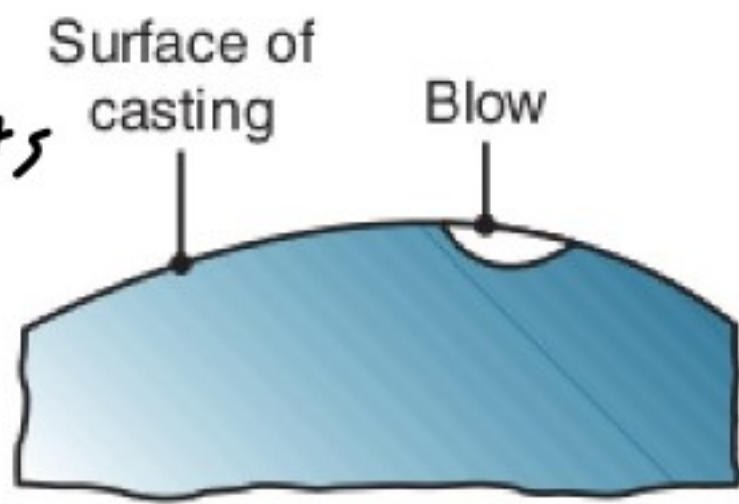
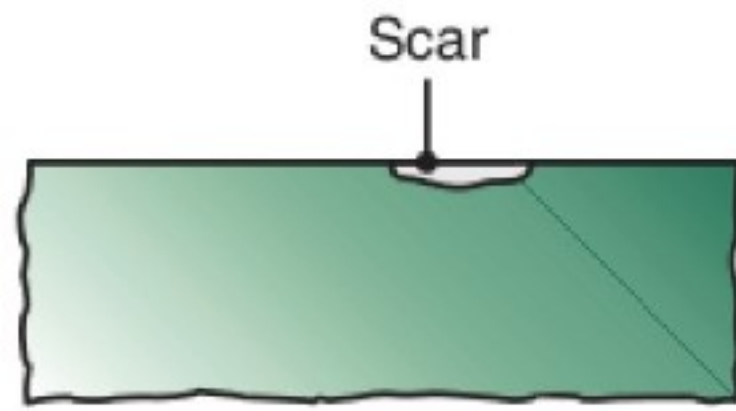


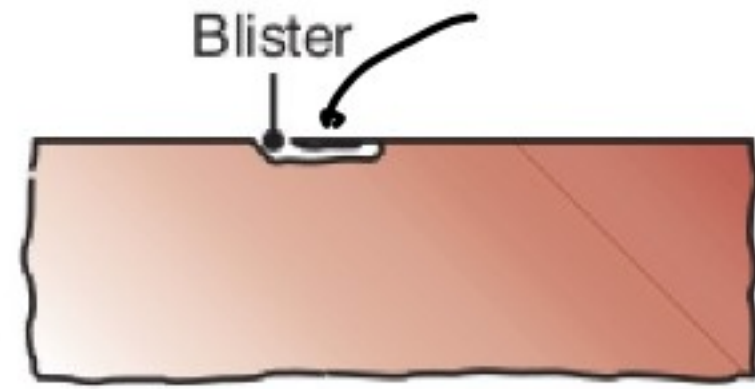
Defects



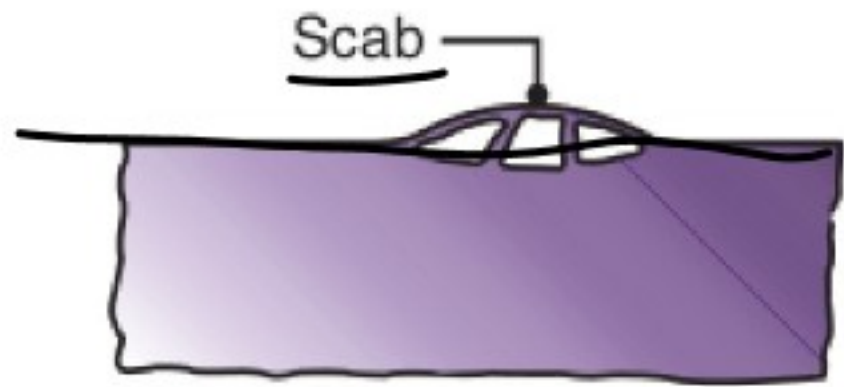
(a)



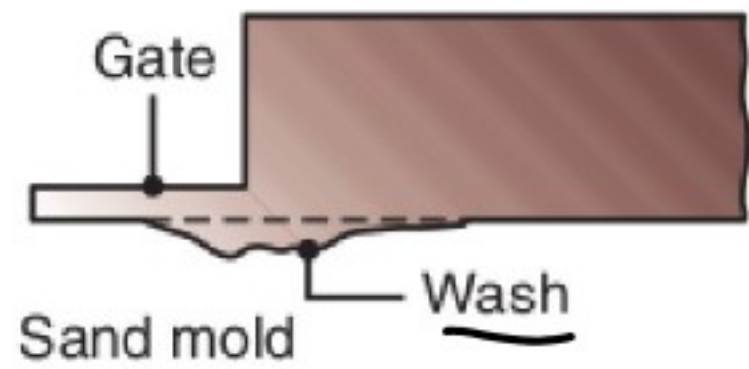
(b)



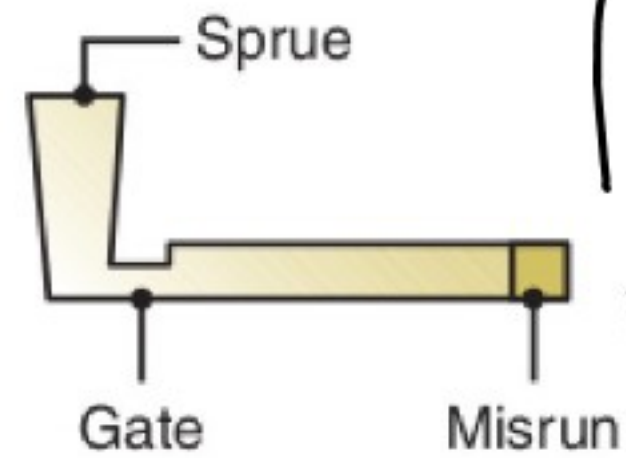
(c)



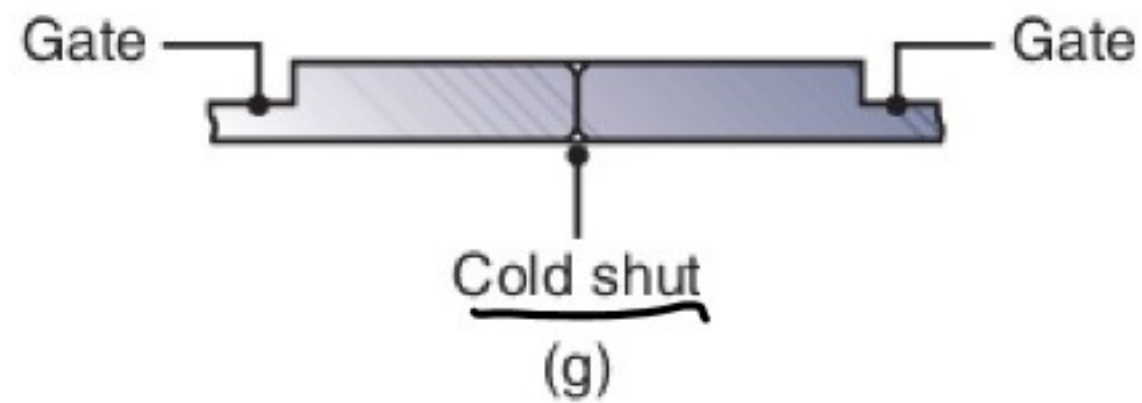
(d)



