



# MANUFACTURING

## Raw materials

The production of gelatin relies mainly on three raw materials : pigskins, cattle hides and bone.

Gelatin is also extracted from fish bones and skins, or from sheep. The former is only available in small quantities, the latter is produced mainly in the southern hemisphere.

The Weishardt Group makes gelatins from three main types of raw materials: pigskins, cattle hides and fish skins .

Pigs skins or pork rinds are received fresh or frozen in heat-insulated or refrigerated vehicles from abattoirs, wholesale butchers and pickling and preserving plants. They are:

- either processed as soon as they arrive
- or kept frozen in freezer rooms at -18°C.

Cattle hides, which are received salted or lime-soaked, come from tanneries, abattoirs or special collection sites.

Bones are collected daily, fat and moist, from the same types of suppliers, i.e., slaughterhouses and wholesale butchers.

In addition to the collagen which produces gelatin, the raw materials contain other proteins, fats and mineral salts. The quality of the end-product depends largely on their selection, transport and preservation.

In order to ensure a consistent quality and to try and compensate for the natural fluctuations in raw materials, the Weishardt Group has extensive storage capacity in the form of large refrigeration units.



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Regular supplies are ensured through subsidiaries in France, Spain and Central Europe which specialise in this field.



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## Pre-treatment of raw materials

The raw materials are handled in different ways, depending on their nature and the type of gelatine required, in the pre-treatment and extraction phases.

Skins and hides are treated directly after being cut into pieces and washed. Bones, on the other hand, are first degreased, crushed and cleaned of meat residues by washing in hot water. They are then dried and treated with hydrochloric acid in order to dissolve the calcium phosphate content. At this stage, all that remains is the organic matter of the bone which is not soluble in acid. This is the ossein, bone collagen, from which gelatin is extracted.

Two treatments of the raw materials are then used to obtain prehydrolysis of the collagen.

### - Acid treatment:

The raw material is immersed in an acid bath for a short time (between eight and 24 hours). The acid bath is drained away, the material neutralised, then washed again to adjust the pH.

### - Alkaline treatment:

The raw material is soaked in a lime solution at ambient temperature. The solution is replaced periodically.

The lime soaking process lasts for between one and four months. It is designed to saponify the fats, destroy the horny layer of the hides and skins, destroy skin secretions, swell the skin and preserve it.

The lime-soaking process is followed by a complex de-liming process, which is designed to remove all traces of lime and adjust the pH before cooking.

Depending on which treatment is used, the gelatins obtained are called acid or alkaline.

## The manufacturing process

Raw material treated in this way is subjected to a series of extractions in hot water in stainless steel cooking vats. By partial hydrolysis of the collagen, various solutions of gelatin are obtained, in variable concentrations and of decreasing quality.

Where pork skins or rinds are used, the fat is separated out of the gelatin solution at this stage.



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The solutions identified are then subjected to purification processes — centrifugation and filtration through various types of filters — in order to eliminate the particles in suspension, coagulated albumens and the last traces of fat.

The solutions are usually demineralised by being passed over ion exchangers before being concentrated and sterilised in vacuum evaporators.

They are then subjected to UHT sterilisation and turned into gel by sudden cooling in a heat exchanger.

The gel is extruded in the shape of “noodles” and is passed through a continuous dryer, fed with filtered and sterilised air, whose hygrometry and temperature are controlled.

The noodles are subsequently broken up, crushed and sifted into powders and grains of the size required by the customer.

After undergoing chemical and bacteriological analysis, the gelatins are mixed in order to create homogenous batches. If necessary, they are then ground and sifted again to fulfil user specifications. No delivery is made until these batches have been subjected to a final series of analytical tests to ensure the conformity of the product.



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RAW MATERIALS	CATTLE HIDES SKINS	BONES	PORK
Degreasing and demineralisation of the bones	Water Steam fat  Acid (HCl) phosphate Lime bones	Crushing  Degreasing  Demineralisation of the bones  Ossein	Bone  Bicalcium from the
Preparation of raw materials	Lime bath treatment	Acid bath treatment	
Extraction	Hot water (meat meal,	Washing Cooking	By-products (fat)
Purification	Ultrafiltration Demineralisation  Steam	Gelatin solutions Filtration Concentration  Sterilisation	
Obtaining the semi-finished gelatin product	Cold  Air conditioning	Sterilisation  Gelling drying  Crushing, sifting and storage	
Manufacturing the finished gelatin product		Mixing  Crushing and sifting	



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	Packing
	Despatch

**Côntrole** =Quality control