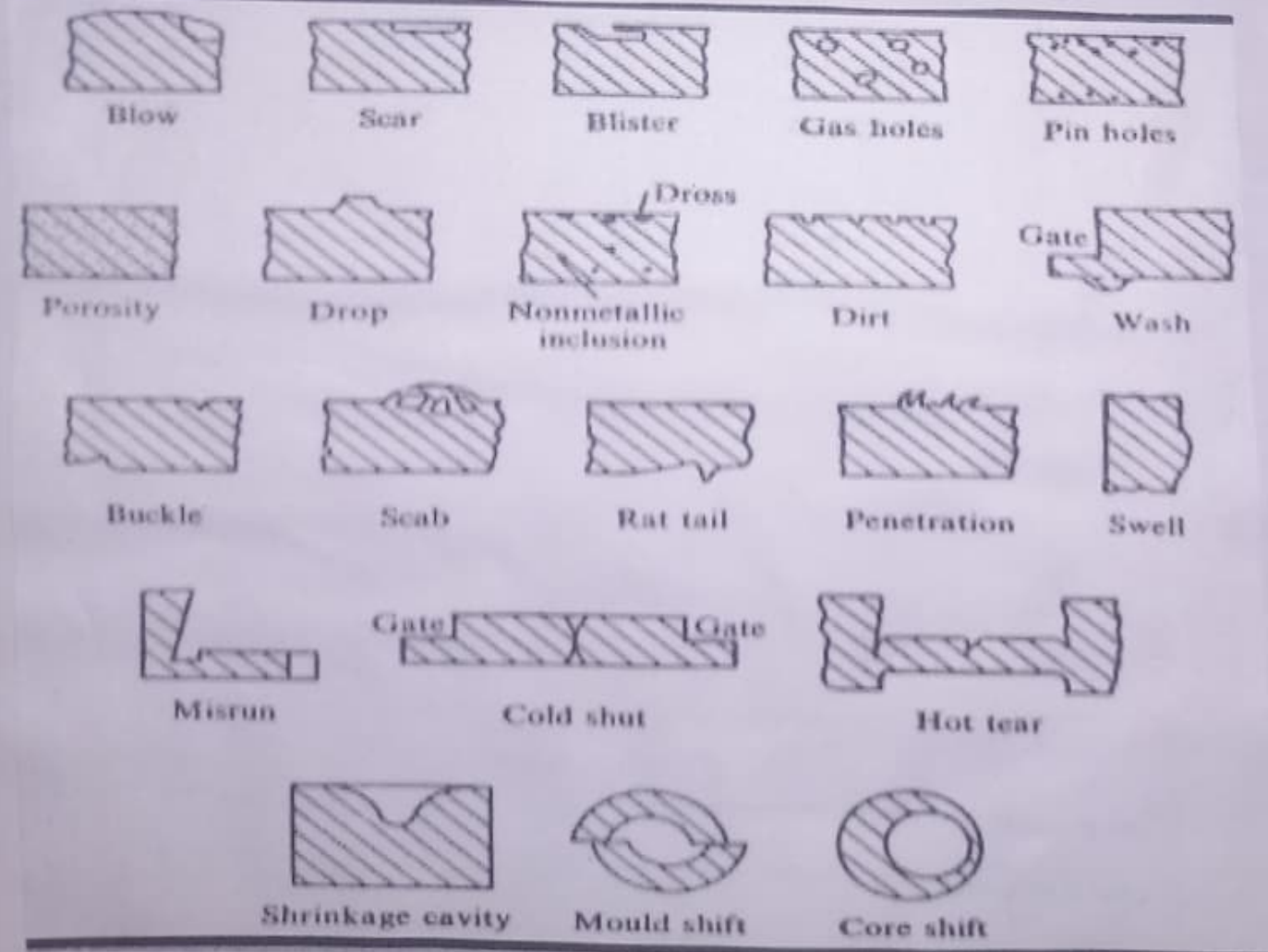
CASTINGS DEFECTS

It is an unwanted irregularity in a metal casting process. They are categories as :

CASTING DEFECTS					
GAS DEFECTS	MOULDING MATERIAL & METHODS DEFECTS	GATING DESIGN	POURING METAL DEFECTS	METALLURICAL DEFECTS	OTHER DEFECTS / SHIFT DEFECTS
Blow holes & open blows	Drop & Dirt	Shrinkage	Misrun	Hot tears / Cracks.	Mould Shift
Scar	Cut & Washes		Cold Shuts.		Core Shift.
Blister	Scab				
Pin hole porosity	Rat tail				



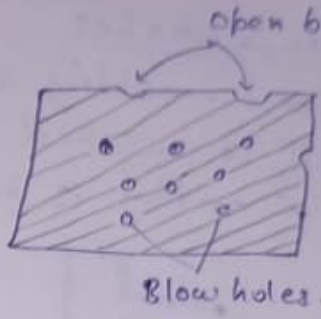
Gas Defects

(a) Blow holes & Open blows:

- Due to low permeability and excessive fine grain sands.
- Due to excessive moisture in the moulding sand.
- Due to excessive use of organic binders and hard rammed sand

the gas molecules are not able to escape properly before the casting becomes solid.