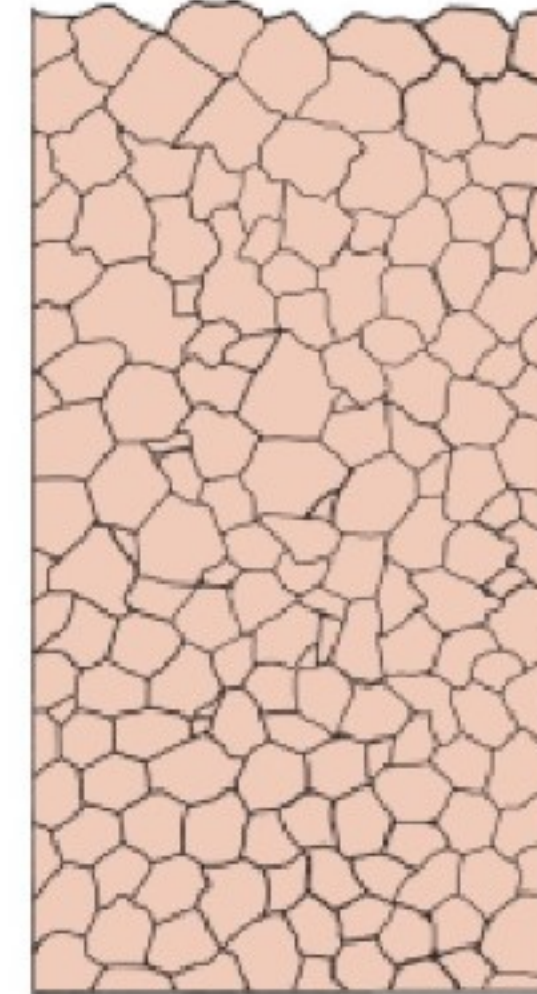
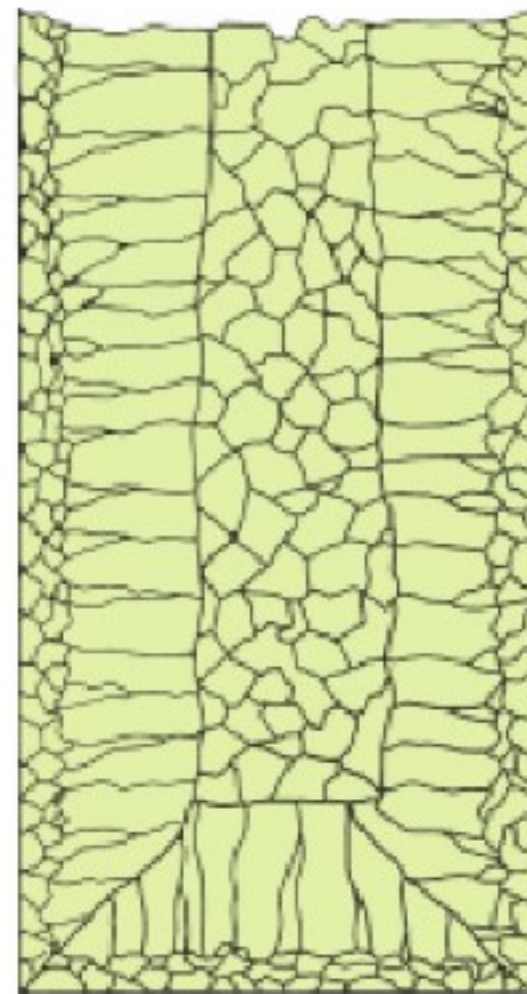
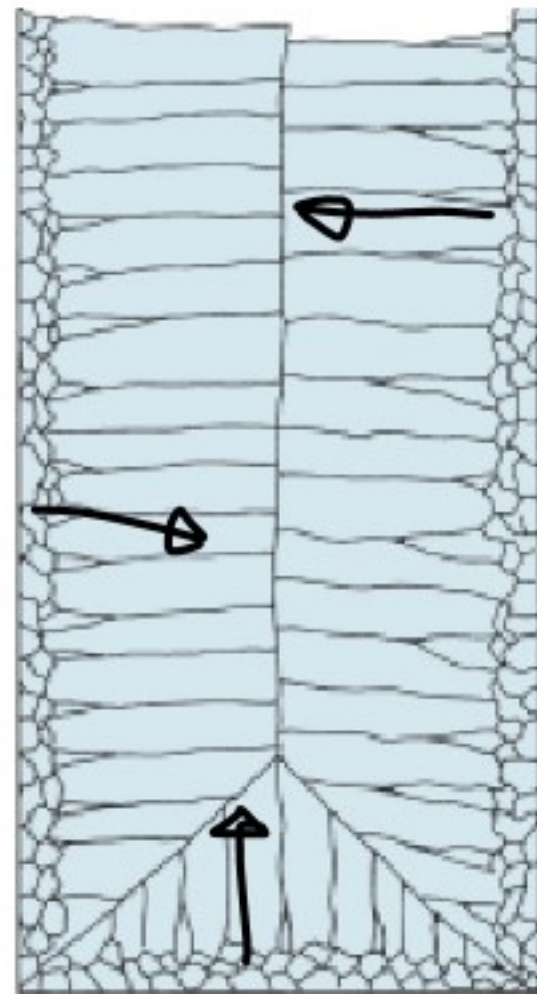
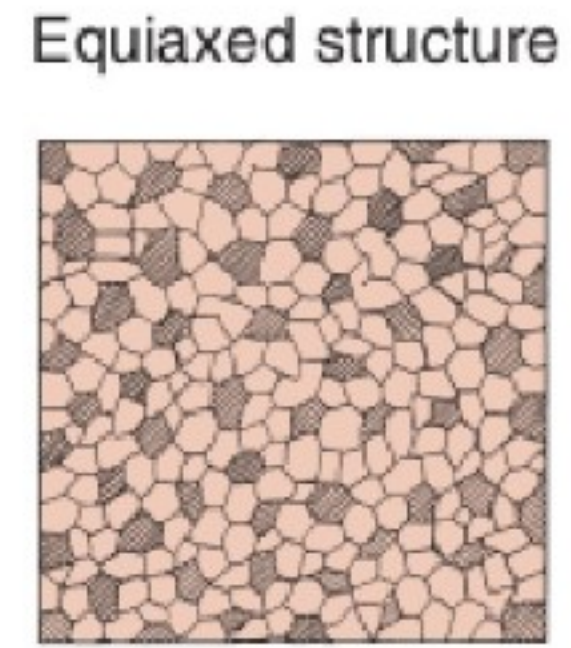
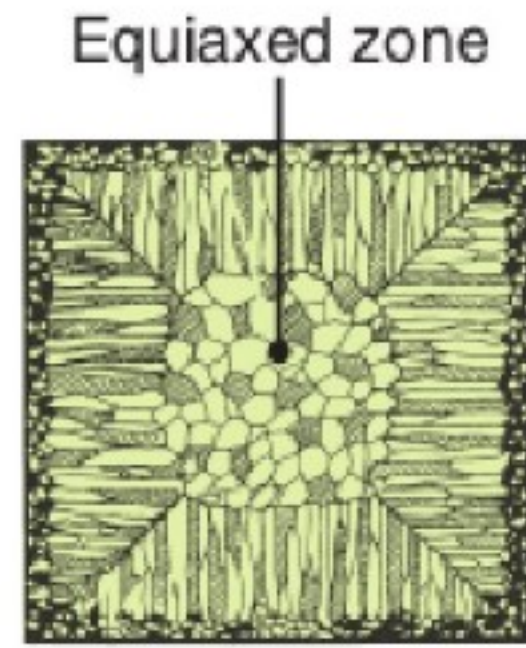
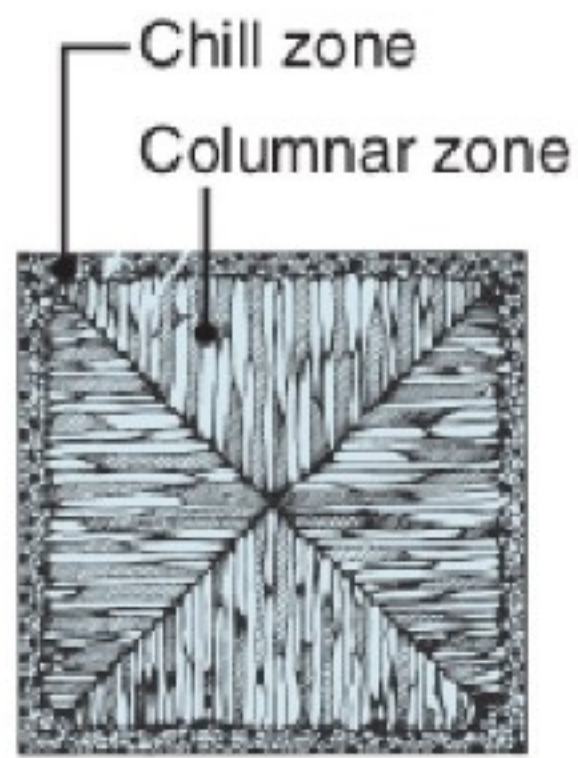
(e)



