UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Brine Math Made Easy (Ha, Ha! Just Kidding!)

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Following a tested recipe is the surest way to safely ferment vegetables. Many recipes use volume measurements for salt, but salt varies between types based on the size of the granules. Weighing salt is more accurate. I wish recipe writers would abandon volumetric recipes!

It is unsafe to reduce salt in lactofermented vegetables. When thinking considering recipes, you should evaluate the amount of salt. This information will help you calculate brine quantities. Tested recipes will fall between 2% and 10% brine concentrations. Seldom will you find a recipe that specifies the salt concentration.

You will need a kitchen scale to weigh your salt and ingredients. Life is made much easier using the metric system if you are figuring out brine. Set scale to g and use the tare button to zero it out before weighing.

Liquid brines are usually used for fermenting chunks, whereas salt is directly mixed with shredded or minced foods like sauerkraut. Some liquid brines have 5% vinegar as well.

I use this process when I use a recipe that I want to evaluate and then weigh salt:

1. Convert recipe to metric (see conversions): either food weight or volume of liquids and the salt.
2. Figure out the brine percentage: g salt / g food or g salt / ml liquid.
3. Measure food or water.
4. Calculate salt needed by weight for brine: brine % as decimal * grams of food for example

CONVERSIONS

1 lb = 0.45 kg = 454 g 1 kg = 1000 g = 2.2 lb

1 cup = 8 fl. Oz = 16 tablespoons = 48 teaspoons = 237 mL

For water: 1 kg = 1000 g = 1 L = 1000 mL (Close enough for brines with vinegar added.)

BRINE MATH

Salt varies from 230 g to 335 g per US cup measured. If it doesn't specify Kosher salt, 285 g / cup is close. Kosher is more like 245 g / cup. This is useful in evaluating recipes that omit concentration.

1% solution = 10 g / L liquid 1% by weight = 10 g / kg shredded food

Therefore:

Concentration	Chunks	Shredded
2%		20 g / kg food
2.5%		25 g / kg food
3%		30 g / kg food
5%	50 g / L liquid	
7%	70 g / L liquid	
10%	100 g / L liquid	

Most reputable recipes will use one of these brine concentrations, so you may not need much math! 😊