100 ml brine (20 °SH) requires 20 × 0.0225 g = 0.450 g pure lactic acid (or 100 l brine = 450 g).
Subject to the concentration of lactic acid, the following is required

$$\frac{450\,\text{g} \times 100}{60} = 750\,\text{g} \quad 60\%\ \text{lactic acid/100 litre brine 20 °SH.}$$

With increasing moisture content in cheese, acidity of brine has to be increased. In general, the following values are applied:

Hard cheese 13...18 °SH
Semi-hard cheese 15...20 °SH
Soft cheese 20...40 °SH.

Too low acidity in brine can cause defects such as *smeary, soapy*; however too high acidity promotes formation of *bitter compounds* and impairs cheese body structure; it becomes *short* and *crumbly*.
The pH-value of brine needs to be adjusted to the one of "raw cheese" (Tab. 2.95).

Tab. 2.95 *Tendencies for setting of brine used for salting of cheese varieties*

Cheese variety	NaCl-concentration %	°SH	pH	Temperature °C	Calcium content %
Hard cheese	20...23	↓ 14	5.3...5.2	↓ 10...16	↓ 0.08...0.15
Semi-hard cheese	↑ 18...21	↓	↑ 5.2...4.9	↓ 12...16	↓ 0.15...0.20
Semi-soft cheese	↑ 17...20	↓	↑ 5.0...4.8	↓ 14...18	↓ 0.20...0.30
Soft cheese	↑ 16...18	40	↑ 4.9...4.5	16...20	0.25...0.55

c) *Ca-content*

Calcium content of brine is important. After brine has been newly prepared with water and without addition of calcium, surfaces of immersed cheese become too soft. At too low salt concentrations, it can get a velvet-like consistency due to water absorption. This is due to peptisation of the protein gel. A calcium addition to brine activates water removal of "raw cheese", thus creating a firmer, more closed structure. Resistance against penetration of salt into the interior of cheese is thus increased, i.e. the diffusion coefficient is reduced (WALENTA). For Dutch cheese, a calcium content of 0.25...0.55% is proven; for Emmental, calcium content should not increase >0.15%, as otherwise scars (rind) turn coarse and brittle. Standard value for "Emmental brine" is 0.1115%. WALENTA determined an average value of 0.22% calcium in brine baths for German semi-hard cheese. Calcium content in brine increases with increasing frequency of cheese, as they expel calcium-containing whey. Ca-content of brine is influenced by building material from time to time. There are several methods to analyse calcium by using standard methods, flame photometry or atomic absorption spectrometry (KAMMERLEHNER).

d) *Temperature*

Temperature of brine during loading with cheese is important. The general rule is: The higher the dry matter content of cheese, the lower the temperature of brine. Normally temperature of cheese is considerably higher than the temperature of brine, therefore cooling is required. Built-in cooling tubes are common. Before immersion, cheese can also be cooled by cold water- or cold brine spraying or by cold air. In Tab. 2.95, tendencies for such target values of brine are shown.

e) *Culture addition*

For the manufacture of Camembert and Brie, white mould cultures are added to brine. Yeast and red smear cultures are suitable for smear cheese varieties, if brine is microfiltered.

f) *Special additives*

For salting of special cheese varieties such as German *Mostviertler*, cheese is immersed into a cider/brine solution (ROGENHOFER). Brine can also contain various spices.