(f)

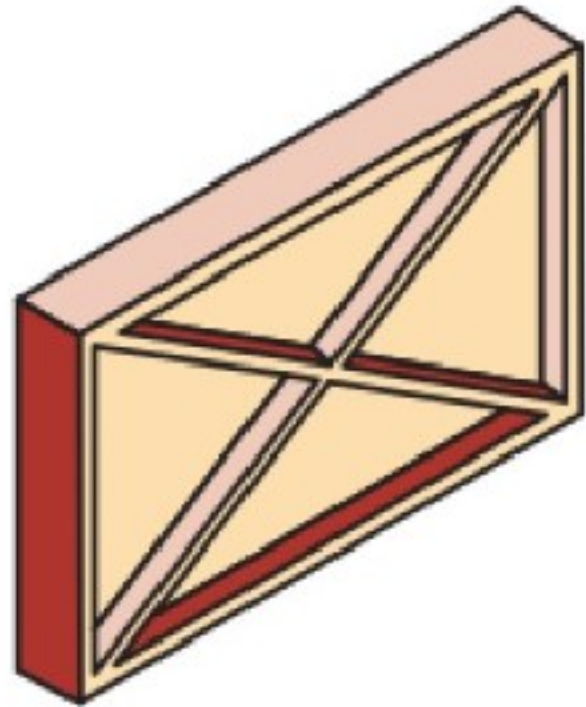


(g)



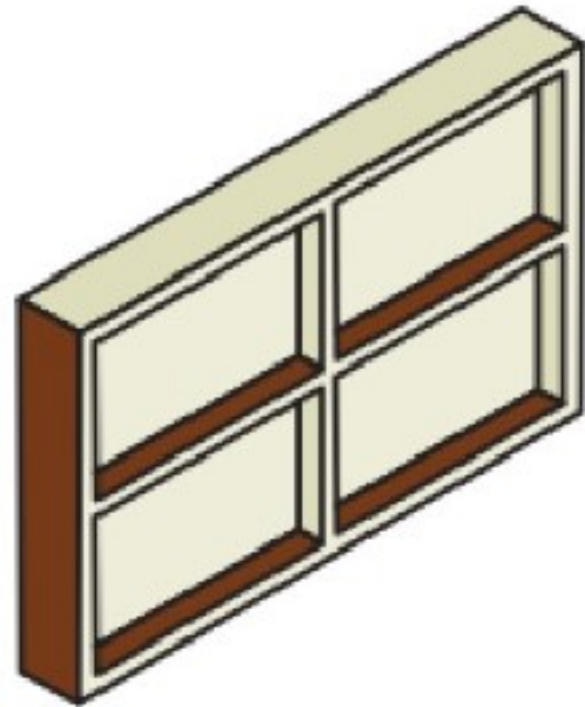
| Metal | Shrinkage allowance (%) |
|----------------------|-------------------------|
| Cast Irons | |
| Gray cast iron | 0.83–1.3 |
| White cast iron | <u>2.1</u> |
| Malleable cast iron | 0.78–1.0 |
| Aluminum alloys | 1.3 |
| Magnesium alloys | 1.3 |
| Copper alloys | |
| Yellow brass | 1.3–1.6 |
| Phosphor bronze | 1.0–1.6 |
| Aluminum bronze | 2.1 |
| High-manganese steel | 2.6 |

Poor



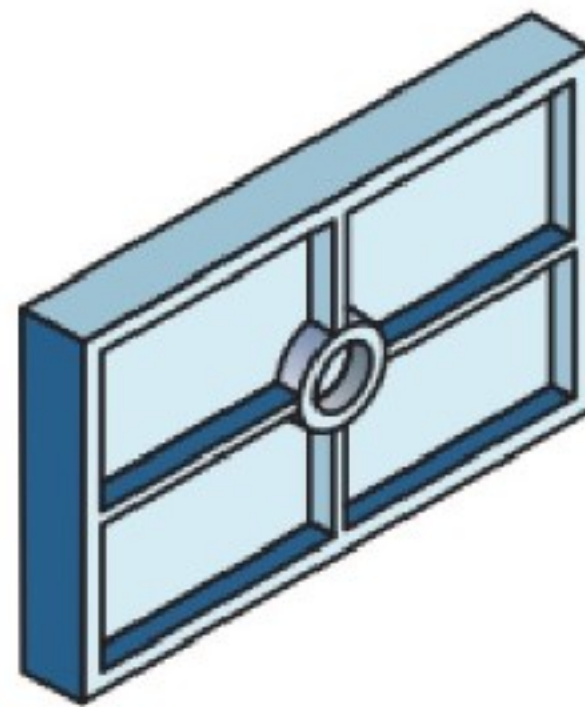
(a)

Poor



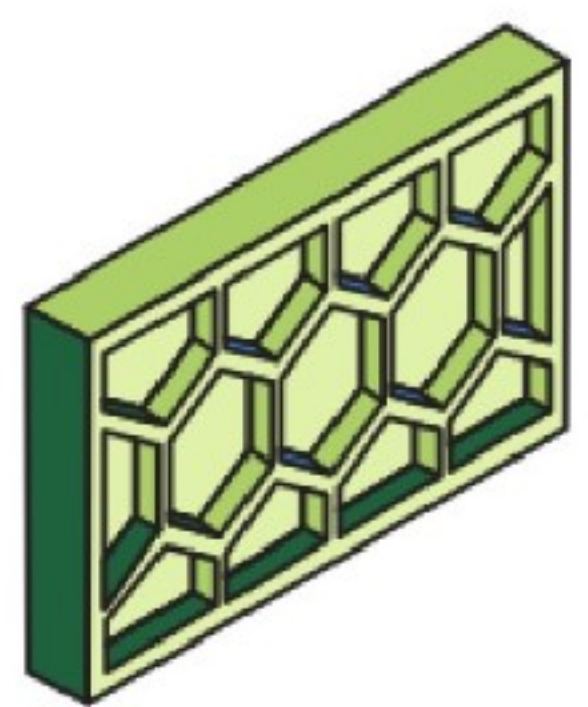
(b)

Good



(c)

