Working Principle Of Rubber Roller

1. All about Core & Cover Composition

Inner core: This is usually steel, aluminum, or composite- serves a structural role.

Rubber jacket: Elastomer coating (such as natural rubber, neoprene, or silicon) glued to the core to maintain controlled friction, shock resistance, and abrasion resistance

2. Mounting Alignment

The **<u>rubber roller</u>** itself is held between two bearings or chucks, one of which can be adjustable to achieve the best clearance.

With axial alignment, an absolute alignment is needed to provide a uniform coverage and avoid abnormal wear patterns

3. Speed & Rotation Control

One or both of the rollers has a motor.

Husking In husking applications, two rollers of slightly different speed - a fixed-velocity roller and a slower and adjustable roller - cause shearing by stripping husks off grains.

4. Material Feeding- Contact

The nip is the point of contact between the two rollers at which material (e.g., paper, fabric, grains) passes.

The material is exposed to friction and shear forces when there is a different or opposing speed of operation, as well as gap adjustments

5. Functional Mechanisms

A. Conveyance/Traction:

The high coefficient of friction allows rubber to hold surfaces (e.g. paper, textile) and move with minimum slippage.

B. Processing(e.g., husking):

holds the shearing force between husk and kernels by differential roller speeds and accurate gaps

C. Shock and Vibration Absorption:

The springiness dampens the inconsistencies and puts the centre and product.

6. Overlap Thickness: Coating

In winding/coating machines, rubber tape is helically wound into a core.

The overlap and thickness is dictated by the feed rate vs core rotation.

The layers are bonded by heat or pressure vulcanized/bonded

7. Completion and Balancing

Post-wrap: cut off, and machine lathe, in case required.

Surface finishing, sanding, grooving, and texturing make the performance even.

8. Parameters of Control & Adjustment

Adjustable options include:

Gap: nip pressure/shear changes.

Speed ratio: varies the traction or the level of shear.

Feed rate: impacts on coverage and layer thickness.

Material: Rubber compound selected within the temperature range, chemical exposure, hardness, etc.