

1. What is the differences b/w pattern & casting.
What are the advantages of casting process mention its applications.

Ans: The casting process can produce everything from art pieces to engine parts. The shape is determined by the mold cavity, but something needs to shape the mold it is known as pattern. Patterns are a model for the object to be cast.

Advantages

1. Intricate shapes can be cast
2. Almost all the metals and alloys and some plastics can be cast.
3. Parts can be made almost to the finished shapes.
4. Good mechanical properties.

Applications

1. Liners
2. Machine tool beds
3. Pistons
4. Piston rings
5. Mill rolls
6. Cylinder blocks
7. Automobile parts etc

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2. Difference b/w pressurized & unpressurized gating system with reference to the applications

Pressurized gating system

1. Gating ratio may be of the order of 3:2:1

2. Air aspiration effect is minimum.

unpressurized gating system

1. Gating ratio may be of the order of 1:3:2

2. Air aspiration effect is more.

3. Volume flow of liquid from every ingate is almost equal

4. They are smaller in volume for a given flow rate of metal. Therefore the casting yield is higher.

5. Velocity is high, severe turbulence may occur at corners.

3. Volume flow of liquid from every ingate is different

4. They are larger in volume because they involve large runners & gates as compared to pressurized system and thus the cast yield is reduced.

5. Velocity is low & turbulence is reduced.

4. What are the various patterns used & how the investment casting process takes place discuss its applications.

The various patterns used for casting are

1. Single piece
2. Split
3. Cope and drag
4. Sweep
5. Skeleton
6. Gated
7. Match plate
8. Shell.

In investment casting wax is used for/as pattern making. The following steps are taken in investment casting process:

1. Pattern creation (wax)
2. Mould creation (Sodium Silicate or ceramic or refractory grains)
3. Pattern removal
4. Casting preparation
5. Mould removal
6. Inspection (If any defects)

Applications :

1. Aeroplanes parts
2. Turbine complex shapes
3. Turbine blades
4. Military parts
5. Marine parts

5. What is the difference b/w AC arc welding & DC arc welding?

AC arc welding	DC arc welding
1. More efficiency	1. less efficiency
2. Power consumption is less	2. Power consumption is more.
3. Cost of equipment is less.	3. Cost of equipment is more.

4. High voltage which is not safe.

4. low voltage which is safe.

5. Non ferrous metals are not suitable.

5. Suitable for both ferrous & non ferrous metals.

6. Not suitable for welding thin sections

6. For thin & thick sections.

7. Any terminal can be connected to work & electrode.

7. +ve terminal connected to work and -ve to electrode.

6. Describe Oxycetylene techin & give its applications.

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3. a) What is the significance of shrinkage in the production of casting?

They play an essential role in promoting directional solidification where the metal solidifies at the furthest point first before moving towards the riser. Using this approach, the cavity forms in the risers and not the casting.

- b) Explain solidification of metals

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6. Describe Oxyacetylene techin & give its applications.

i. It is the common method of gas welding.

ii. The Oxy-acetylene welding process combines oxygen and acetylene gas to provide a high temperature flame for welding.

iii. This temperature provides enough heat to melt metal mostly.

iv. The chemical reaction b/w acetylene and oxygen is exothermic in nature.

v. Oxy-acetylene flame may also be used for all types of brazing.

vi. Oxy-acetylene welding is a manual process.

Applications :

1. It is used for welding & cutting operations for metals & alloys.