Best

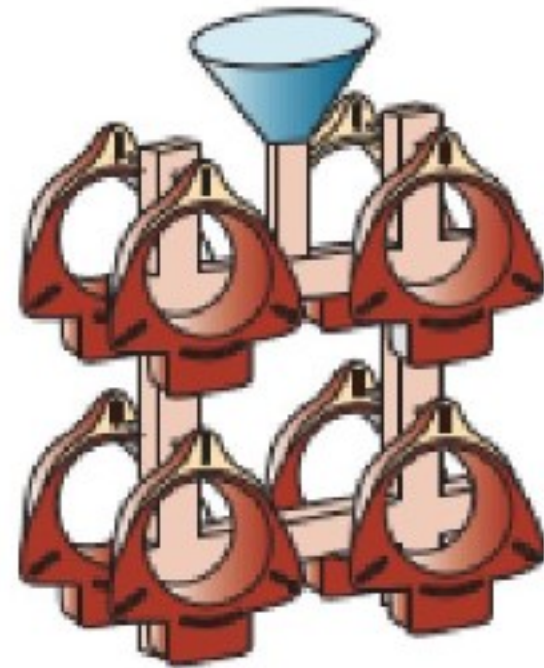


(d)

Lost Foam



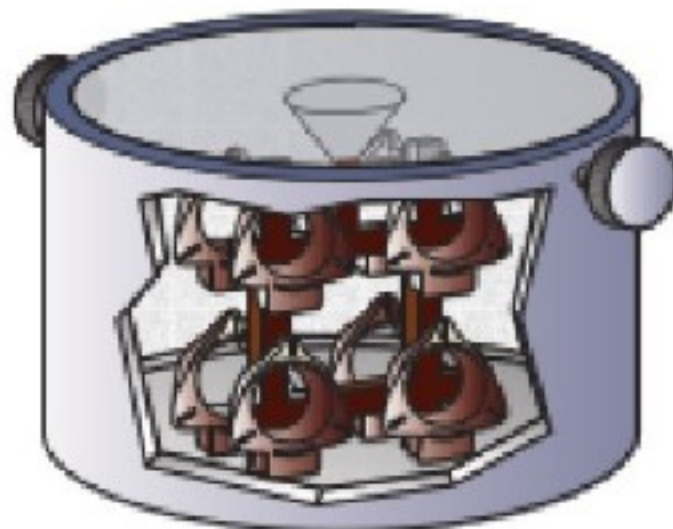
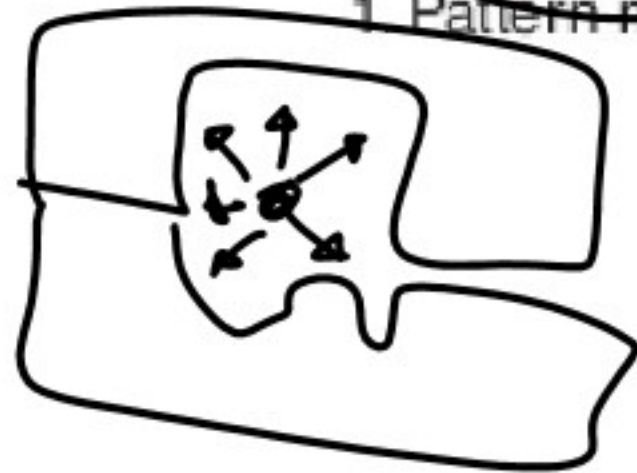
1. Pattern molding



