

SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai

Approved by Pharmacy Council of India, New Delhi.

Coimbatore -641035

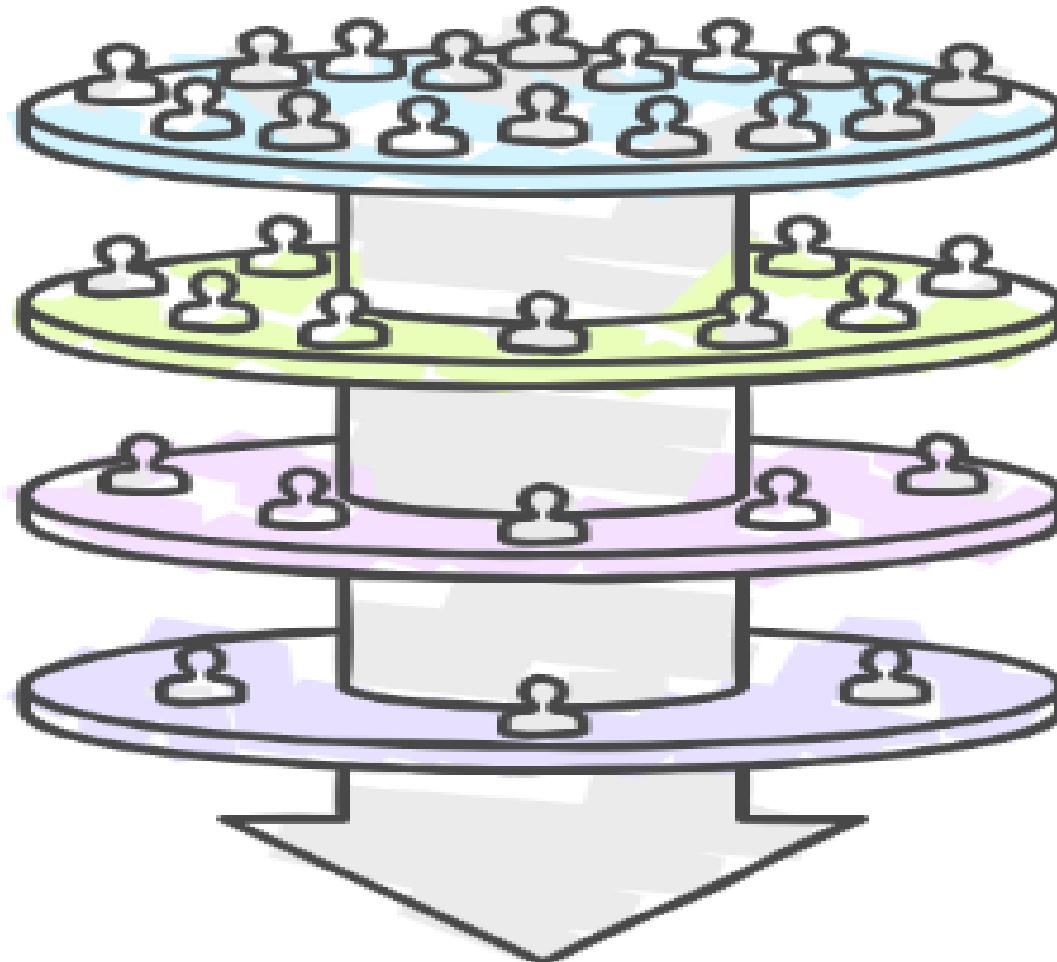
COURSE NAME : PHARMACEUTICAL ENGINEERING (BP 304 T)

