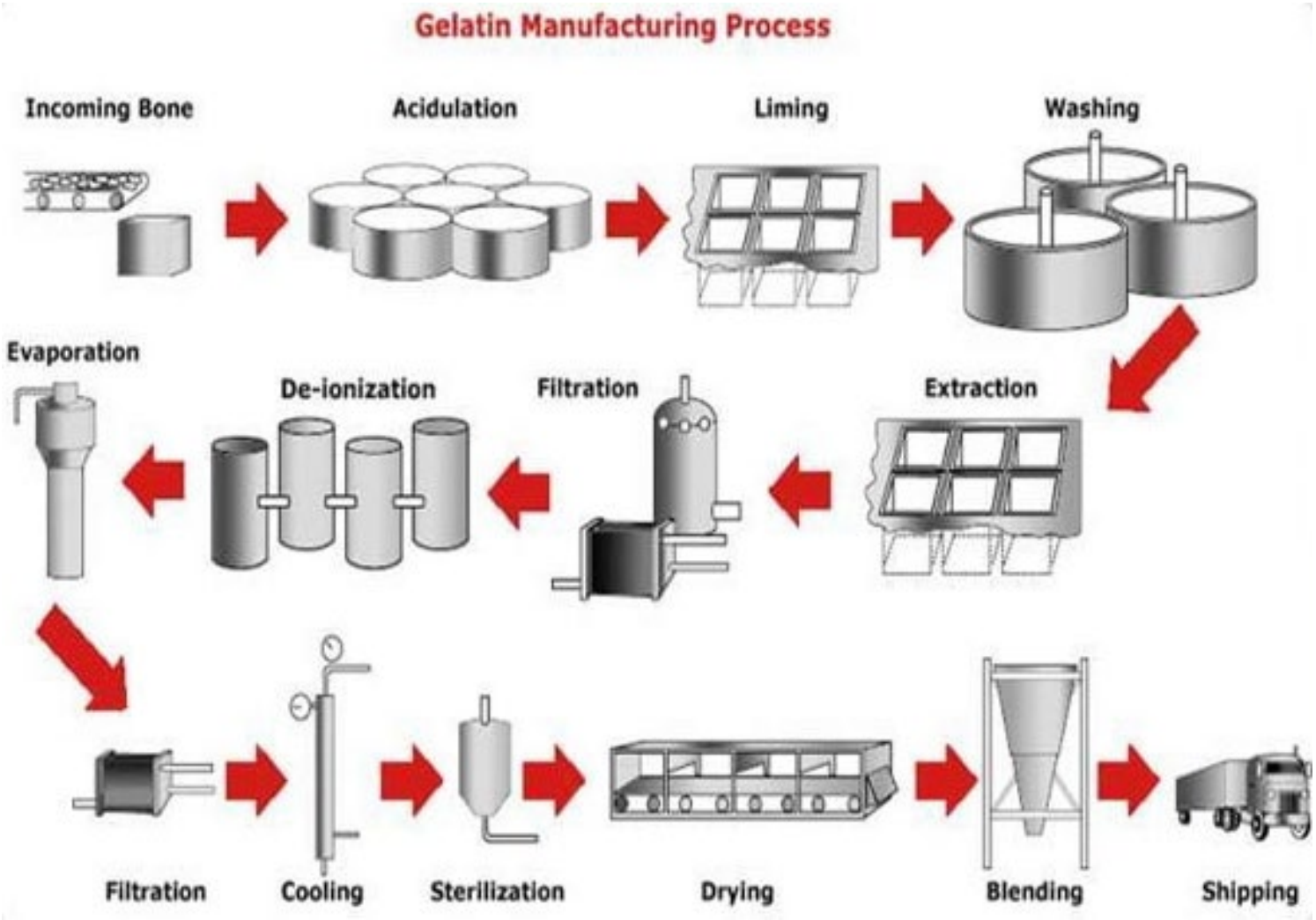
Gelatin Manufacturing Process
Incoming Bone
Acidulation
Liming
Washing
Extraction
Filtration
De-ionization
Evaporation
Filtration
Cooling
Sterilization
Drying
Blending
Shipping

From “Gelatin Handbook” By the Gelatin Manufacturers Institute of America

In the Food Chemicals Codex (1) gelatin is defined as the product obtained from the acid, alkaline, or enzymatic hydrolysis of collagen, the chief protein component of the of the skin, bones, and connective tissue of animals.

Gelatin recovered from bone is used primarily for pharmaceutical purposes. The so-called green bone from the slaughter of cattle is cleaned, degreased, dried, sorted, and crushed to a particle size of about 1-2 cm. The pieces of bone are then treated with dilute hydrochloric acid to remove mineral salts. The resulting sponge-like material is called ossein. From this point on in the manufacture of Type B gelatin, both cattle hides and ossein receive similar treatment.

For the production of Type B gelatin, both ossein and cattle hide pieces are subjected to lengthy treatment with an alkali (usually lime) and water at ambient temperature.

The number of extractions varies, 3-6 is typical. The first extraction generally takes place at 50-60° C, subsequent extractions being made with successive increases in temperature of 5-10° C. The final extraction is carried out close to the boiling point. Extracts are kept separate, analyzed, and subsequently blended to meet various customer specifications

The dilute gelatin solutions from the various hot water extractions are filtered, deionized, and concentrated by crossflow membrane filtration and/or vacuum evaporation. The gelatin solution is then chilled and either cut into ribbons or extruded as noodles, and the gelled material is deposited as a bed onto an endless, open weave, stainless steel belt.

The belt is passed through a drying chamber, which is divided into zones in each of which the temperature and humidity of the drying air is accurately controlled. Typical temperatures range from about 30° C in the initial zone up to about 70° C in the final zone. The air is usually conditioned by filtration, dehumidification and tempering. Drying involves progressive increases in air temperature, often with exhaustion of moist air and replenishment with conditioned air. Drying time is 1-5 hours, depending on the quality and concentration of the material and the exact conditions employed. The rate of drying is carefully controlled to avoid melting and case hardening. The gelatin leaves the dryer with a moisture content of approximately 10%.

The dried bed is then broken into pieces that are ground to the required particle size. Dried gelatin is tested for quality and gel strength according to standard methods developed by the Gelatin Manufacturers Institute of America.