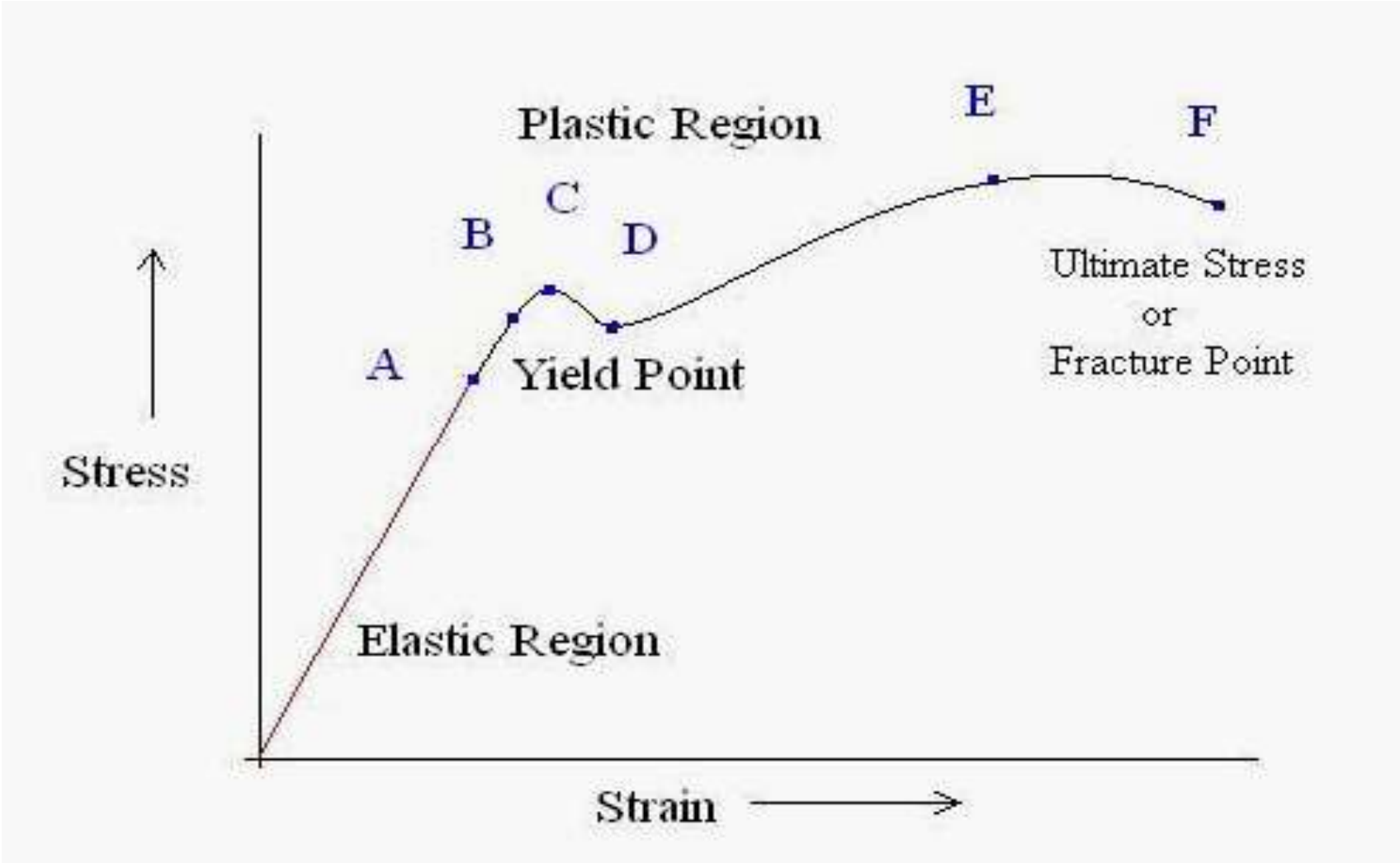
Compression Process

- **The compression** is the final stage of tabletting methods involving compaction of the granules or powders between the punch and the die.
- The compression steps: filling, compression and ejection.
- Compression step is occurred by movement of feeder to beside, falling of upper punch at certain force (measured in kg, ton, or newton per unit area). So, the tablet mix is subjected to different forces (from punches and die walls).

See Video ……

The Compression theory



- **From figure:**

- **Compression, causes cohesion of tablet mix. And interaction which pass through:**

- **1) Elastic region = initial linear, reversible stage**

- **2) Yield point ??**

- **3) Plastic region= non linear, irreversible stage**

- **4) Fragmentation or fracture in which there is ultimate tensile stress causes destruction of bond between particles.**

Tablet defects or problems

- **Their causes are related to excipients, methods , machines or storage conditions, like:**

1) Pitting: Production of pit marks on the tablet surface.

Causes: may be in sufficient lubricant or roughened surfaced punches.

Treatment: Increase the conc. Of lubricant, changing the mixing conditions, and polishing of punches regularly.

2) Capping and lamination: are mechanical splitting of the tablet. Capping (top or bottom of tablet or is separated) while lamination involves (fracture within the main body of tablet).

Causes: may be related to machine (stress-Induced fracture), or materials (binder or lubricant).

Treatment: optimization of tablet strength, By changing compression force, binder

3) Mottling (as before)

4) Sticking

5) Chipping:

Breaking of tablets edge,

While the tablets leaving the press or subsequent handling.

6) Post processing defect during storage due to adsorption of water upon high humidity, causing (dissolution, crystallization or changing the polymorphic shapes or change in tablet hardness due to change of polymer properties ex. Relaxation and expansion).