

Task 1. Fill in the gaps with the most appropriate word from the box.

desirable / reduced / converted / subjected / particle /

properties / separation / external / solids

Size reduction is the term related to the process in which the size of solids is 1)_____ or broken into smaller items. It involves the creation of smaller mass units from bigger mass units of the same material. To change this, the bigger mass units need to be 2)_____ to the application of an 3)_____ energy. Reduction of size is brought about by means of mechanical aids without change in chemical 4)_____ of the materials. In the various industries 5)_____ materials are reduced by different methods for different purposes. For example, crude ore is broken to 6)_____ size, synthetic chemicals are 7)_____ into powder, sheets of plastic are cut into various pieces, etc. Reducing the 8)_____ size also permits 9)_____ of unwanted materials by mechanical methods.

Task 2. Match the definitions with the processes.

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| SCREENING | 1. It is a separation technique that uses a porous medium that retains the solid substance but allows the fluid to pass through it. It is the process of removing insoluble substances from the solution. It is commonly used in applications like wastewater treatment, air purification, and the separation of solids from liquids, aiming to remove contaminants and achieve cleaner, purified substances. |
| FILTRATION | 2. It is the operation carried out to reduce the size of bigger particles into smaller ones of desired shapes & sizes with the help of external forces. To bring this about, the larger mass units need to be subjected to stress by applying force. |
| SIZE REDUCTION | 3. It is a process that involves separating and classifying materials or particles based on their size, shape, or other characteristics by passing them through a specialized apparatus consisting of a series of membranes with different-sized openings. This method is often used to sort particles or materials into different categories or grades, such as in the mining industry for grading ore or in agriculture for separating grains by size. |

Task 3. Match the sentences with the processes they describe. For each process, you should choose two sentences.

Attrition Grinding:

Compression Grinding:

Cutting Grinding:

Impact Grinding:

1. During this type of grinding, high-speed rotating hammers or similar mechanisms strike the material, causing it to fracture into smaller particles
2. The material to be ground is subjected to high pressure, resulting in the reduction of its volume and the creation of smaller particles.
3. It typically occurs when two materials or particles rub against each other, gradually wearing down and reducing their size.
4. is a grinding method that involves the removal of material through the use of special tools, such as abrasive wheels or grinding discs.
5. This force increases the proximity of particle surfaces, resulting to the formation of bonds between particles.
6. A technique used to break up particles by direct fall of crushing bodies on them.
7. It is a grinding process that involves the wear and abrasion of materials due to friction and repeated contact.
8. This process is used to shape, refine, or finish a workpiece by cutting away excess material, resulting in a smoother and more precise surface.

Task 4. Match the parts of the sentences to get more information about the advantages of size reduction.

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| 1. Size reduction increases surface area | a) become effective if smaller particles are used. |
| 2. During compression of a tablet, particle size should | b) drying of granular mass becomes rapid. |
| 3. Extraction of active constituent | c) be small so that powder can easily flow into dies |
| 4. If the size of the particle is small, the flow of powder | d) Of material and this further improve rate of dissolution. |
| 5. If the size of granules is small, then the | e) As content uniformity is important in case of potent and low dose drugs formulations. |
| 6. For effective mixing particles of uniform size are desirable. | f) into dies during the compression of tablets is effective. |