2. Cluster assembly



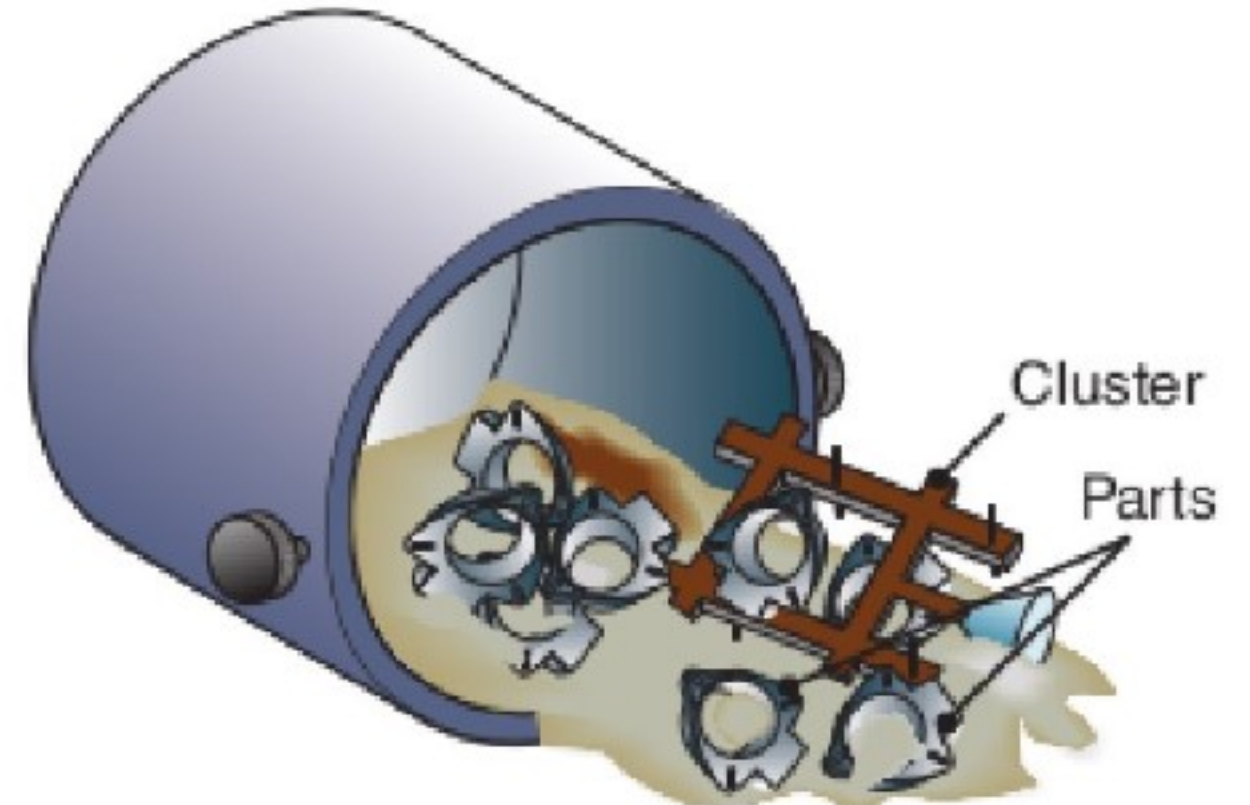
3. Coating



4. Compacted in sand



5. Casting

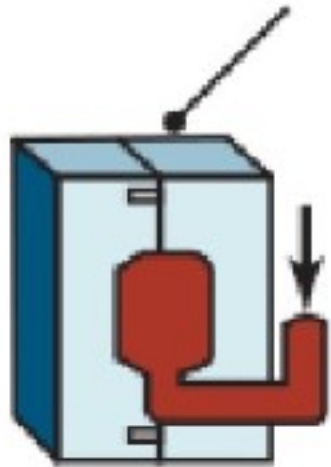


6. Shakeout

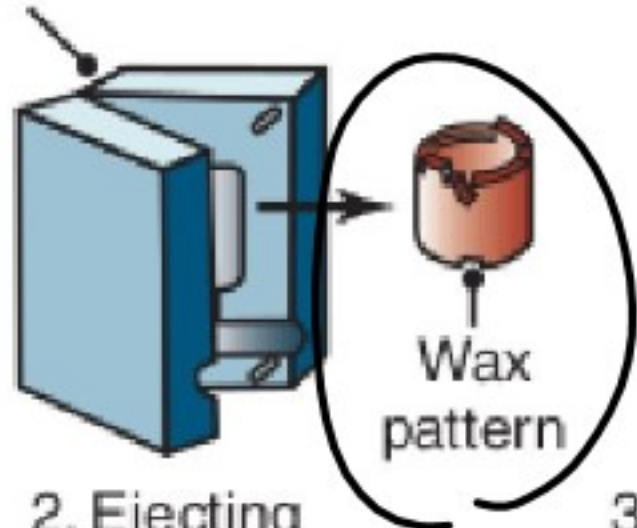
Investment Casting

Lost Wax

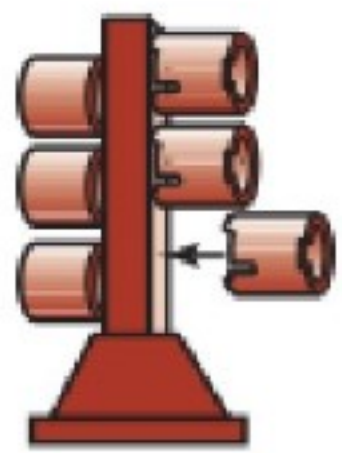
Mold to make pattern



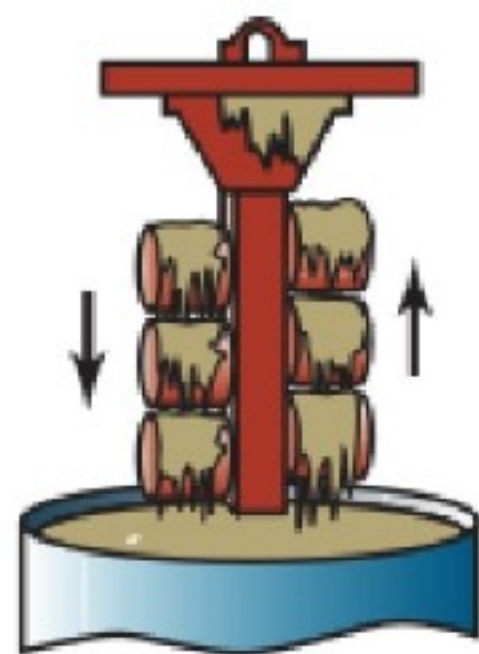
1. Injecting wax or plastic pattern



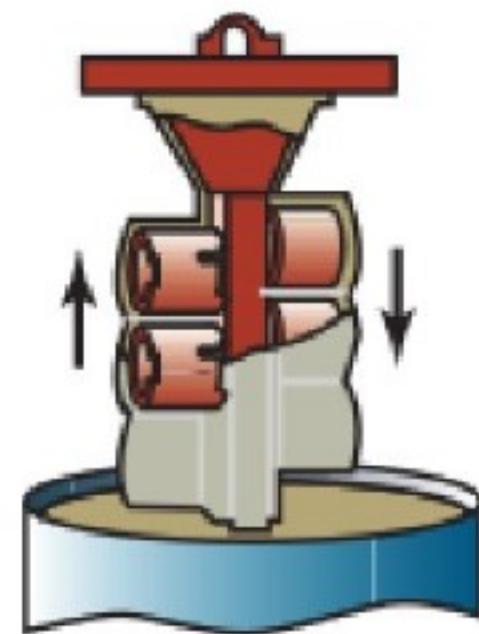
2. Ejecting pattern



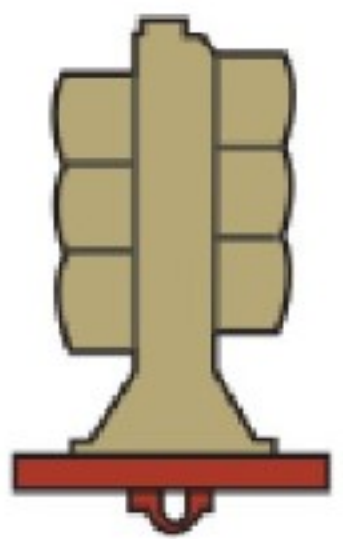
3. Pattern assembly (Tree)