III SEM / II YEAR

UNIT -2

TOPIC 2 :SIZE REDUCTION

Size Reduction Process Funnel



Method Selection

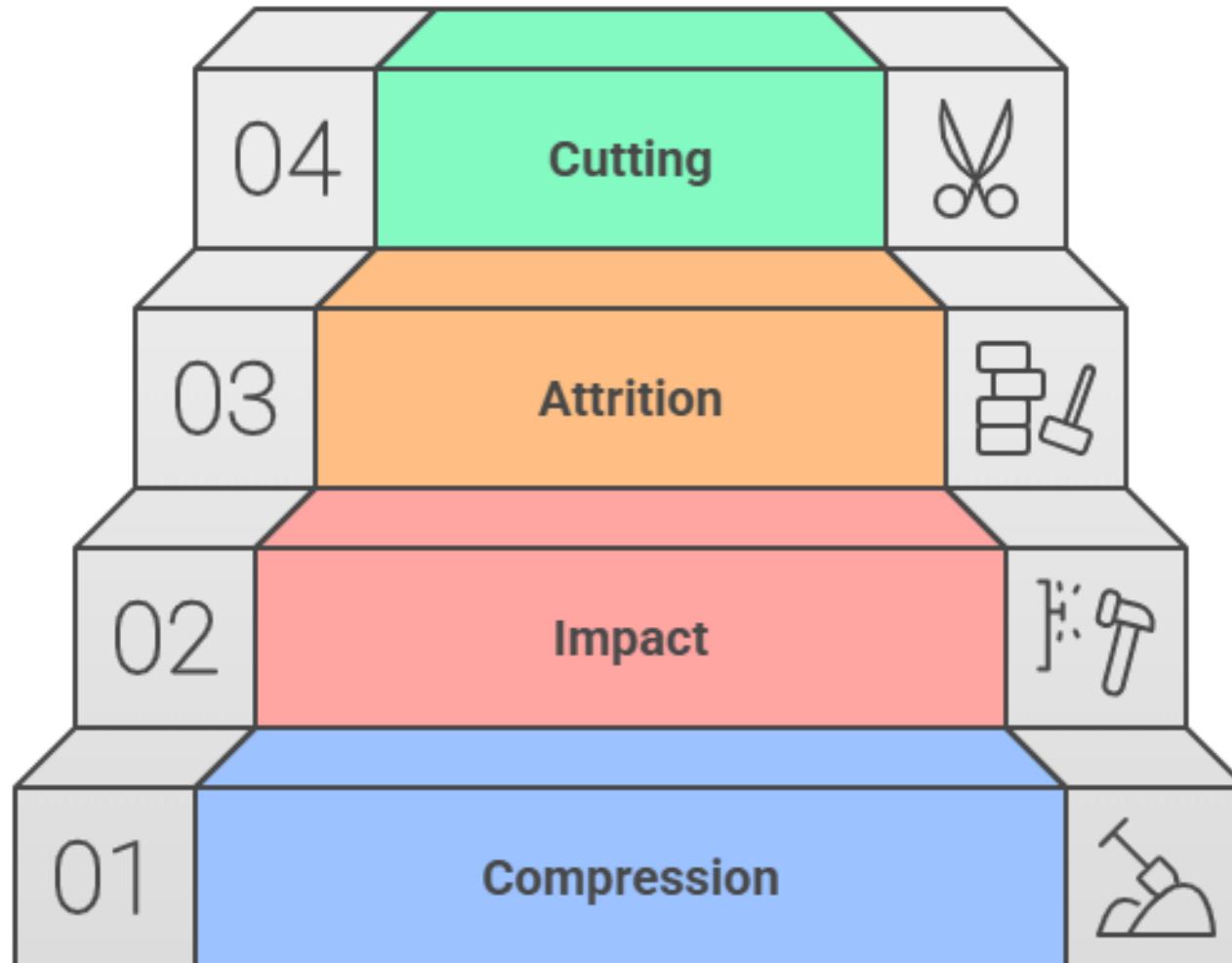
Equipment Use

Factor Influence

Application

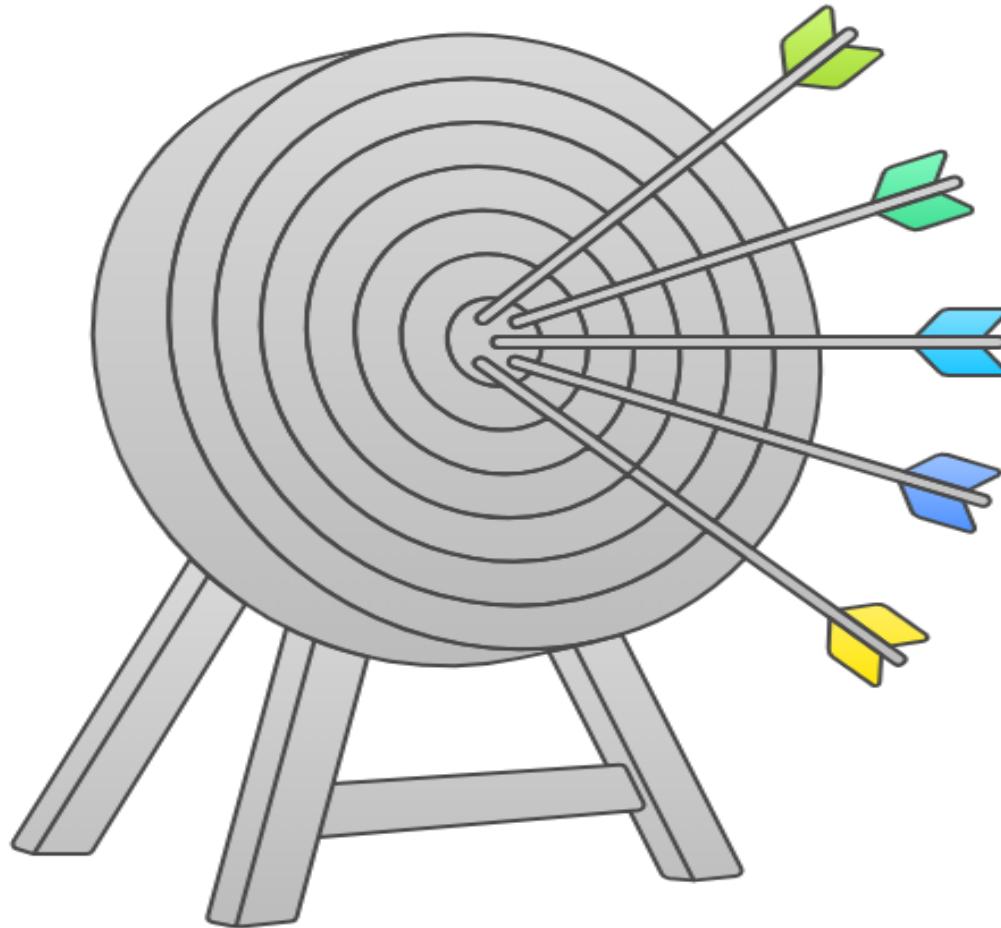
Made with  Napkin

Achieving Effective Size Reduction



Made with Napkin

Size Reduction Method Selection



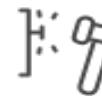
Desired Particle Size

The ultimate goal of size reduction



Material Properties

Characteristics affecting reduction process



Hardness

Resistance to deformation



Abrasiveness

Tendency to cause wear



Moisture Content

Water presence affecting process

Which size reduction method should be used for a specific material?



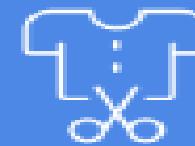
Crushing

Ideal for coarse reduction of hard, abrasive materials with high throughput.



Grinding

Suitable for finer particle production using various mechanisms.



Cutting

Best for fibrous or ductile materials using sharp blades.

