

## A QUICK REFERENCE GUIDE TO ASME PRESSURE VESSELS AND STEEL API TANKS

### ASME PRESSURE VESSELS

[DixieSouthern.com/products/asme-pressure-vessels/](https://www.dixiesouthern.com/products/asme-pressure-vessels/)

The ASME Boiler & Pressure Vessel Code is an American Society of Mechanical Engineers standard that regulates the design and construction of boilers and pressure vessels.

#### **Section VIII, Division 1**

This division of Section VIII stipulates requirements for the design, fabrication, inspection, testing and certification of either fired or unfired vessels operating at pressures exceeding 15psig. This code is developed utilizing historical industry experience, trending toward a more conservative design.

#### **Section VIII, Division 2**

In contrast to Division 1, Division 2 design is based on stress analysis, allowing for less design margin, higher tensile strength materials and reducing plate thickness. Section VIII, Division 2 may be a cost saving option for vessels greater than 1000psig and is broken down further into two classes.

- **Class 1** – Design option created in 2017 as a less conservative option than Division 1, yet more conservative than Class 2
- **Class 2** – True Division 2

#### **Section VIII, Division 3**

This Division of Section VIII pertains to the design and certification of pressure vessels operating at pressures greater than 10000psig with no maximum. High pressures may occur when a process reaction is introduced.



### API Tanks

[DixieSouthern.com/products/api-tanks/](https://www.dixiesouthern.com/products/api-tanks/)

The American Petroleum Institute established standards for the design and fabrication of welded steel storage tanks. The API standard is applicable for stationary atmospheric and low-pressure petroleum storage tanks. While written specifically for O&G, the standards have become common across many industries.

#### **API 620**

The design configuration of API 620 requires that the user has an elevated or flat bottom on which to set the steel tank. This type of storage tank has a single, vertical, central axis of revolution, and the tank is used for products that have elevated internal pressures, such as liquified natural gas and cryogenic tanks.

#### **API 650**

The design configuration of API 650 covers tanks that support the whole bottom evenly and tanks in non-refrigerated service that have a maximum design temperature of 200 degrees F. API 650 tanks can store oil, gas, chemical, water, and biofuel and are some of the most common steel tanks.



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### UL ABOVE GROUND STORAGE TANKS

[DixieSouthern.com/products/api-tanks/](http://DixieSouthern.com/products/api-tanks/)

The National Fire Protection Association (NFPA) requires atmospheric tanks to be designed and fabricated in accordance with one of several recognized engineering standards, two of which are UL 142 and UL 2085.

#### **UL 142**

Shop fabricated steel tanks used for atmospheric storage of non-corrosive, stable flammable and combustible liquids that have a specific gravity of no greater than (1.0). UL 142 Storage Tanks can be cylindrical, rectangular, or round; and orientated either vertically or horizontally.

#### **UL 2085**

Shop fabricated tanks meeting the UL 142 Standard with additional requirements to classify as a protected storage tank. UL 2085 Storage Tanks meet specific design requirements to ensure a two-hour fire resistance and a secondary containment.



[www.dixiesouthern.com/products/](http://www.dixiesouthern.com/products/)

#### **Sources:**

American Society of Mechanical Engineers – [asme.org](http://asme.org)

American Petroleum Institute – [api.org](http://api.org)

Underwriters Laboratories – [UL.com](http://UL.com)

[www.dixiesouthern.com](http://www.dixiesouthern.com)