* if they are trapped inside and appears as cavity in a casting, called Blow holes
* if they escape from the surface, small below (pits) are created on the surface, called open blow hole.

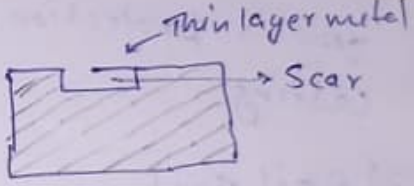


(b) Scare

- A shallow blow which is formed on the surface of the casting is scare.

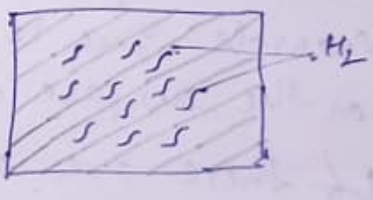
(c) Blister

It is scare covered by a thin layer of metal



(d) Pin hole Porosity:

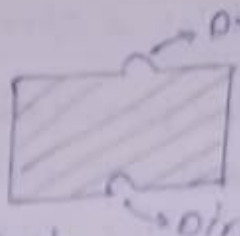
Small sized gas holes formed due to hydrogen gas in a pinhole porosity, which has small mass and high velocity.



$$2H_2O \longrightarrow 2H_2 + O_2$$

(2) Moulding Material & Method Defects:

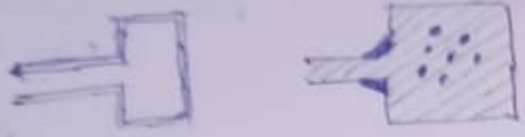
(a) Drop & Dirt:



- Due to improper ramming loose silica sand particle will be dropped will be dropped from cop to drag box forming a projection on the surface of the casting is called a Drop. while a cavity on the other side of the casting is called dirt.

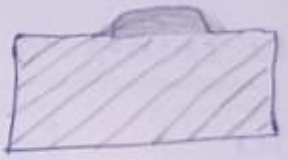
(b) Cuts & Washes

If some moulding sand will be erroded from the surface and it will be washed into the mould cavity. This will projections on the casting is known as cuts & washes.



(c) Scab

Liquid metal can be penetrated into the loose sand layer in the cope box will form a projection on the surface of the casting.



(d) Rail Tail

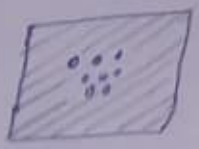
Under the influence of the heat, the sand expands, thereby moving the mould wall backwards. Due to this there is an irregular line on the surface of the casting ~~line~~ called rat tail

If there are a number of criss-crossing small lines and there are serve rat tails, called buckles.

...ING DESIGN DEFECT

...rinkage cavities:

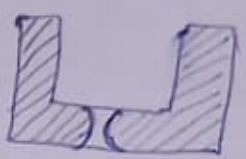
Due to improper riser design metal cools before casting and cavity is formed due to shrinkage of the material at the centre of the casting.



(4) POURING METAL DEFECTS:

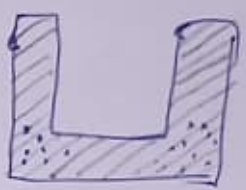
Misrun: Due to lack of fluidity & pouring temp.(less) liquid metal start solidification before reaching the cavity.

Cold Shut: Two streams of Liquid metal will not fuse properly will form a discontinuity in the casting.



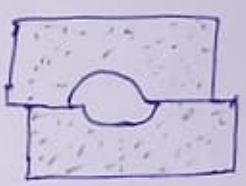
(5) METALLURGICAL DEFECTS

Hot tears / Crack: Due to non-uniform cooling, internal stresses can be developed in the casting. If the stresses will be more than the strength of the materials, cracks will be formed known as hot tears/Crack.



(6) OTHER DEFECTS/SHIFTING DEFECTS:

Mould Shift: Due to improper positioning of cope box and the drag box, there is a mismatch along the parting line in the casting.



Core Shift: Shifting of the core from its original position.