



OREGON FIRE CODE Interpretations and Technical Advisories

collaborative service by local and state fire professionals, along with our stakeholders and customers, to provide consistent and concise application of Oregon's fire prevention and life safety regulations.

Date: August 24, 2005

Ruling: Technical Advisory No. 05-01 (Revised Interp. #95-08)

Subject: Intermediate Bulk Containers (IBC's)

Code Reference: 2004 Oregon Fire Code (OFC), based on the 2003 International Fire Code, Chapters 27 (Hazardous Materials) and 34 (Flammable and Combustible Liquids).

Content: How does the OFC regulate the use of IBC's pertaining to the storage, use, dispensing, and/or handling of flammable and combustible liquids and other hazardous materials?

IBC's were originally developed as shipping containers. Their approval was issued by US DOT and the Commerce Dept. of the UN. "IBC" is a generic term used by industry for containers which can range in sizes from 140 to 792 gallons as they are currently constructed. IBC's are currently being used to store and transport flammable and combustible liquids and other types of hazardous materials.

At the present time, IBC's have not received specific approval for any purpose other than for transportation (DOT) by any recognized national testing agency. The State Fire Marshal is unaware of any full-scale fire tests with which to evaluate an IBC's structural stability when exposed to fire conditions. Some small-scale fire tests do show promise, however at this time, there are no recognized standards which are "listed and approved" for IBC fire test scenarios, either small or large-scale. Therefore, fire authorities have no test results upon which to base any evaluation of technical documentation.

IBC's are required to conform to the OFC. Refer to the attached position paper for the State Fire Marshal's findings and position regarding this matter.

- Chapter 34 regulations shall apply when either the primary or secondary hazards of materials are classified as a flammable or combustible liquid.
- Chapter 27 regulations shall apply when hazardous materials are classified for hazards other than flammable or combustible liquids.
- In those cases where materials possess hazardous classifications (flammable/combustible liquid & other hazardous classes), both Chapter 27 and 34 must be complied with.

Office of State Fire Marshal Position Paper

Subject: Intermediate Bulk Containers (IBC's)

Date: August 24, 2005 (Revised Date); December 2, 1994 (Original Date)

IBC's, as they are referred to by industry, come in a variety of sizes, they are usually found constructed of polyethylene (not to be confused with the term "plastic"); however, some IBC's are also constructed using metal materials. For the purposes of this paper, both polyethylene and metal IBC's will be discussed.

FINDINGS: The following findings are based on information available to the Office of State Fire Marshal as of this date and research of the 2004 Edition of the Oregon Fire Code (OFC) as adopted by the State of Oregon. The intent of this position paper is not to deny use of IBC's, but to bring their use into conformance with the OFC code requirements.

- IBC's can be classified into one of three OFC categories, based on their capacity.
 1. Container: a vessel with a volume of 60 gallons or less capacity.
 2. Portable Tank: a vessel with a volume of more than 60 gallons that is designed to be loaded into or upon or temporarily attached to a transport vehicle or ship. This category does not include any cylinder having less than 1,000 pound water capacity, or a cargo tank, tank car tank or trailer carrying cylinders of more than 1,000 pound water capacity.

NOTE: The capacity of portable tanks exclusively containing flammable or combustible liquids are limited to no more than 660 gallons.
 3. Stationary Tank: a vessel packaged or designed primarily for stationary installations not intended for loading, unloading or attachment to a transport vehicle. This category does not include any cylinder having less than 1,000 pounds water capacity.

- IBC's, based on their current approvals, may be used in "off-site" transportation conditions regulated by DOT and UN. However, IBC's are regulated "on-site" by OFC regulations for storage, use, dispensing, and/or handling.

- Based on the capacities of the IBC's, these containers and/or tanks may contain quantities of flammable/combustible liquids or other hazardous materials which exceed the maximum allowable quantities allowed in occupancies classified other than Group H under the Oregon Structural Specialty Code.

- Based on a review of the OFC, the type, design and construction of IBC's is as follows;
 1. IBC's containing flammable/combustible liquids or other hazardous materials intermixed with flammable and/or combustible liquid hazards shall conform to section 3404.3.1 which refers to NFPA 30, section 4.2 for the construction of IBC's. OFC Chapter 34 allows the use of approved containers, portable, and stationary tanks.
 2. IBC's containing other hazardous materials without flammable and/or combustible liquid hazards shall conform to OFC section 2703.2.1. OFC section 2703.2.4 limits the use of tanks to either underground or above-ground stationary tanks.

FINDINGS: (cont.)

- IBC's shall comply with use, dispensing or handling requirements of the OFC.

POSITION:

1. Products to be stored, used, dispensed or handled must be properly identified and classified based on the OFC hazardous materials classifications. When this occurs, the regulation of IBC's become straightforward to address by the fire authority having jurisdiction.
2. When products are classified either as a flammable or combustible liquid (either as a primary or a secondary hazard), IBC's may be used for combustible liquids only and are limited to a maximum size of 60 gallons if constructed of polyethylene. If constructed of metal, IBC's can be used for either type of product and are not limited in size; however, IBC's must comply with the OFC regulations pertinent to their capacity (Container, Portable Tank or Stationary tank). These regulations are specified in Chapter 34 of the OFC.
3. When products are classified for other hazards (other than flammable or combustible liquids), IBC's of any size may be used, provided that they are classified as either a container or stationary tank, subject to complying with the requirements of OFC Chapter 27. The fire authority having jurisdiction will need to determine that the IBC's are constructed "in accordance with approved standards" and that such tanks or containers are an "approved" type.
4. Depending on the products in storage or use and the size of IBC's, an occupancy could be required to comply with Group H occupancy requirements as a result of maximum allowable quantity criteria. This may require an occupancy change through the building department for existing occupancies.
5. Irrespective of the classification of products, the State Fire Marshal will deny any stacking arrangement without specific engineering approvals which are based on design assumptions that all containers are considered full of product.