The More You Know

MILWAUKEE VALVE

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Why Ductile? Why Cast? What's The Difference In The Iron!

Do You Know… the difference between **cast iron** and **ductile iron**? Iron is one of the most commonly used materials in the world, used for centuries in various applications. Cast and ductile iron are two iron types commonly used in commercial and industrial pipes, valves and fittings. Both materials have advantages and disadvantages, and choosing between them depends on the specific application.

Cast iron has been around for millennia and can be found in artifacts dating back to the 5th century BC. In contrast, ductile iron wasn't developed until the 1940's. Both have similar chemical compositions, which includes the addition of relatively small percentages of carbon and silicon along with a sprinkling of other elements. The primary difference is the alloy process. In the case of cast iron, the carbon forms graphite in the form of flakes and can be seen when fractured giving it the "gray" appearance.

For ductile iron, a small amount of magnesium is added to molten iron, which causes the graphite to form in "nodules" or spheres. These differences make ductile iron more impact resistant, as the cast iron material tends to fracture along the planes of the flakes. Cast iron is more brittle, and ductile iron being more, well, pliable.

But before throwing cast iron under the bus, let's consider some arguments for its use. Cast iron is easy to produce, machines well, and is less expensive than ductile. Cast iron can be more than twice as hard as ductile; therefore it performs far better for dampening

vibration.

When following best installation practices in a well-designed and supported piping system, cast iron is more than adequate. In fact, customers often send photos, asking for identification of old valves in the field. Some of these old cast iron valves may even pre-date the use of ductile in valves, which speaks to their longevity in service.

The inference is often made that cast iron is inferior to ductile. But every day, we trust cast iron to keep ourselves and our families safe.

Chances are, the disc brake rotors and calipers on your car are both made from good old cast iron. Cast iron also has a significantly higher heat-transfer rate than other materials, making it ideal for brake components. Remember drum brakes? Those were also cast iron. Also, the caliper-mounting bolt torque specs can be an astonishing 150 ft. lbs. And speaking of heat transfer; have you ever heard of a ductile iron fry pan? Didn't think so.

Milwaukee Valve has more than 120 years of experience in the valve industry. Iron gates, globes and check valves are one of the pillars of our product offering. Iron butterfly valves are our best-selling product line. The weights, patterns and designs of our products have been tested and refined to meet the highest industry standards and to give your customers complete peace of mind.

Cast (or gray) iron is used for all Milwaukee Valve "M" and "A" series flanged gate, globe and check valves, as well as our "C" and "M" series iron butterfly valves. Ductile (or nodular) iron can be found alongside cast iron in the "M" series butterfly offering.

For more information on Milwaukee Valve iron valves,

visit www.MilwaukeeValve.com. For pricing and delivery information, 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.

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