

MBAA Webinar “Introduction to Sake and Sake Brewing”
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Additional Questions and Answers

Question: How much Sake is produced per 100# of rice?

We get about 24 gallons from 125# of rice, so I would expect about 19 gallons from 100#. It works out to a little over 1# of rice per 750 ml bottle.

I would like to make something similar to the Murai Family Nigori Gunshu Sake, any tips?

Sure! When making nigori, we separate the kasu (rice lees) from the sake using a coarse nylon mesh bag instead of the cotton cloth bags used for the clear styles. This allows some of the finer rice particles into the pressed sake. A colander or sieve or other similar strainer can also be used.

Gunshu means no water has been added to the pressed sake. Most sake has some water added as a final step. Freshly pressed sake can have an ABV of 20%, so water is added to bring it down to a more drinkable 15% or so. To make gunshu, skip the addition of water to the pressed sake.

How can you get around a temp and humidity controlled room? ideas?

I assume you're talking about the koji room, which we keep at 87 F and very high humidity at the beginning of the koji growing cycle. Temperature control is important during the main fermentation, but that can be controlled using a jacketed tank and glycol chiller.

There is no way around the need for a warm and humid environment for growing koji, but for small batches, it can be accomplished on a smaller scale than a room. For homebrew-sized batches, a picnic cooler works well. A glass of water will provide adequate humidity. The trick is keeping the temperature and humidity up without suffocating the koji, which need oxygen to grow and survive. Keeping the lid cracked slightly and peeking in every few hours worked for me.

A step up from a picnic cooler is a larger box known as a koji crib. This is a large box dedicated to making koji. The challenge with a koji crib is keeping the temperature and humidity up while working with a relatively large amount of rice, since you can't walk in and close the door behind you as you can with a koji room.

Any advice for someone interested in trying to make sake at home or on a small production scale?

First, check with your local homebrew supply shop. They may carry the supplies you need for a 12.5 pound batch (10 pounds of polished rice, 2.5 pounds of koji, lactic acid, yeast, and yeast nutrient). If not, you can order them at <https://homebrewsake.com/products-page/>.

Making koji is probably the most difficult part of brewing sake, so I'd recommend starting out with ready-made koji. The koji available from homebrewsake.com is produced by SakeOne in Oregon and is excellent koji. You can find ready-made koji in some grocery stores, but in my experience it does not produce as good a result as the SakeOne koji.

There is lots of great information about all aspects of sake brewing on homebrewsake.com. If you want more detailed information about making koji on a larger scale, contact me at jeff@cedarriverbrewing.com and I can send you an excellent writeup on the process.

Can you speak about the genetic similarities between sake yeasts, and other industrial yeast strains? Do they have more in common with enological strains than traditional brewing strains?

Sorry, I know very little about the genetics of sake yeast. Given its high tolerance for alcohol, I would expect it to be more similar to enological or industrial yeast strains than to beer brewing strains, but that is mere speculation.

Role of koji in saccharification

I want to add a short discussion of this topic because I don't think I covered it well in the webinar.

Perhaps the most significant difference between brewing sake and beer is the saccharification of the grain. For beer, whole grain barley is malted to activate amylase enzymes which break down starch into sugars. For sake, this is not an option. One of the first steps in the sake brewing process is milling and polishing the rice. This removes the husk and any opportunity to generate enzymes from the rice.

Koji, like yeast, is a fungus, more specifically a mold. Among the many compounds it produces are alpha and beta amylase enzymes. By growing koji and using it in the sake brewing process, we are able to provide the saccharification enzymes normally provided by malted barley to break down the starches into sugars and let the yeast do its job.

An interesting aspect of the sake brewing process is that saccharification and fermentation occur simultaneously in the same vessel. This is often referred to as multiple parallel fermentation.

So, for brewing sake, there is no mash separate from the fermentable wort. Koji, rice, water, and yeast are all added to the same vessel. As the enzymes from the koji break down the starches, the yeast is ready and waiting to ferment the sugars. Both processes occur simultaneously during the course of moromi or the main mash.