requirement, **W** – Warranty/Manufacturer Certification, **A** – Equipment is required to be approved. (National Conference on Weights and Measures (NCWM), California Air Resources Board (CARB), Texas Council on Environmental Quality (TCEQ), and Missouri Performance Evaluation Testing Procedures (MOPETP))

Notes:

[1] OSHA 1910.106(g)(3)(iv)(b)(1) – Only listed devices may be used for dispensing Class I liquids.

[2] OSHA 1910.106(b)(1)(i)(c) – Tanks built of materials other than steel shall be designed to specs embodying principles recognized as good engineering design for the material used.

OSHA 1910.106(b)(1)(iii)(a) – Atmospheric tanks shall be built in accordance with acceptable good standards of design. Atmospheric tanks may be built in accordance with the following consensus standards that are incorporated by reference as specified in 1910.6.

(1) Underwriters' Laboratories, Inc., Subjects No. 142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, 1968; No. 58, Standard for Steel Underground Tanks for Flammable and Combustible Liquids, Fifth Edition, December 1961; or No. 80, Standard for Steel Inside Tanks for Oil-Burner Fuel, September 1963.

[3] OSHA 1910.106(c)(2)(ii) – Materials for piping, valves, and fittings - Material other than steel, nodular iron, or malleable iron shall be designed to specifications embodying principles recognized as good engineering practices for the material used.

NOTE: OSHA 1910.307(c)(2)(i) – [Electrical] Equipment shall be approved not only for class of location, but also for the ignitable or combustible properties of the specific gas, vapor, dust, or fiber that will be present.

[4] NFPA 30 Chap. 18.3.7 – Listed flexible connectors shall be permitted to be used where vibration exists.

[5] NFPA 30 Chap. 21.4.1.1 – Tanks and their appurtenances must be made of materials compatible with liquid to be stored. Any doubts about the properties of the liquid to be stored shall be referred to supplier, producer, or other competent authority of the liquid.

NFPA 30 Chap. 21.4.2.1.1 – Atmospheric tanks shall be designed and constructed in accordance with recognized engineering standards. Atmospheric tanks that meet any of the following standards shall be deemed as meeting the requirements of 21.4.2.1: API Spec 12B, *Bolted Tanks for Storage of Production Liquids*; API Spec 12D, *Field Welded Tanks for Storage of Production Liquids*; API Spec 12F, *Shop Welded Tanks for Storage of Production Liquids*; API Standard 650, *Welded Steel Tanks for Oil Storage*; UL 58, *Standard for Steel Underground Tanks for Flammable and Combustible Liquids*; ANSI/UL 80, *Standard for Steel Inside Tanks for Oil Burner Fuel*; ANSI/UL 142, *Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids*; ANSI/UL 1316, *Standard for Glass-Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures*; ANSI/UL 1746, *Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks*; UL 2080, *Standard for Fire Resistant Tanks for Flammable and Combustible Liquids*; and ANSI/UL 2085, *Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids*.

NFPA 30 Chap. 21.5.1 – All tanks…shall be tested before they are placed in service in accordance with the requirements of the code under which they were built.

NFPA 30 Chap. 21.5.1.1 – An approved listing mark on a tank shall be considered to be evidence of compliance with this requirement.

[6] NFPA 30 Chap. 27.4.4.2 – Piping materials chosen shall be compatible with the liquids being handled.

NFPA 30 Chap. 27.4.4.3 – Piping systems of [low melting point materials] shall be designed and built in accordance with recognized standards of design for the particular materials chosen or with approved equivalent standards or shall be listed.

[7] NFPA 30A Chap. 6.3.2 – Dispensing devices for Class I and II liquids shall be listed.

Other Relevant NFPA 30A dispensing requirements:

6.3.2.1 – Listed dispensing devices may be modified provided that the modifications are "listed by report" by an approved testing laboratory or by an AHJ.

6.3.9 – Where liquid is supplied to the dispensing device under pressure, a listed…emergency shutoff valve…shall be installed.

6.3.10 – Where a suction-type dispensing system…produces a gravity head…a listed, vacuum-actuated shutoff valve…shall be installed.

6.5.1 & 6.5.2 – Listed hose assemblies and emergency breakaway devices must be used to dispense fuel.

6.6.1 – Nozzle valves listed in accordance with UL842 must be used to dispense Class I & II liquids.

6.6.3 – Over-head dispensing devices must use a listed, automatic-closing-type hose nozzle valve.