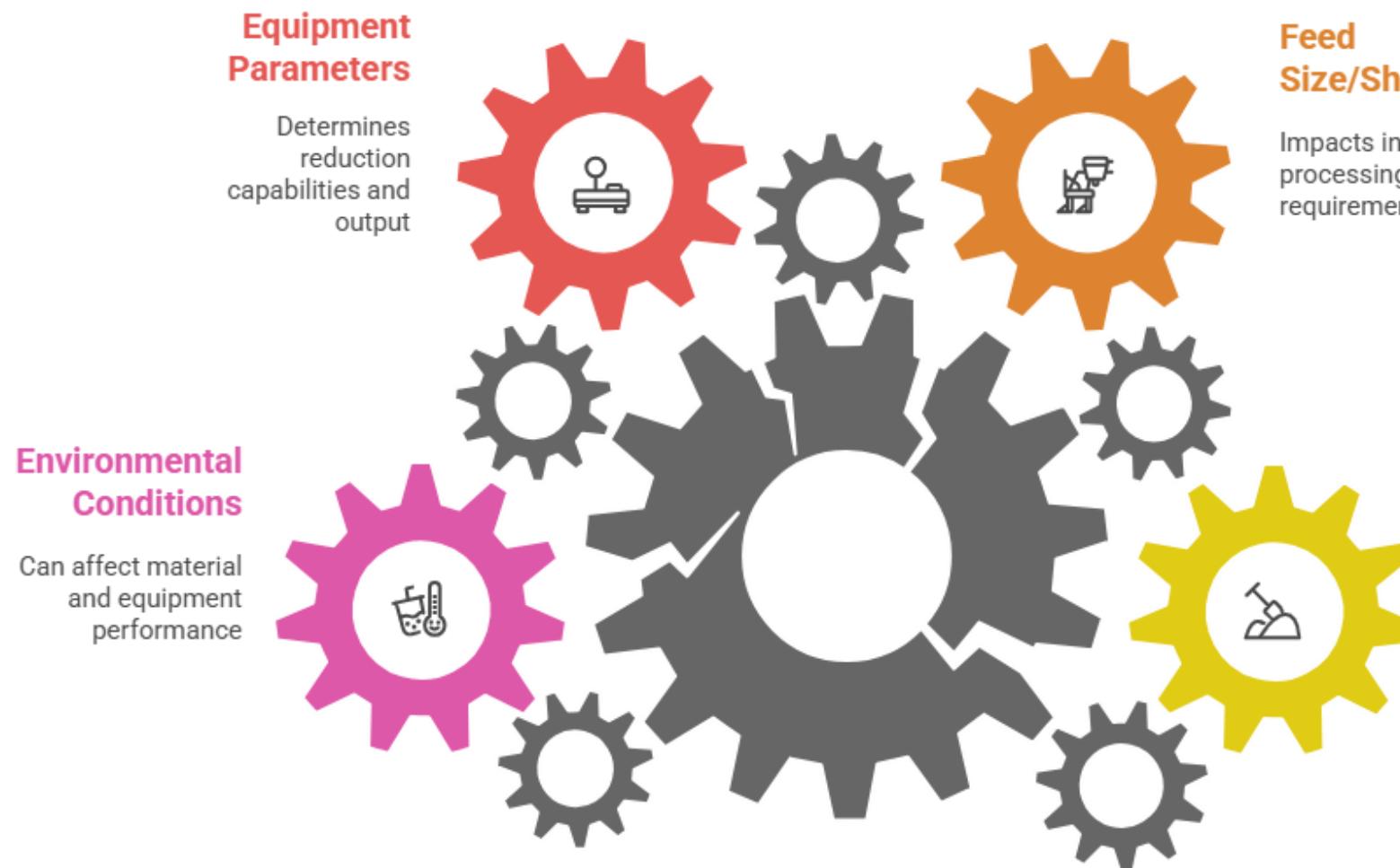


Ultrafine Grinding

Produces extremely fine particles using specialized methods.



