

## Acces PDF Directional Solidification Of Steel Castings

# **Directional Solidification Of Steel Castings**

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## **Ductility - an overview | ScienceDirect Topics**

The flow of material through the mold can be controlled by good mold design and employment of techniques such as directional solidification. Other shrinkage defects include: Sponge shrinkage usually arises in the thicker mid-section of the casting product and causes a thin

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lattice texture similar to filament or dendrites to develop.

## **Castings - ZOLLERN**

The latter aspect is taken care of by adopting techniques like directional solidification (to ensure that castings solidify in a directional manner, towards the feeder) which is achieved by having

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widest parts near the feeders, and/or using chills at points away from the feeders. These way shrinkage cavities are confined to feeders only.

## **Chapter 11: Fundamentals of Casting**

What is Casting? Casting is a manufacturing process by which a

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molten material such as metal or plastic is poured into a mold, which contains a hollow cavity of the desired shape, and then allowed to solidify. This solidified part is ejected or broken out from mold to make a fabricated part; this process is known as casting.

### **MCQ on Production Process - I -**



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## **Amit Mahto**

The ductility of the adhesive layer in shear is the key property affecting the joint strength; the reference parameter is the ultimate adhesive shear strain energy, which is proportional to the toughness given by the area under the stress-strain curve (Hart-Smith, 1973a). In addition, ductility offsets the

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effect of shear and peel stress peaks.  
The shear stress-strain response varies  
with ...

### **Casting (metalworking) - Wikipedia**

Solidification of Metals 1.

Thermodynamically, both liquid and  
solid have equal energy at melting point  
and therefore both are equally stable at

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melting point. 2. Therefore, no solidification or melting will take place at the melting point. Liquid will remain liquid and solid will remain solid. 3. Some under-cooling will be essential for ...

**FLOW-3D CAST | State-of-the-art  
Metal Casting Simulation**

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Acurad is an anagram for accurate, reliable, and dense. It combines stable fill and directional solidification to create fast cycle times. It includes thermal analysis, flow and fill modeling, heat treatable castings, and indirect squeezing. Double pistons increase the pressure when the shot is partially solidified. Gravity

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## **STEEL CASTINGS HANDBOOK - SFSA**

In metalworking and jewelry making, casting is a process in which a liquid metal is delivered into a mold (usually by a crucible) that contains a negative impression (i.e., a three-dimensional negative image) of the intended shape. The metal is poured into the mold

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through a hollow channel called a sprue. The metal and mold are then cooled, and the metal part (the casting) is extracted.

### **Die Casting: What is it? Overview, Process, Design, Material**

The axis may be horizontal, vertical, or inclined. Casting cools and solidifies

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from outside towards the axis of rotation; so it results in good directional solidification. Hence castings are free from shrinkage. It may be produced in metal or sand lined mold, depending largely upon the quantity desired.

**What Is Casting?- Definition, Process, And Types ...**

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The major cause is failure to obtain directional solidification of the casting towards the desired heat centres, such as risers and ingates, insufficiently high pouring temperature and placing of ingates adjacent to heavy sections. ... It is a casting defect which occurs during the middle and later stages of solidification of the cast steel ...



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## **Directional Solidification Of Steel Castings**

Directional solidification (DS) and progressive solidification are types of solidification within castings. Directional solidification is solidification that occurs from farthest end of the casting and works its way towards the

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sprue. Progressive solidification, also known as parallel solidification, is solidification that starts at the walls of the casting and progresses perpendicularly from ...

### **Directional solidification - Wikipedia**

Internal Soundness/Directional Solidification Steel castings begin to

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solidify at the mold wall, forming a continuously thickening envelope as heat is dissipated through the mold-metal interface. The volumetric contraction which occurs within a cross section of a solidifying

## **Metallurgical Processes and Defects in Steel Products ...**

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Ease of obtaining directional solidification. • High cooling rate due to high heat conduction coefficient of metal molds. • Metal cores that can be separated from the casting and/or adjacent to the mold can be used. • High tooling cost. • Applicable mostly to metals having low melting point. • Short mold life in steel and iron ...

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## **White Cast Iron - Types, Microstructure, and Applications**

FLOW-3D CAST is a state-of-the-art metal casting simulation modeling platform that combines extraordinarily accurate modeling with versatility, ease of use, and high performance CLOUD computing capabilities. For every metal

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casting process, FLOW-3D CAST has a workspace ready to put you on a quick, intuitive path to modeling success. With 11 process workspaces, powerful post-processing ...

## **Types Of Casting Processes - Diagram, Working, Advantages**

The directional solidification in casting

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can be improved by using \_\_\_\_\_ a) chaplets and riser b) chills and padding ... The castings produced by centrifugal casting method have open and coarse grained structure d) The castings produced by centrifugal casting method have fine grained structure ... High speed steel drills can be operated at ...

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## **Causes of Shrinkage in Casting Process and Solutions**

.3 HANDBOOK OF STRUCTURAL STEEL  
CONNECTION DESIGN - 3TH  
EDITIONAKBAR R. TAMBOLI

## **Solidification of Metals | Industries | Metallurgy**

Solidification can occur over a range of



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temperatures in alloys Beginning and end of solidification are indicated by changes in slope Figure 11-3 Cooling curve for a pure metal or eutectic-composition alloy (metals with a distinct freezing point), indicating major features related to solidification.

**What is Investment Casting? -**

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## **European Investment Casters ...**

Segregation defects greatly affect the service performance and working life of castings during the vacuum arc remelting (VAR) process. However, the corresponding research on the prediction of segregation defects is still not comprehensive. Through considering the influence of water-cooled crucible on

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the electromagnetic field inside an ingot, a full-scale model for the comprehensive prediction ...

### **Metals | Free Full-Text | Numerical Investigation of ...**

Cooling or directional solidification has a huge impact on microstructure of White cast iron. If fast cooling is only allowed

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on the surface than chill cast iron is developed which contains grey structure (graphite flakes) within the center region. To grasp the importance of solidification, Follow cast-iron types.

### **Permanent Mold Casting - an overview | ScienceDirect Topics**

Examples of early investment castings

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are found in Europe, Asia, Africa and South America. Many of these castings are very intricate and show a high degree of crasmanship. ... examples are stainless steel alloys, brass, aluminium, carbon steel and glass. ... directional solidification and last generations of single Crystal blades and vanes have ...

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## **Solidification of material - SlideShare**

We transform artists' ideas into unique cast products using CAD and cast simulation applications and plenty of experience in art casting. Castings are made for sculptures, for example, that meet very specific quality requirements. Controlled solidification during the

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casting process creates almost pore-free surfaces under the casting skin.