

Difference Between Galvanized Pipe and Ductile Cast Iron

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Key Difference – Galvanized Pipe vs Ductile Cast Iron

Iron is a metal that is used for the production of different equipment. It is widely used due to its favorable characteristic features. But, there are some unfavorable properties as well. These unfavorable features limit the usage of iron as a metal. Therefore we need methods to get rid these undesirable properties. Galvanization is such a method which is used to prevent iron from **rusting**. Pipes can be galvanized in order to prevent rusting. Ductile cast iron is another method of giving desirable properties to iron. This is done to make iron more flexible and elastic. The key difference between galvanized pipe and ductile cast iron is that **galvanized pipes are produced by applying a zinc coating to cover the surface of pipes whereas ductile cast iron is produced by mixing graphite with iron.**

What is Galvanized Pipe?

Galvanized pipes are pipes made of iron that is coated with a zinc layer. The process that is used to make galvanized pipe is called galvanization. Galvanization is the process of applying a protective zinc coating to **steel or iron** to prevent the metal from rusting.

The processes of production of galvanized pipe include hot-dip galvanization, thermal diffusion galvanizing and electrochemical methods. The most common and cost-effective method is hot-dip galvanization. Here, the pipe is submerged in a hot bath of molten zinc. After taking the pipe out of the bath, a zinc layer is left on the surface of the pipe. This zinc layer acts as a protective coating.

The zinc coating act as a sacrificial anode. Even if the coating is scratched, the exposed iron on the surface of the pipe is protected by the remaining zinc layer.



Figure 01: Galvanized Pipes

Galvanized pipes are used for the distribution of treated water. Treated water is drinking water. This treated water should not be contaminated by rust. Therefore, galvanized pipe is a good choice for this purpose.

What is Ductile Cast Iron?

Ductile cast iron is a type of cast iron made by adding graphite. Cast iron is made by heating iron to melt, and this molten iron is poured into a mould to solidify. Cast iron is composed of iron, [silicon](#) and a small amount of carbon. But ductile cast iron is rich in graphite.

[Brittleness](#) is a problem with most varieties of cast iron. But ductile cast iron is very flexible and elastic. The properties of ductile cast iron can be controlled by controlling the amount of graphite added to the iron. It can vary from 3-60%.



Figure 02: Concrete Lined Ductile Iron

Carbon is added in the form of nodular graphite inclusions. This means graphite is present in ductile cast iron in the form of nodules rather than complete mixing or striated pattern. These rounded nodules inhibit the formation of cracks. Thus, the spherical shape of graphite in ductile cast iron causes the enhanced ductility and impact strength.

What is the Difference Between Galvanized Pipe and Ductile Cast Iron?

Galvanized Pipe vs Ductile Cast Iron

Galvanized pipes are pipes made of iron coated with a zinc layer.

Ductile cast iron is a type of cast iron made by adding graphite.

Composition

Galvanized pipes are made of iron and zinc.

Ductile cast iron is produced with iron, graphite, and silicon along with some other elements in trace amounts.

Presence of Other Elements

Galvanized pipes are made by coating zinc on the iron surface.

Ductile cast iron is made by adding graphite as nodular inclusions into iron.

Importance

Galvanized pipes are protected from rusting by galvanizing them.

Ductile cast iron has enhanced ductility, high impact strength, etc.

Summary – Galvanized Pipe vs Ductile Cast Iron

Galvanized pipe and ductile cast iron can be described as two types of iron. Galvanized pipes are pipes that are made by coating the iron surface with a zinc layer. This prevents the pipes from rusting. Ductile cast iron is made by adding graphite to iron in the form of nodular graphite inclusions. It makes the iron more ductile. This is the main difference between galvanized pipes and ductile cast iron.

References:

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Image Courtesy:

1. “Metals-pipes-texture” (Public Domain) via [PIXINO](#)
2. “DuctileIronConcreteLined” By Yeti Hunter – Working on the site where installation occurred. ([CC BY-SA 4.0](#)) via [Commons Wikimedia](#)

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