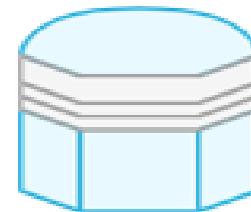
Inefficient Size Reduction Process



Diverse Applications of Size Reduction

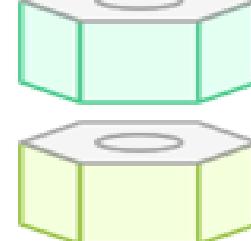
Pharmaceuticals

Enhances drug formulation and bioavailability



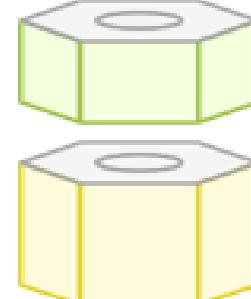
Mining

Liberates valuable minerals from ores



Recycling

Facilitates waste handling and processing



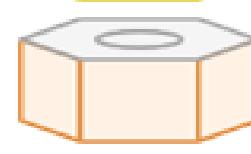
Food Processing

Improves texture, flavor, and digestibility



Chemical Manufacturing

Produces fine powders for catalysts and pigments

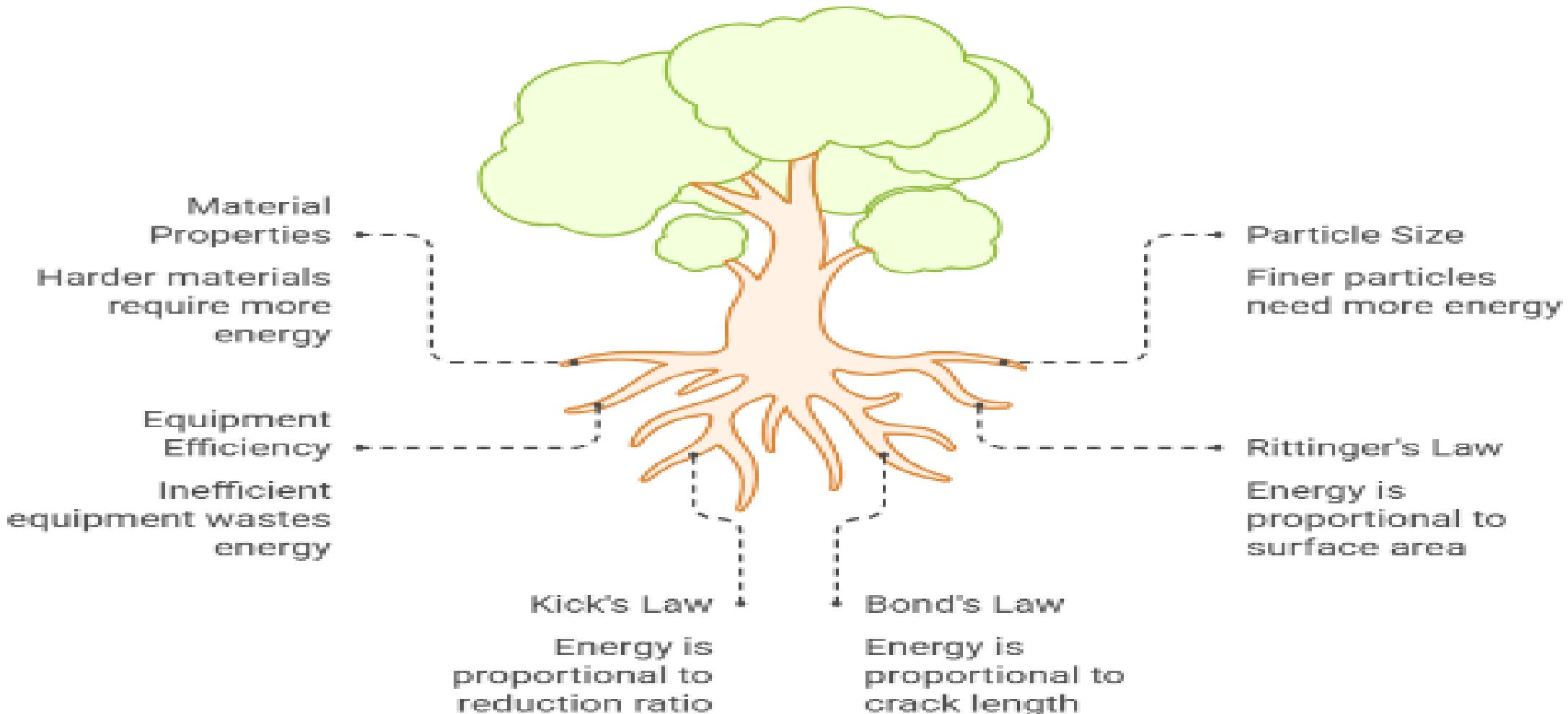


Cosmetics

Creates fine powders for makeup and lotions



High Energy Consumption in Size Reduction



Made with  Padlet

Principles

Methods

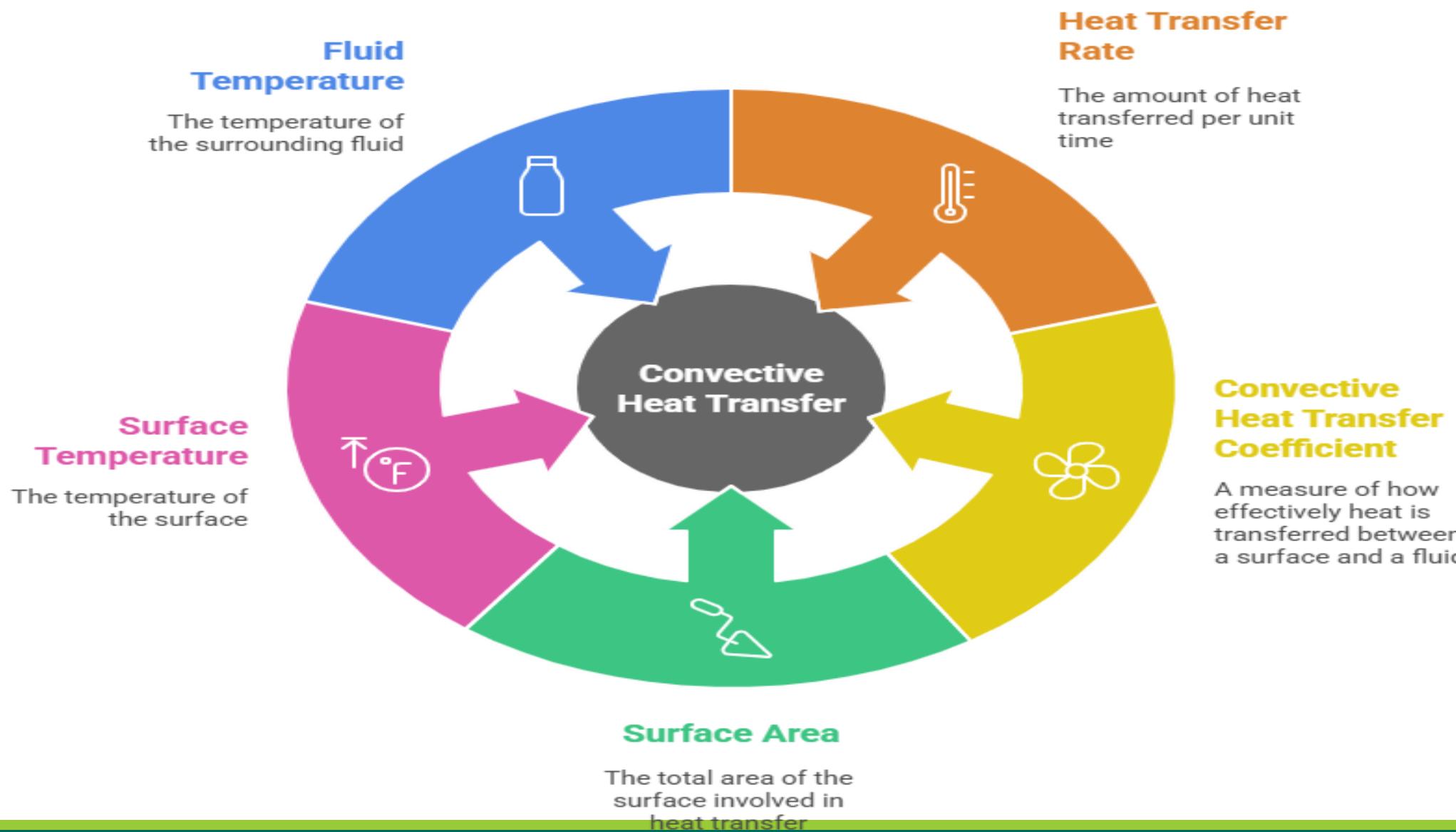
Factors

Applications

Technology