6.8.1 & 6.8.2 – Dispensing devices and hose nozzle valves on vapor recovery systems must be listed.

[8] NFPA 30A Chap. 4.3.1 – USTs shall meet all applicable requirements of Chapters 21 through 23 and 27 of NFPA 30. (See note 4)

[9] NFPA 30A Chap. 5.2.1 – Design, fabrication, assembly, test, and inspection of the piping system shall meet the requirements of Chap. 27 of NFPA 30. (see note 5)

[10] NFPA 30A Chap. 5.4.4 – On remote pressure pumping systems, each pump shall have installed…a listed leak detection device that will provide an…indication if the piping and dispensing devices are not liquidtight.

NFPA 30A Chap. 6.4.2 – Each pump shall have installed…a listed leak detection device that will provide an…indication if the piping of dispenser is leaking.

[11] NFPA 30A Chap. 6.8.1 – Dispensing devices that incorporate vapor recovery shall be listed.

NFPA 30A Chap. 6.8.2 – Hose nozzle valves used on vapor recovery systems shall be listed for the purpose.

NFPA 30A Chap. 10.1.1 – Vapor processing system components, including hose nozzle valves, blowers, vacuum pumps, flame arresters, or systems for preventing flame propagation, controls, and vapor processing equipment shall be individually listed for their intended use.

[12] CCR 23.3.16.2631(b) – The design and construction of all primary containment including any integral secondary containment system, shall be approved by an independent testing organization in accordance with industry codes, voluntary consensus standards, or engineering standards. All other components used to construct the primary containment system, such as special accessories, fittings, coatings or linings, monitoring systems and level controls shall also be approved by an independent testing organization. This requirement became effective on July 1, 1991 for underground storage tanks; January 1, 1992 for piping; and shall be effective on January 1, 1995 for all other components. The exterior surface of underground storage tanks shall bear a marking, code stamp, or label showing the following minimum information: (1) Engineering standard used.

CCR 23.3.16.2631(d) – A secondary containment system which is not an integral part of primary containment shall be designed and constructed according to an engineering specification approved by a state registered professional engineer or according to a nationally recognized industry code or engineering standard. The engineering specification shall include the construction procedures. Materials used to construct the secondary containment system shall have sufficient thickness, density, and corrosion resistance to prevent structural weakening or damage to the secondary containment system as a result of contact with any released hazardous substance.

CCR 23.3.16.2631(d)(6) – Secondary containment systems using membrane liners shall be approved by an independent testing organization in accordance with industry codes, voluntary consensus standards, or engineering standards.

CCR 23.3.16.2631(d)(7) – A membrane liner, if used, shall be installed under the direct supervision of a representative of the membrane liner fabricator or a contractor certified by the fabricator.

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[13] 40 CFR 280.32 – Owners and operators must use an UST system made of or lined with materials that are compatible with the substance being stored in the UST system. Note: Owners and operators storing alcohol blends may use the following codes to comply with the requirements of this section: API Pub. 1626, *Storing and Handling Ethanol and Gasoline-Ethanol Blends at Distribution Terminals and Service Stations*; API Pub. 1627, *Storage and Handling of Gasoline-Methanol/Cosolvent Blends at Distribution Terminals and Service Stations*.

40 CFR 280.12 – *UST System or Tank System* means an underground storage tank, connected underground piping, underground ancillary equipment, and containment system, if any.

40 CFR 280.12 – *Ancillary Equipment* means any devices including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from a UST. (EPA confirms that this definition includes leak detection equipment.)

40 CFR 280.20(a&b) – Tanks and piping must be designed, constructed and protected from corrosion in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory.

40 CFR 280.43(g)(2) – For UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier: (ii) The barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected.

40 CFR 280.43(g)(3) – For tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner, and the liner is compatible with the substance stored.

[14] IFC 2206.7.1 – Electrical equipments, dispensers, hose, nozzles and submersible or subsurface pumps used in fuel-dispensing systems shall be listed.

IFC 2206.7.5 – Dispenser hoses shall be listed and approved.

IFC 2206.7.5.1 – Dispenser hoses for Class I and II liquids shall be equipped with a listed emergency breakaway device.

IFC 2206.7.6 – A listed automatic-closing-type hose nozzle valve…shall be provided on island-type dispensers used for dispensing Class I, II, or IIIA liquids.

IFC 2206.7.9.1.1 – Dispensing devices incorporating provisions for vapor recovery shall be listed and labeled. When existing listed or labeled dispensing devices are modified for vapor recovery, such modifications shall be listed by report by a nationally recognized testing laboratory.

