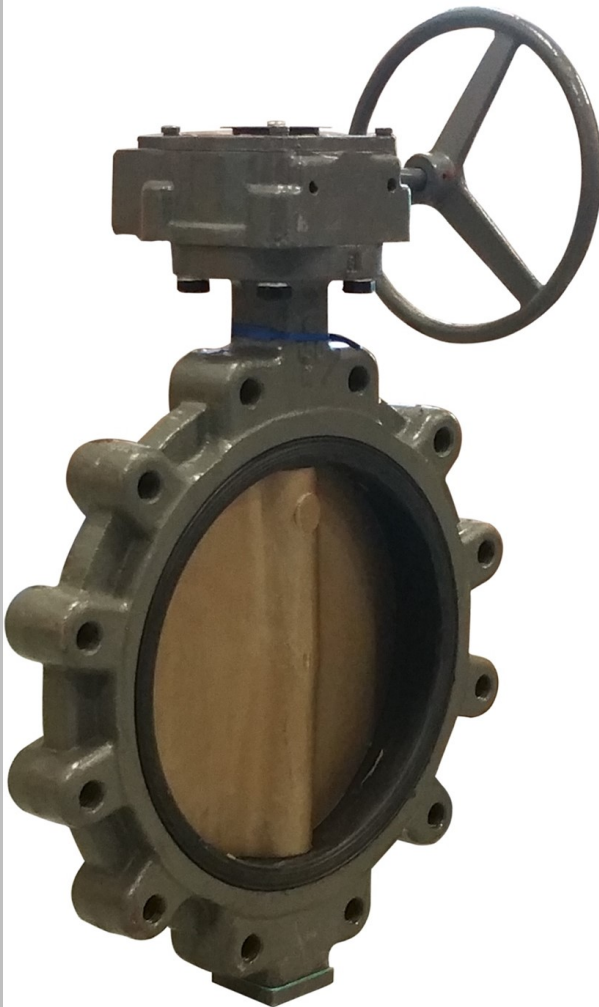


July 31, 2024

## Choosing Between Cast and Ductile Iron Butterfly Valves

When a project calls for resilient-seated (rubber-seated) butterfly valves, the first decision is between body materials, and generally, we're talking about the choice between cast or ductile iron. Just a few months ago, we discussed the differences between those materials, but let's apply that information for [Butterfly Valve](#) installations and see if we arrive at the same conclusions.



Luckily, comparing ductile and cast iron is simple, as these materials have just a few major differences.

**Cast iron** (also known as gray iron) is an alloy made from 96%-98% iron, 2%-4% carbon, and small amounts of silicone. It has impressive temperature tolerances, with some cast iron capable of handling temperatures over 2100° F (1150° C). The two most common pressure classes are class 125 and class 250. Class 125 cast iron flanges are rated for pressures between 150 psi

(for valves 14" and larger) and 200 psi (for valves 12" and smaller). Class 250 cast iron is a bit tougher, with pressure ratings from 300 psi (for valves 14" and larger) to 500 psi (for valves 12" and smaller).

Cast iron is strong and will usually go undamaged even after going through intense vibrations. The primary drawback is that cast iron is not very ductile at all. Virtually any bending will cause cracking. At the same time, cast iron is cost effective, and is usually the most economical option.

**Ductile iron** is a more modern iron alloy made with nodule-shaped graphite. This gives the material excellent ductility, so it will resist cracking when exposed to excess stress. The temperature limit is a bit lower than cast iron, but it is still quite high at 1350° F (730° C). Ductile iron flanges are available in 150 and 300 psi pressure classes. Maximum working pressures are 250 and 640 psi respectively at ambient temperatures. Compared to cast iron, ductile iron



has superior corrosion resistance, tensile strength, and yield strength. These benefits come at a cost. But if your application requires a tougher material, you can justify the additional expense.

Although rarely called out in commercial engineering specifications, cast is more than adequate for almost all applications. Consider that the valve is typically installed

between two pipe flanges. If installed properly, with the bolts tightened in their proper sequence and torques, there is little opportunity for the lug to crack or fail, regardless of whether the valve is cast or ductile.

Often, installers will do a crossover comparison between various butterfly valve manufacturers. For Milwaukee Valve, resilient-seated butterflies are our number one selling valve. Just sheer volume and capacity demands that we offer the cast alternative to our very popular ductile line. And the attributes of cast are more than adequate for almost all commercial applications.

For more information on Milwaukee Valve Iron Butterfly Valves, visit [www.MilwaukeeValve.com](http://www.MilwaukeeValve.com) or contact your Milwaukee Valve customer service rep today. A complete listing, by territory, can be searched at our website, at [www.MilwaukeeValve.com/Find-Sales-Rep/](http://www.MilwaukeeValve.com/Find-Sales-Rep/).



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