Factors Influencing Convective Heat Transfer



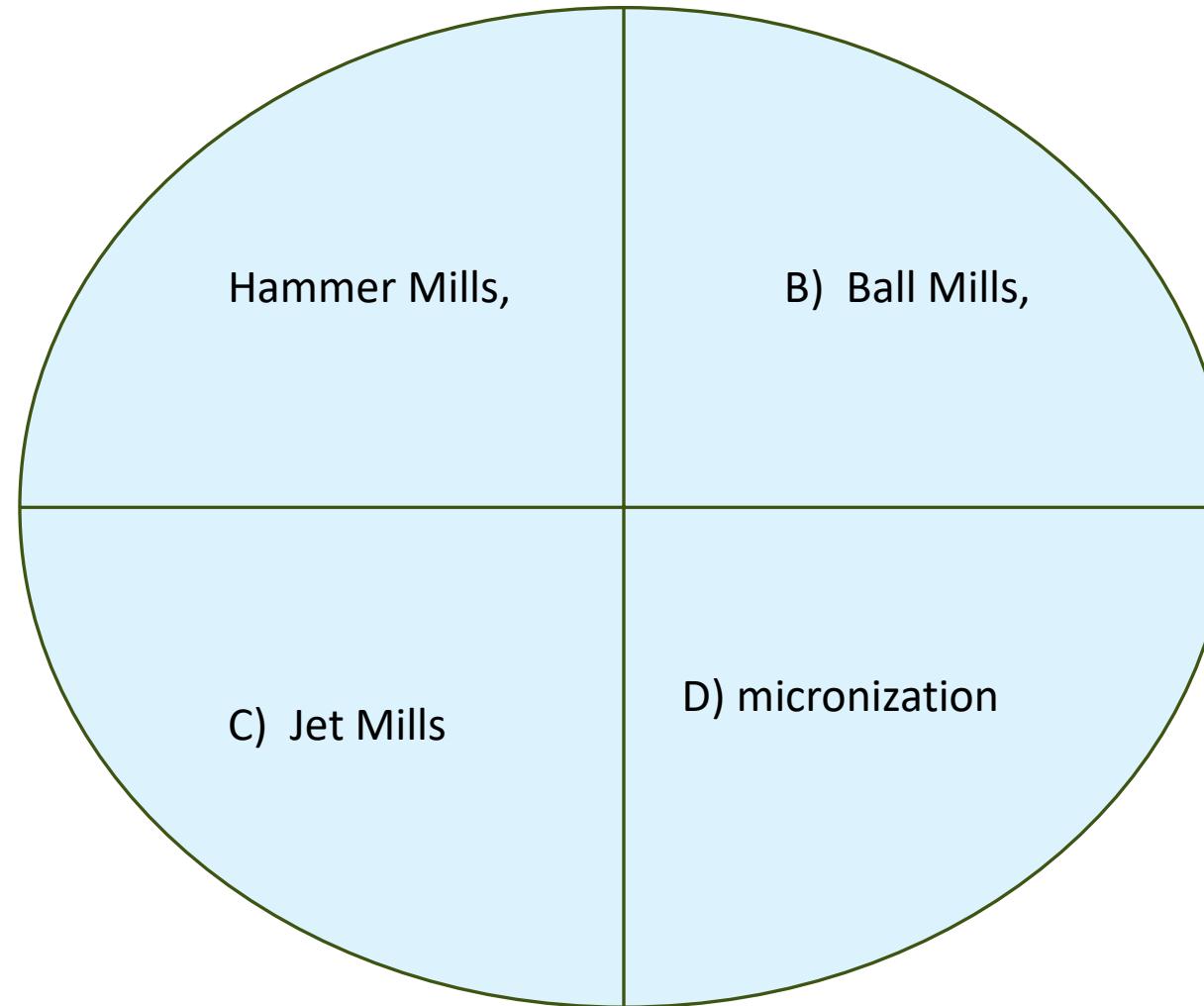
List factors affecting size reduction



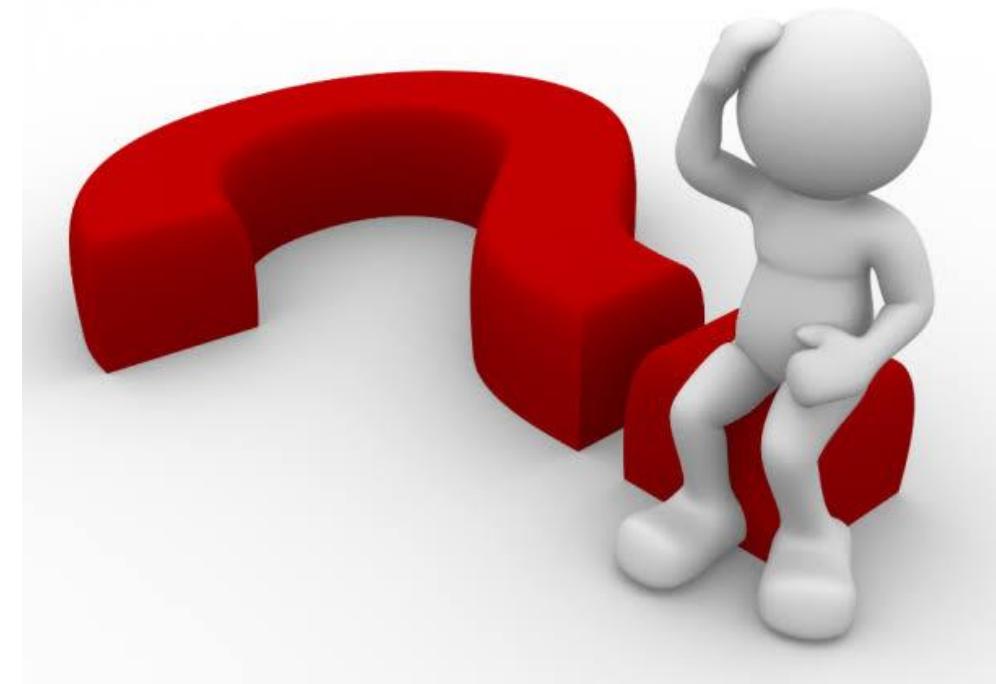


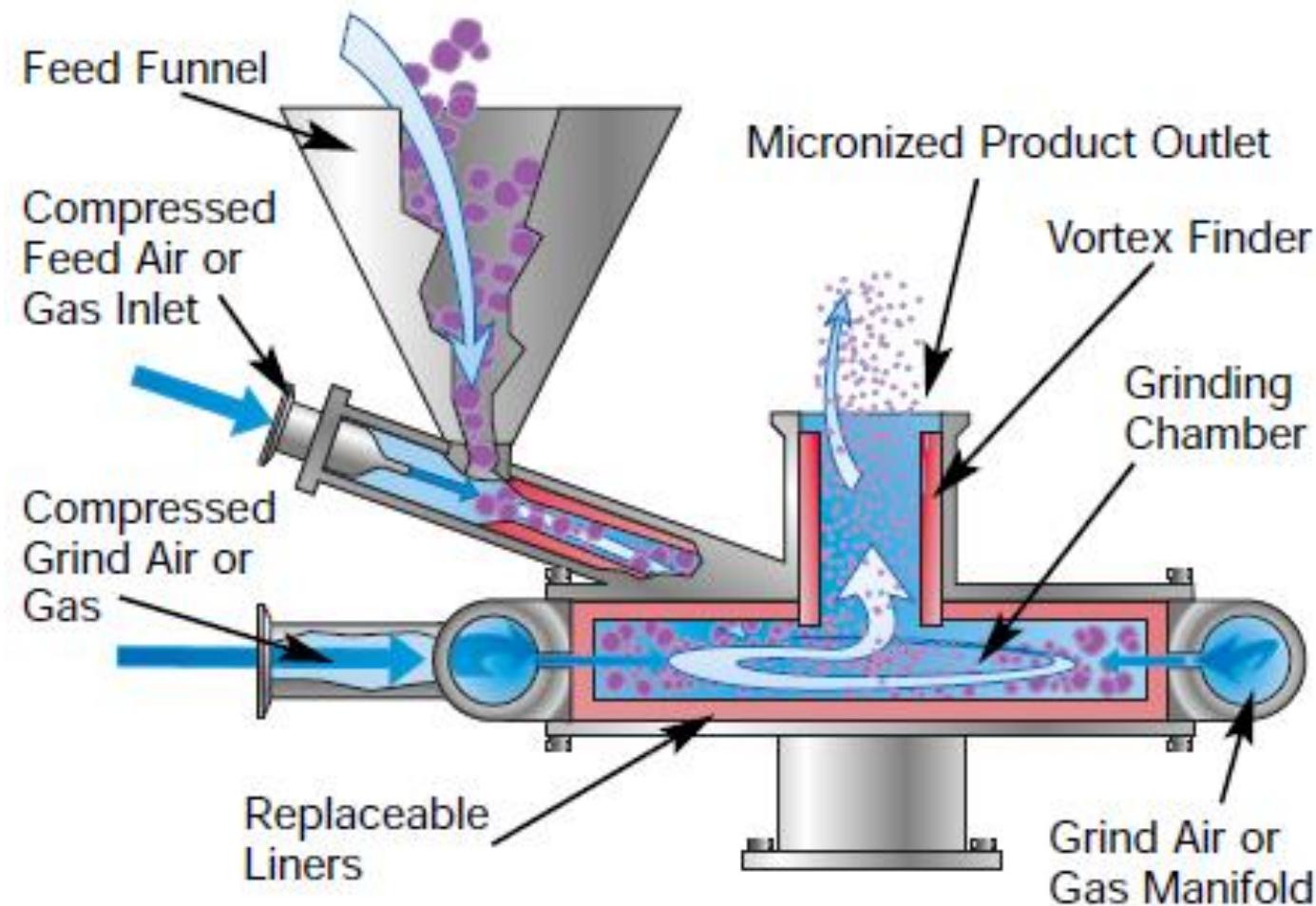
2 .Name different types of grinding equipment.





Name equipment used for ultrafine grinding.





REFERENCES

1. Yie W. Chien: Novel Drug Delivery Systems, Second Edition, Marcel Dekker, Inc, 1992 Pg no.816.
2. Joseph R. Robinson: Sustained and Controlled Release Drug Delivery Systems, First edition, Volume 6, Marcel Dekker, Inc, 1986, pg.618.
3. <https://www.sciencedirect.com/journal/journal-of-controlled-release>
4. <https://www.tandfonline.com/doi/full/10.1080/10837450.2018.1534376>
5. <https://www.scribd.com/document/668313752/Controlled-and-Novel-Drug-Delivery-by-N-K-Jain-1st-Editn-Reprint>



THANK YOU