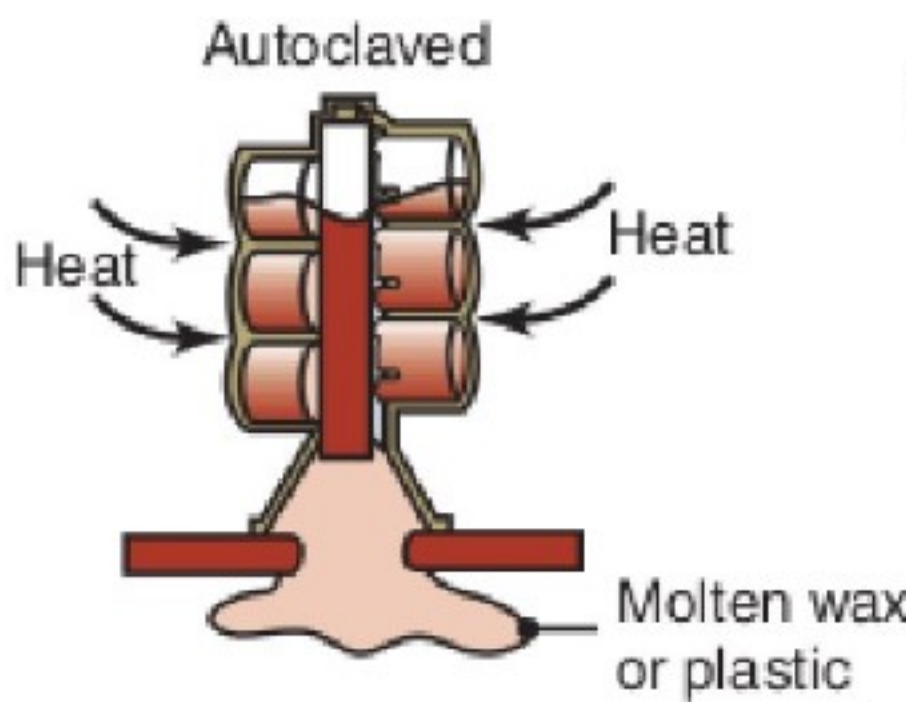
4. Slurry coating



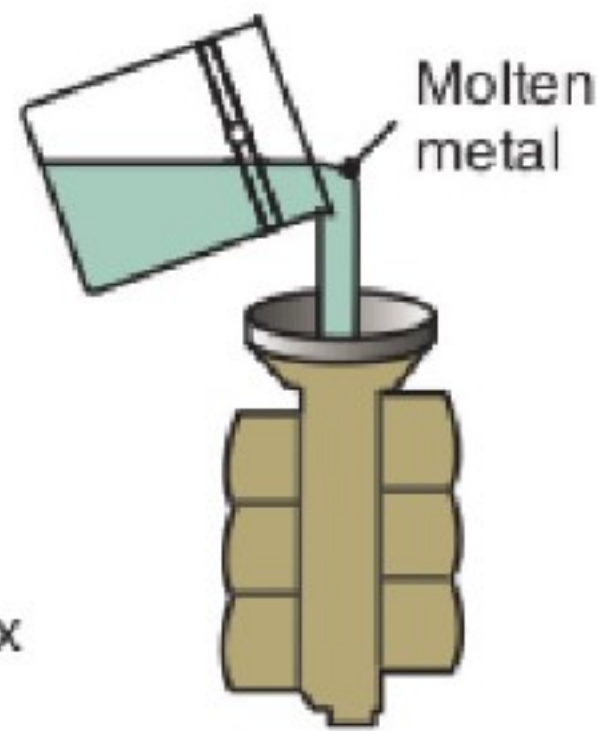
5. Stucco coating



6. Completed mold



7. Pattern melt-out



8. Pouring



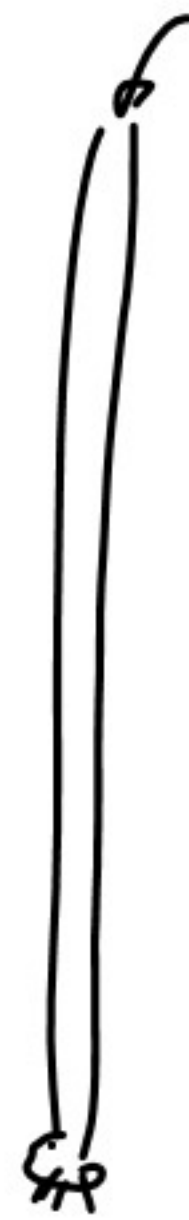
9. Shakeout



Casting

