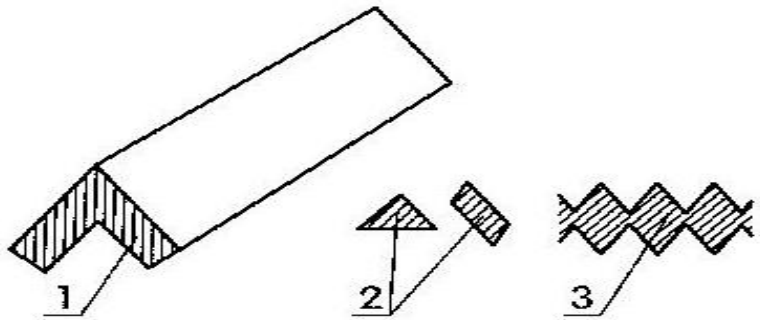
Cutting them

Sugar beets are tapped by water and cut in narrow stripes. It increases the surface and facilitates extracting of the sugar.



This section discusses Station 6 (Beet Slicing) of sugarbeet processing. Station 6 consists of the beet conveyor, beet hopper, slicers, and the knife-maintenance shop (for sharpening the slicers' knives). The equipment included in this station is installed inside the main processing building. In the slicers, beets are cut up into cossettes.

The beet-slicing station is one of the most important stations in sugarbeet processing. Quality slicing depends on many factors, as are explained in this section. The operating problems that can occur in slicing operations will be also discussed.

BEET SLICERS

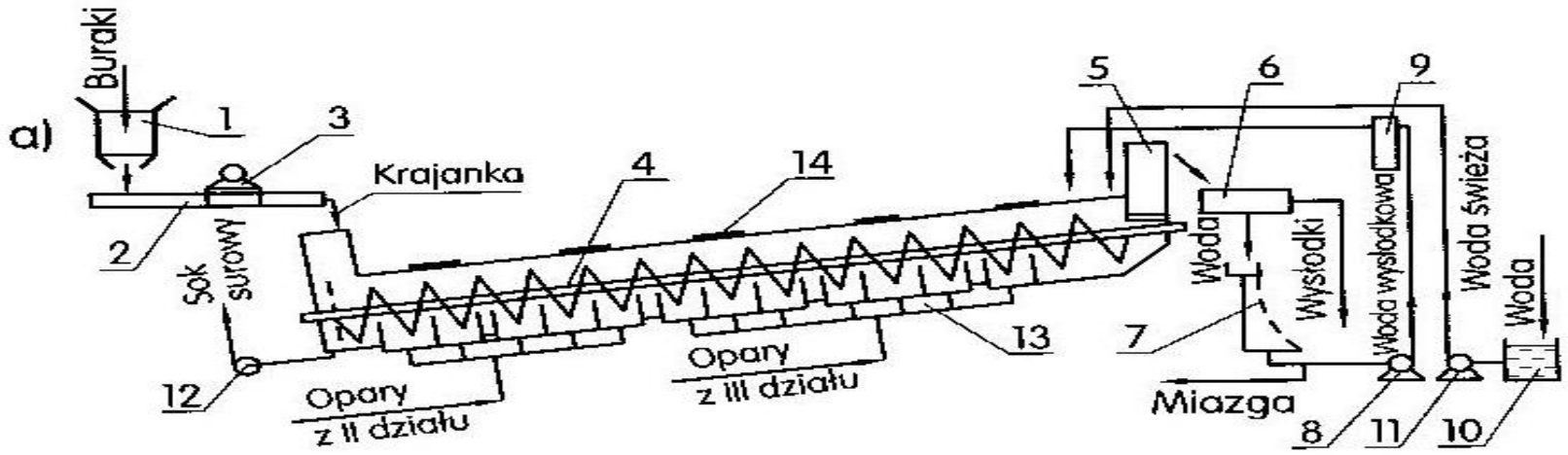
Slicers contain knives in knife blocks (knife boxes) for slicing beets to cossettes. The knife blocks are used to hold several knives in the drum of the slicer. Sugar factories usually use one of the following types of slicers:

- Drum slicer
- Disc slicer
- Centrifugal slicer

Extraction of sugar from cut beets

The extraction takes place in extractors, where cut sugar beets are in hot water. The extractor is a big container in which cut beets move towards the opposite direction of the water movement. There is higher concentration of sugar and as a result one can obtain a solution which is called raw juice.

Usually, the juice after the process of diffusion contains on average 14 % of sugar.



Tower diffusers are equipped with a cossette mixer (scalder), which is a horizontal tank for preheating the cossettes. This type of diffuser results in a more efficient denaturation process. As the cos- sette enters the cossette mixer, it meets the warm juice. This brings the temperature of the cossettes to the denaturation level (about 70ºC). The mixture of cossettes and juice is next pumped to the diffuser tower (the main part of the diffuser) for completion of the diffusion process.

Despite the chemical changes in the cell's protoplasm caused by temperature, the cell wall (the main part of the pulp) retains its rigidity (hardness). Therefore, it continues to be resistant to mass transfer during the pressing process.