November 30th, 1953.

GELATINE PRODUCTION.

Process. (NUMBER 1)

Comments.

Caustic Soda Treatment

$2\frac{1}{2}$ - 3 tons R.M. with water to half-fill drum and dry caustic soda.
2 cwts. summer to $3\frac{1}{4}$ cwts. winter per drum.
Drum immediately for 1-2 hours then for $1\frac{1}{2}$ hours each morning and afternoon for 4 days.

Sheep pieces need less caustic soda - $1\frac{1}{2}$ - $2\frac{1}{2}$ cwts.

WAsh off 48 hours.

The caustic soda concentration varies with the season from 1% to $2\frac{1}{2}$%, absorption by the pieces is not quite complete in first 24 hours.

The heat of solution is an advantage in winter but a disadvantage in summer. Temperatures over 20°C are detrimental and under 12°C prevent adequate softening of the raw material in the time available. Optimum photographic properties were attained by increasing agitation in the drums, but this cannot be overdone or the surface of the pieces is damaged and the yield affected. Longer time in weaker caustic soda, with frequent drumming seems to be the only way of improvement.

Acid Treatment

Preliminary acidulation with $1\frac{1}{2}$ cwts. ammonium chloride and $3\frac{1}{2}$ galls. 30% hydrogen peroxide for 2 - $2\frac{1}{2}$ hours.

Wash off for $2\frac{1}{2}$ hours.

Main acidulation with $4\frac{1}{2}$ galls. sulphuric acid and $\frac{1}{2}$ cwt. of sodium sulphite for 3 - 4 hours.

Wash off for 16 hours with Company's water.

Slightly less acid is needed for Sheep pieces.

Ammonium Chloride, by reducing swelling and by its buffer action gives much more rapid and even removal of alkali. Peroxide at this stage removes some desensitizing compounds and also some of the sensitizers, and balances the shortness of the alkali treatment.

The sulphur dioxide generated from the sulphite removes ~~and~~ residual peroxide and also has a bleaching action on the pieces.

pH test with Universal Indicator on a section of average thickness at the end of acidulation should be orange at the surface and yellow to orange at the centre, and after washing should be yellow.

Extraction. The best physical results are obtained by taking many short runs of 2 - 3% concentration at a pH of about 6.5, starting at a temperature of 155F. and rising 5F. for each run. Time of extraction should not exceed 3 - 4 hours for any run except the last.

The pH is lowered to 5.5 with lactic acid before filtering, and 2 pints of santobrite added. 1 pint of the latter is added to each 100 galls. strong liquor. The time from boilers to coolers should be as short as possible. 1 pound P.C.M.C. preservative is added to each boiler for the first and second runs. Sterility of the filter pulp is essential.

Inertisation. 10 lbs. active carbon is added to the filter pulp to remove desensitizers which are chiefly concentrated in the first run, which exhausts the activity of the carbon so that it has no effect on later runs.

Peroxide is added to the strong liquor at the rate of one-pint (at 3%) to each 100 galls. As the concentration of gelatine increases in the later runs the proportion of peroxide to gelatine becomes smaller as less is needed, the proportion of desensitizers is greater in the early runs.

June 30th, 1954.

PROCESS NO. 1.

ORDINARY PHOTOGRAPHIC GELATINES.

Put 2 lb. P.C.M.C. in each digestor for Run 1.

Put 2 lb. P.C.M.C. in each digestor for Run 21

RUN	COOKING TEMPERATURE	TIME	EVAPORATE TO
1	155°	4 hours	10%
2	160°	3 "	12%
3	165°	3 "	14%
4	170°	3 "	16%
5	180°	3 "	18%
6	190°	4 "	20%
later	200°	4 "	22%

SHEEP BATCHES CAN BE COOKED AT 200° from RUN 5.

PERACETIC ACID!

WEAK LIQUOR.

1. Stir well
2. Take dip, gluemeter reading, pH.
3. Stir well in Santobrite according to chart.
4. Adjust pH to between 5.7 and 6.3 with SPECIAL ACID.
5. Stir well in CARBON according to chart, leave to settle, then filter.

STRONG LIQUOR.

1. Stir well.
2. Take dip and concentration.
3. Stir well in 3 pints WEAK PEROXIDE at 2½° Twaddell for each 4 inches.
4. Leave ¾ hour
5. Stir well in 2 gallons SO_2 at 5° Twaddell for each 4 inches.
6. If run to coolers, stir well in 1 pint SANTOBRITE (¼ jug) for each 4 inches.

NO PRESERVATIVES IN EDIBLE.

1st February, 1965.

3 types, Active, Inert, Bryta.

Bloom 180 - 210

pH 5.8

Viscosity 6 - 7 m.p.s. Good colour and clarity,
Ash content below 1% (0.4½).

1st Pieces.

Machine cut pieces into tubs 8 - 10 cwts into brick lined pits, 2 - 3 tons charge.
Preliminary wash off 12 - 24 hours, depending on type of material.
Caustic Soda Flake 3¼ cwts.
3¼ cwts could be increased to 5 cwts (winter treatment)
(basic treatment 3¼ cwts to 2½ tons) 4 - 5 day treatment occasionally stirring.
Washing off - 48 hours. (The longer the better)
Acidulate with Muriatic Acid 24 Twaddell if available or 36 Twaddell.

1 carboy - 10 galls. start drum for 6 hours. Check for more acid (maximum 15 galls.)

Final wash out - maimum 12 hours - no ceiling.

(Carbon Treatment Out)

Digestors.

12 tons of Pieces.

1st run 4 hours (1 point per hour)
4% 150° - 160° F

evaporate to 20% (less if possible)

2nd run

4 - 5 runs

1 - 3 runs photo.

Active.

SO_2 treatment 1% weak liquor 4 Twaddell.
Hydrogen peroxide - 1% weak liquor. 100 vols.

Inert Gelatine.

Use peroxide in washers, after acidulation 1 qt. in Digestors - strong.
From mincer into stainless steel tanker, (two tanks).

2" Pegson - rubber diaphragm mud hog pump.

PEGSON LTD., COALVILLE, LEICESTERSHIRE.