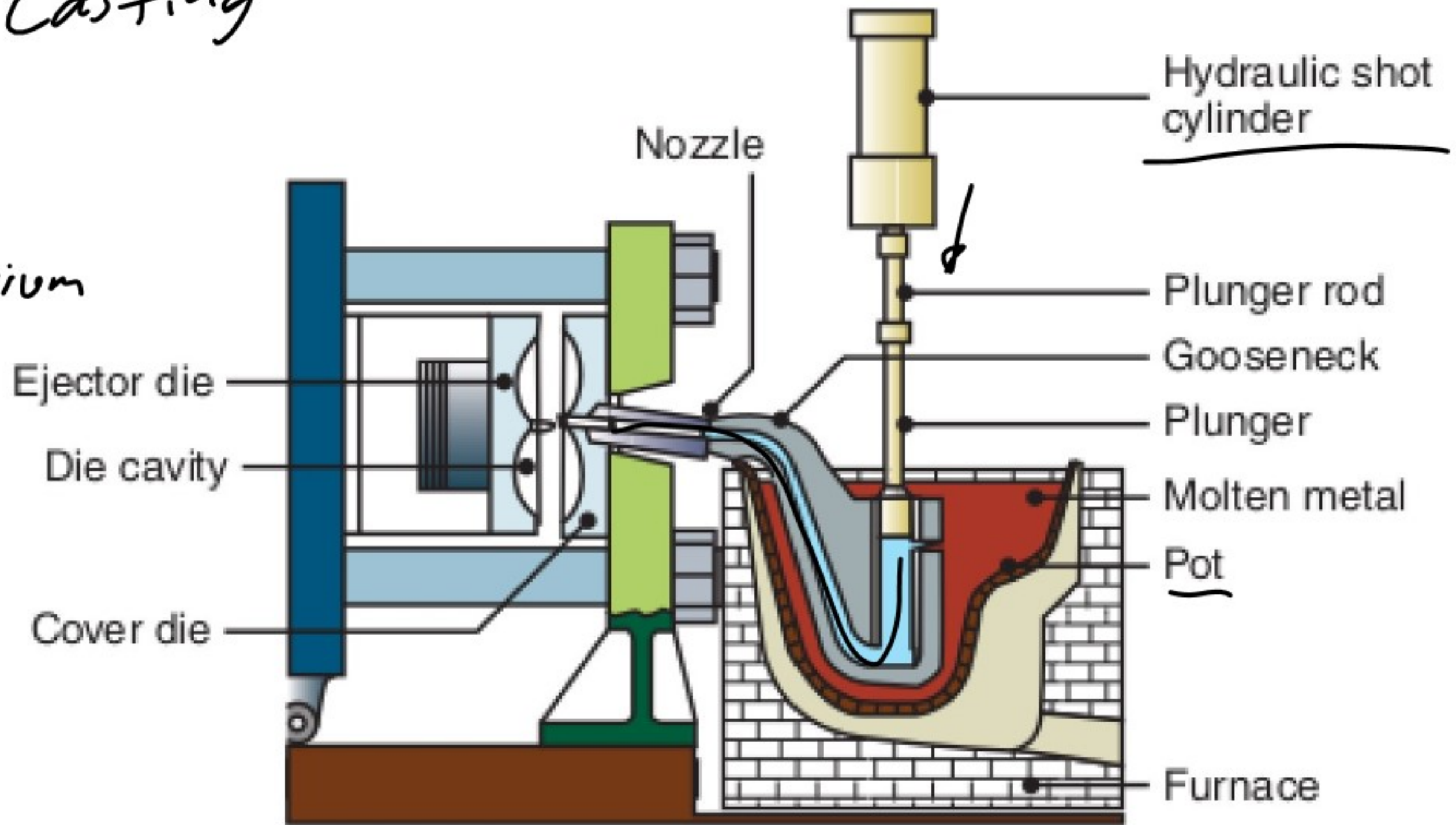


10. Pattern

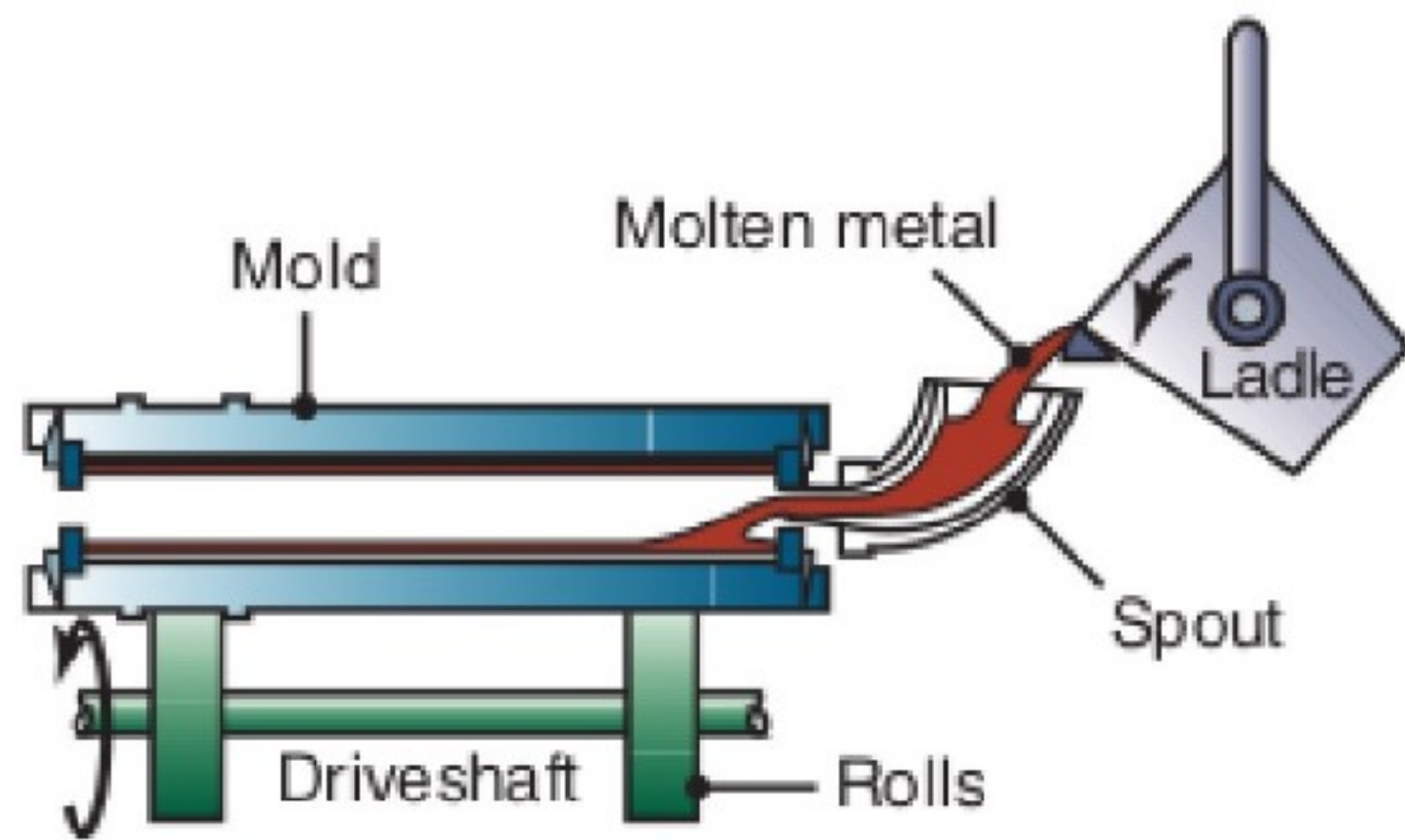


Die Casting

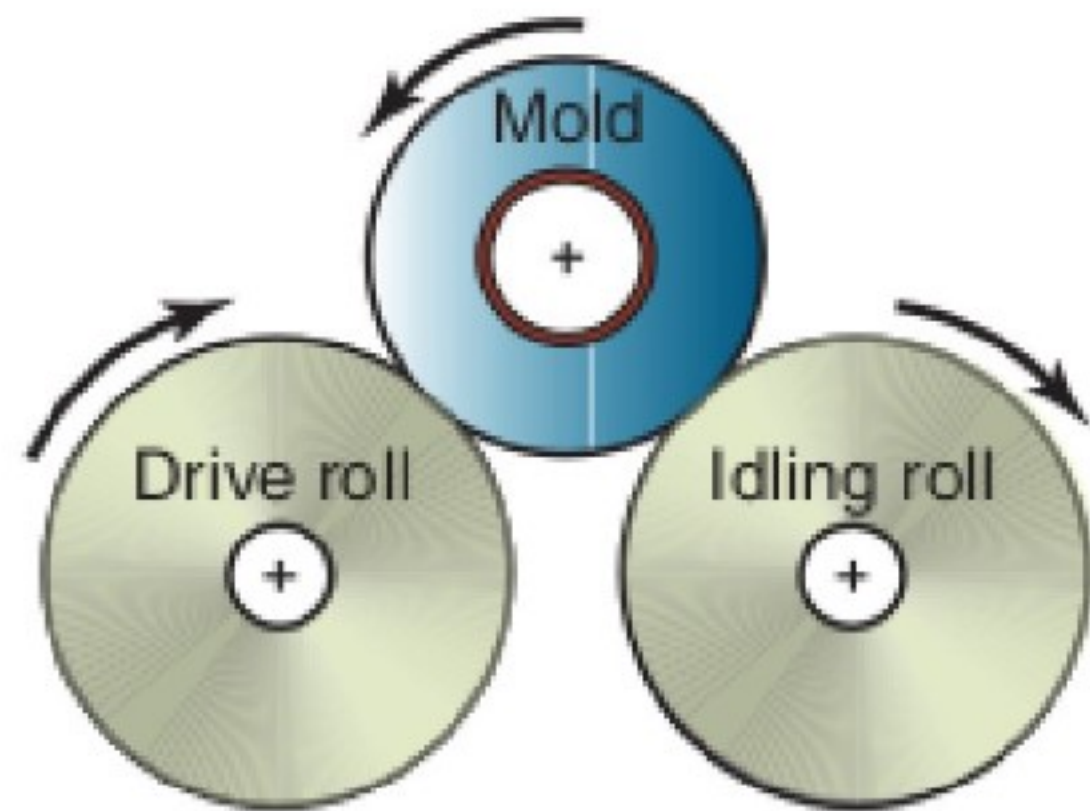
Zinc
Magnesium
Tin
Lead



Centrifugal Casting

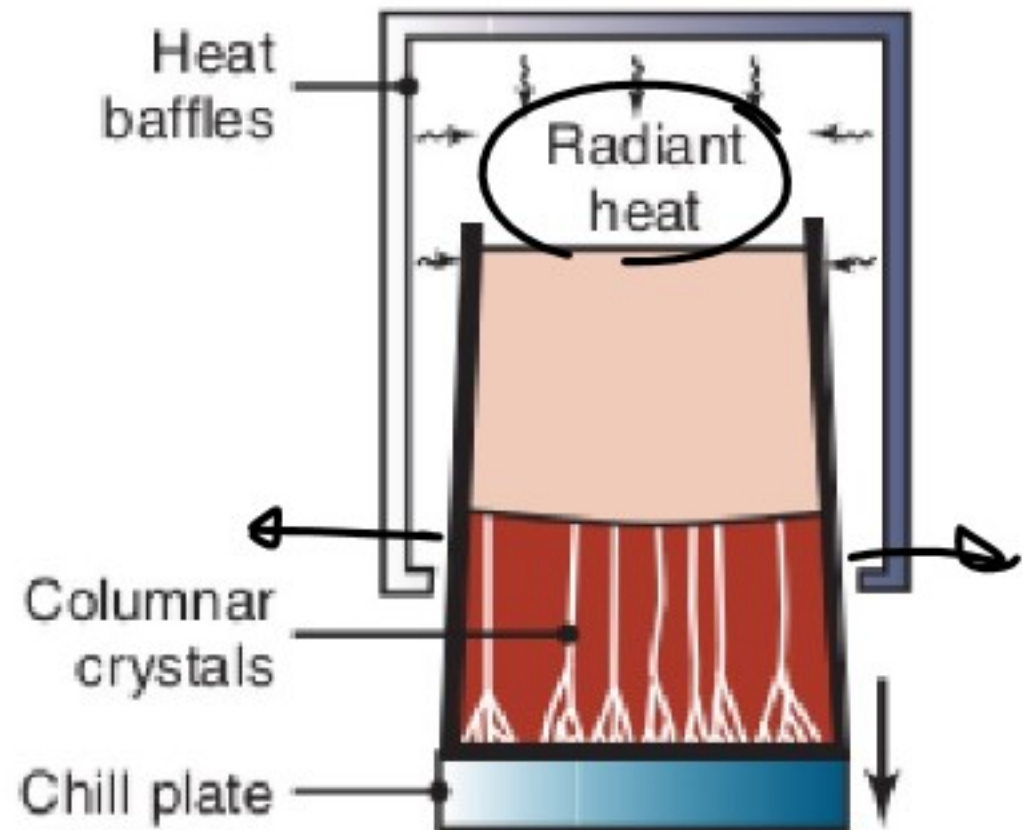


(a)