IFC 2705.1.11 – Systems shall be suitable for the use intended and shall be designed by persons competent in such design.

IFC 3405.2 – Liquid transfer equipment and methods for transfer of Class I, II, IIIA liquids shall be approved.

IFC 3405.2.3 – Piping, hoses and valves used in liquid transfer operations shall be approved or listed for the intended use.

[15] IFC 2206.8.1 – Dispensers, hoses, nozzles, breakaway fittings, swivels, flexible connectors or dispenser emergency shutoff valves, vapor recovery systems and pumps used in alcohol blended fuel-dispensing systems shall be listed or approved for the specific purpose.

IFC 2705.1.11 – Systems shall be suitable for the use intended and shall be designed by persons competent in such design.

IFC 3405.2 – Liquid transfer equipment and methods for transfer of Class I, II, IIIA liquids shall be approved.

IFC 3405.2.3 – Piping, hoses and valves used in liquid transfer operations shall be approved or listed for the intended use.

[16] IFC 2703.2.1 – Containers, cylinders, tanks, and other means used for containment of hazardous materials shall be of an approved type.

IFC 3404.2.7 – The design, fabrication, and construction of tanks shall comply with NFPA 30.

IFC 3404.2.11.1 – Underground tanks shall not contain petroleum products containing mixtures of a nonpetroleum nature, such as ethanol or methanol blends, without evidence of compatibility.

[17] IFC 2703.2.2 – Piping, tubing valves and fittings conveying hazardous materials shall be designed and installed in accordance with approved standards.

IFC 2703.2.2.1 – Piping, tubing, valves, fittings and related components shall be designed and fabricated from materials that are compatible with the material to be contained.

IFC 3403.6.2 – Piping system components shall be designed and fabricated in accordance with the applicable standard listed in Table 3403.6.2 [ASME B31, *Code for Pressure Piping*] and Chapter 27 of NFPA 30, except as modified by Section 3403.6.2.1.

IFC 3403.6.9 – Flexible joints shall be listed and approved.

IFC 3403.6.10 – Nonmetallic joints shall be approved and shall be installed in accordance with the manufacturer's instructions.

IFC 3405.2.3 – Piping, hoses and valves used in liquid transfer operations shall be approved or listed for the intended use.

[18] IFC 2206.7.7.1 – Where remote pumps are used to supply fuel dispensers, each pump shall have installed…a listed leak detection device that will detect a leak in the piping and dispensers and provide an indication.

IFC 2703.2.3 – Equipment, machinery and required detection and alarm systems associated with the use, storage or handling of hazardous materials shall be listed or approved.

IFC 2704.2.2.5 – An approved monitoring method shall be provided to detect hazardous materials in the secondary containment system. Where monitoring devices are provided, they shall be connected to approved visual or audible alarms.

IFC 3404.2.11.5.2 – Underground storage tank systems shall be provided with an approved method of leak detection from any component of the system that is designed and installed in accordance with NFPA 30.

[19] IFC 2206.7.9.1.1 – Dispensing devices incorporating provisions for vapor recovery shall be listed and labeled. When existing listed or labeled dispensing devices are modified for vapor recovery, such modifications shall be listed by report by a nationally recognized testing laboratory.

IFC 2206.7.9.2.1 – Equipment in vapor-processing systems, including hose nozzle valves, vapor pumps, flame arresters, fire checks or systems for prevention of flame propagation, controls and vapor-processing equipment, shall be individually listed for the intended use in a specified manner. Vapor-processing systems that introduce air into the underground piping or storage tanks shall be provided with equipment for prevention of flame propagation that has been tested and listed as suitable for the intended use.

IFC 3405.2.3 – Piping, hoses and valves used in liquid transfer operations shall be approved or listed for the intended use.

IFC Definition of "labeled" – Equipment, materials or products to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, inspection agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

IFC Definition of "listed" – Equipment, materials, products or services included in a list published by an organization acceptable to the fire code official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.

IFC Definition of "approved" – Acceptable to the fire code official (The fire chief or other designated authority charged with the administration and enforcement of the code, or a duly authorized representative.)

IFC Definition of "alcohol blended fuels" – Alcohol blended fuels, including those containing 85-percent ethanol and 15-percent unleaded gasoline (E85), are flammable liquids consisting of ethanol or other alcohols blended greater than 15 percent by volume.