

CHAPTER 19

Cold-Working Processes

Review Questions;

1. Attractive features of cold working over hot working include: no heating is required, surface finish is better, dimensional control is superior, reproducibility is better, strength properties are improved so cheaper material may be utilized, directional properties can be imparted, and contamination problems are minimized.
2. Cold-working equipment is usually more powerful than that used for hot-working because the starting material is stronger (no thermal softening), and the material becomes even stronger as it is being formed due to the effects of strain hardening.
3. Sheet or strip is often given a skin-rolled reduction pass to produce a smooth surface and a uniform thickness, and also to improve the yield-point phenomenon that causes the formation of Luders bands.
4. The cold rolling of shaped products generally requires a series of shaping operations, each requiring a separate pass through specially-grooved rolls. Since these rolls are usually expensive, two such rolls are required for each pass, and multiple passes are usually required to produce a product, large production quantities are usually required to justify the expense of the shape-rolling process.
5. If the starting material is a tube, and a shaped mandrel is inserted before swaging, the metal can be collapsed around the mandrel to simultaneously shape and size the interior and exterior of the product.