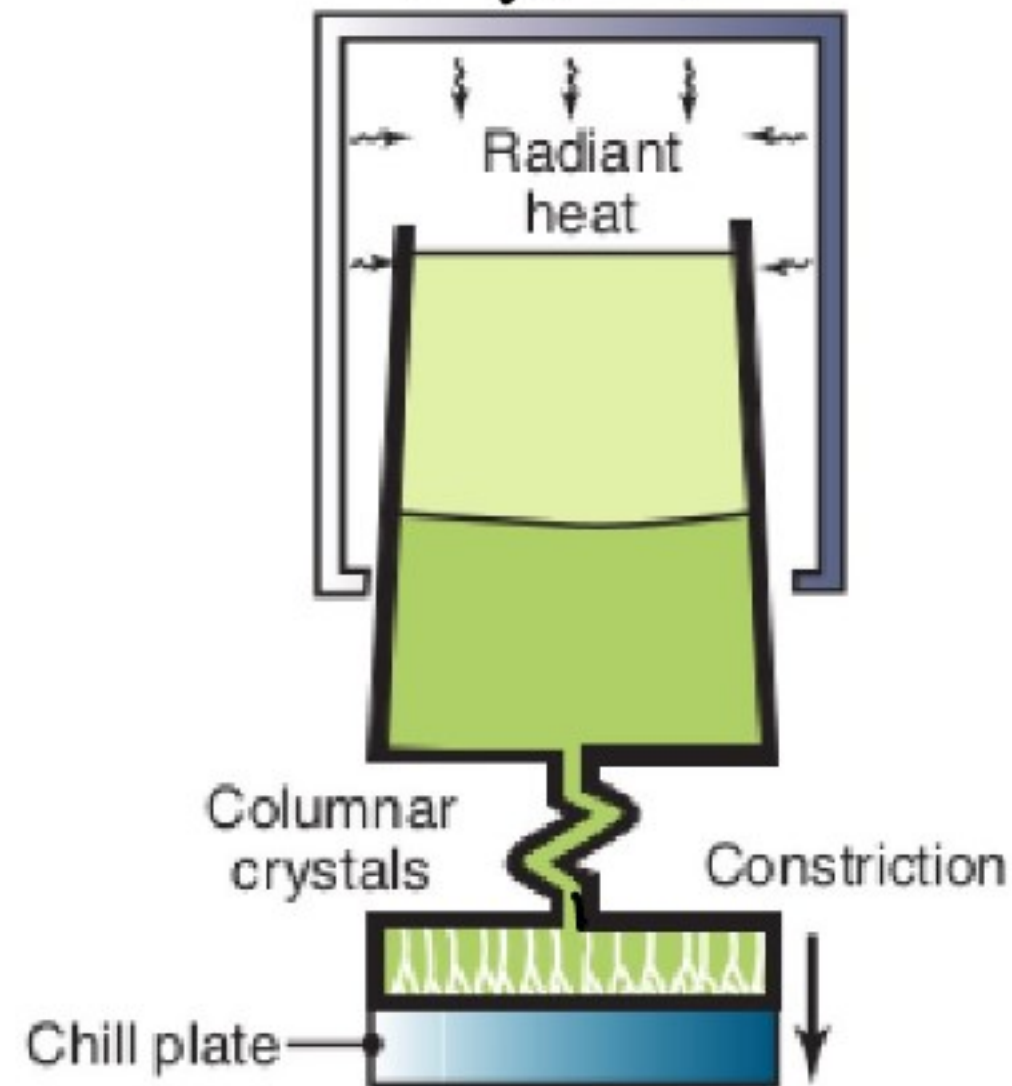


(b)

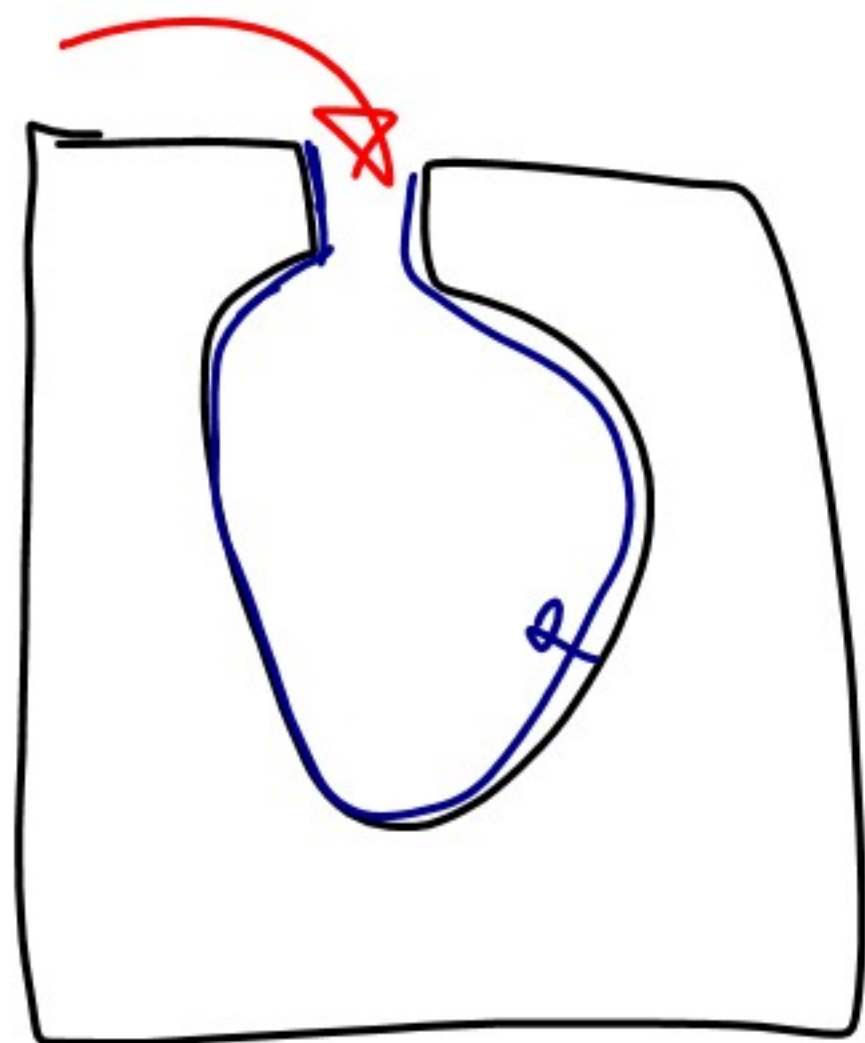
Parallel
Crystals



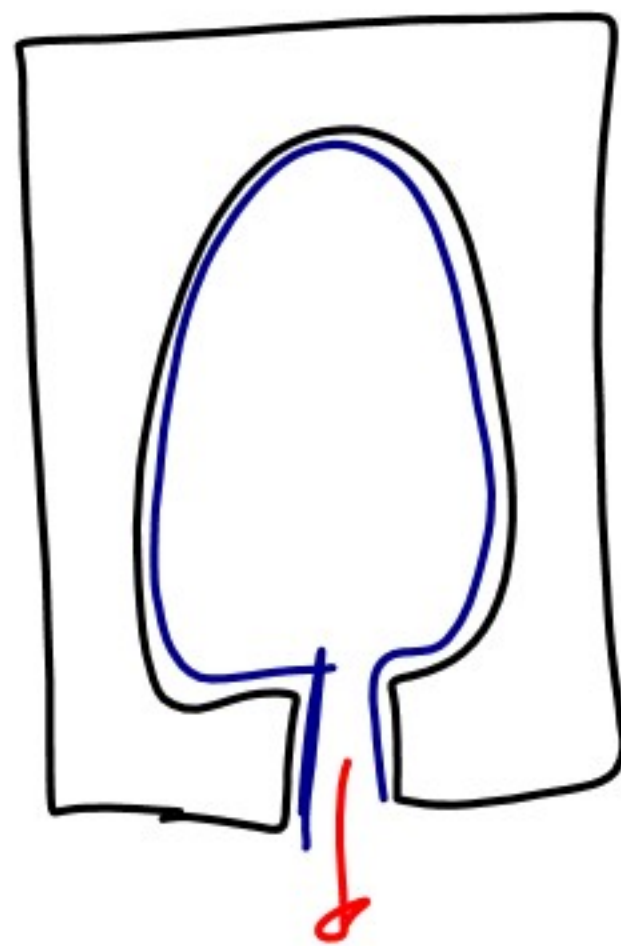
Single
Crystal



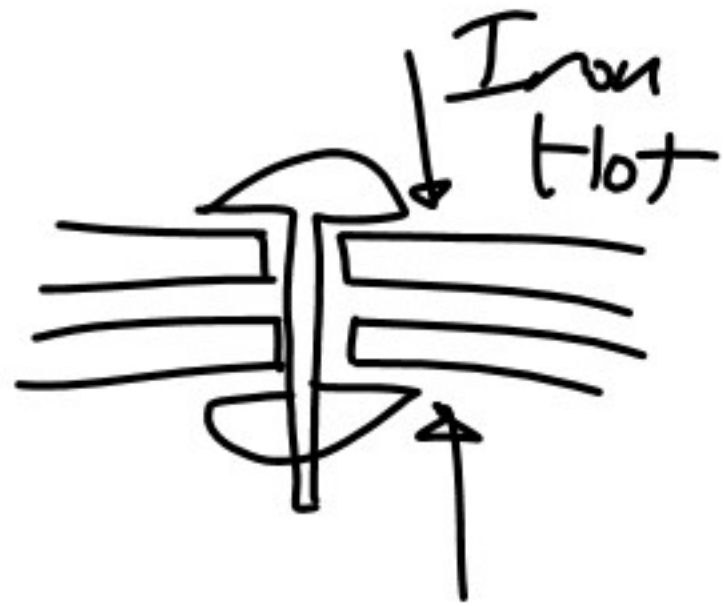
Slush Casting



wait



Rivets



IBC

Aluminium
Cold

Aersspace

Pop Rivet

