Article published on December 14th 2011 | Advertising

Crusher is a mechanical device whose metal surface is used to break or compress materials. Crusher is designed to obtain fine crushed smaller volume or particles or to reduce large solid materials/objects. Crusher is also used to reduce the waste materials into disposable or recycled form or to reduce the size of solid mix of raw materials(as in rock ore),to obtain pieces as per composition.Crushers are basically used in mining operations.Depending upon the degree to which starting material is to be fragmented, we decide which crushers are to be used. .> Primary / secondary crushers- for coarse material(jaw crusher).

. Tertiary/Quanternary crushers- for reducing ore particles to finer gradation(Jaw, cone, roller, or hammer Crushers).

Types Of Crushers:

1.Jaw crusher:-

Jaw crusher is also known as toggle crusher.Jaw crushers are the most commonly used and oldest type of crushers in use and have modified a little bit.Crusher basically crush material having compression strength less than 320 MPa. So, jaw crusher is widely used to crush material . Jaw crushers are mainly used in building material, highway, railway, water conservancy, chemical industry, metallurgic industry, mine, etc.

Some commonly used Jaw crushers are -

â€¢ Single toggle Jaw crusher: Amongst all the jaw crushers single-toggle crusher is the simplest and the lightest one . So, it produces only low crushing forces and thatâ€™s why mostly used for soft rocks.

â€¢ Double Toggle Crusher: The Blake jaw crusher is double toggle crusher which has a fixed jaw as well as a moving jaw, pivoted at the high point. The crushing trouble with crushers are made either of chilled cast iron.or of manganese steel.

â€¢ Impact Jaw Crushers: this type of crusher cavity is inclined. a result, it is used to process hard and tough materials.

2.Gyratory (Cone) Crushers :-

In Gyratory Crushers, there are two surfaces- a stationary and a movable surface,and between them the stress to the feed is applied. The crushing head consist of a truncated cone which is mounted upon a shaft, its upper end is held in a bearing which is flexible, while its lower end is driven eccentrically describing a circle. The main crushing work is performed around the cone.

3. Roller Crushers:-

The working principal of roller crushers states that the stress (to the feed) is applied either between two rollers OR between roller & crushing surface.

â€¢ Single-Roll Crusher:- single roll crusher, springs or a hydraulic system hold a crushing roller which act against a crushing plate. This roller crusher helps in coarse crushing of moderately hard to soft materials.

â€¢ Double Roll Crusher:- Double roll crusher having an adjustable gap between them, which rotate towards each other . The gap is adjustable as per size of the feed and the required product size.. Rollers ranging from 0m to 2m can handle feed sizes ranging from 0m-1m. it is mainly used for soft to moderately hard materials.

4. Hammer Crusher:-

In hammer crushers the hammers are linked to the rotor with the help of pivots which leads to deflection when they hit strong and particularly large stones. Mostly the crushing zone is surrounded by grate bars so that large fragments which cant enter the openings of the grating are retained in the crushing zone. High hammer crushers & diameters of rotors ranging between 0m to 3m are available having throughput of even 1500T/hr. Although, hammer crushers are fast and much efficient than impact crushers, specially in case of moist materials. Due to wear considerations only soft to moderately hard materials can be processed .These crushers have less complexity than jaw and cone crushers and comparative throughput are much smaller in size.

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Article Keywords:
Conveyor , Conveyors Machine, Crusher, Crusher Manufacturer India

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