

## Denshu

--- Why do so many Japanese sake fans love it? ---



I love Japanese sake. Actually, I like alcoholic drinks in general. But when I am asked what I like most, at least for the last 20 years or so, my reply has been sake. Although occasionally I do buy magazines with special features on sake, I hardly ever read them. When the flavor of sake is explained in technical jargon, I just don't want to read about it. What's good is good. If I think something is tasty myself, surely that is enough, isn't it? It was with this approach that a few years ago I came across a sake called Denshu *tokubetsu junmaishu* (special pure rice sake), produced by Nishida Sake Brewery in Aomori Prefecture. Although Denshu has a light taste, it is also extremely distinctive and flavorsome. I can't really explain why, but anyway I was captivated.

So recently, rather selfishly, I admit, I visited Nishida Sake Brewery, the only sake brewery in the city of Aomori, to learn about the secrets to the tastiness of Denshu, which I believe to be the best sake in Japan. Together with videos of the sake-making process, let me introduce the essence of Japanese sake brewing.

On the day of my visit, I heard from Mr. Tsukasa Nishida, the president of Nishida Sake Brewery, who also showed me around their sake-making facilities. When I began by explaining the purpose and title of my article, the first thing that Mr. Nishida said, with a laugh, was, "We get some people visiting here who ask such technical things as what yeast we use, but you really don't have to know about that. The important thing is simply whether or not the sake tastes good when you drink it." When I heard him say that, I knew we were on the same wavelength.

- Video of interview with Mr. Nishida

<https://youtu.be/NOolSEle6kU>



Mr. Tsukasa Nishida, president of Nishida Sake Brewery

### What do you pay particular attention to in rice polishing?

The first stage in the sake-making process is rice polishing (*seimai*). Since the National Tax Agency stipulates the quality standards for sake by the polishing ratio,<sup>1</sup> I didn't imagine Nishida Sake Brewery gave any particular attention to this process. But Mr. Nishida told me something very surprising.

"We outsource half of the rice polishing," he said, "but for the rest we have started original-form polishing [*genkei seimai*, in other words, maintaining the original grain shape] using our own rice-polishing machine. Usually, with the emphasis on time efficiency, the grains of rice are milled into a spherical shape. But milling using this special rice-polishing machine maintains the original grain shape, which is not round, enabling unnecessary parts in the outer portion to be properly removed and the starch in the inner portion to be used effectively without any waste. Since there is no waste, I think it can be said to be environment-friendly too."

1. The polishing ratio (*seimai buai*) indicates the degree to which the rice has been milled. Since the ratio shows how much the outer portion of the rice has been milled, a lower ratio means high-grade polished rice with only the genuine starch in the middle of the grain remaining. The *ginjoshu* grade has a polishing ratio of no more than 60% (meaning that under 60% of the original grain size remains after milling), and *daiginjoshu* of no more than 50%. Tokubetsu junmaishu has a polishing ratio of under 60%; the ratio for Denshu tokubetsu junmaishu is 55%.

### What about the rice-washing process?

Before my visit I had acquired a bit of knowledge from magazines and the Internet. I knew, for example, that some breweries emphasize washing rice in small quantities. Mr. Nishida, however, told me about a large automatic rice-washing machine that I had neither seen nor heard about.

“At our brewery we use a fully automatic jet-current rice-washing machine,” he said, with a look of satisfaction. “This machine fully automates the method of washing small lots, or batches, both by machine and manually. Normally three workers are required, but we need only one machine operator. And actually the machine washes the rice better than manual washing.” His eyes were brimming with confidence in the future.



**After being washed at the brewery, the rice is a glittering white.**

- Video of the rice-washing process <https://youtu.be/mgN-Lr91y88>

### **What about the rice-steaming process?**

The Nishida Sake Brewery steams sake rice<sup>2</sup> using a modern and enormous steaming oven called an OH-type double-layer steaming vat. The steamed rice is cooled to an extent in a cooling machine releasing the heat. Usually a brewery of this size would emphasize efficiency and use a device called an air-shooter. But in recent years Mr. Nishida has returned to the method of relying on manual power for this task. “If you use an air-shooter,” he explained, “the rice is hit by strong blasts of cool air, and through a thick hose it can be sent directly from the cooling machine to the final mash tank<sup>3</sup> for brewing sake. This process does not require any people. But it is difficult to make the air-shooter, which uses an extremely long hose, absolutely free of bacteria. And because the rice is suddenly blown around by the air-shooter, its temperature when transferred to the final mash tank cannot be strictly controlled. When this process is done manually, it requires five workers, and the work environment is tough. But we place the priority on making tasty sake.” Hearing his explanation, I realized that the tastiness of Denshu stems from much more than merely my own liking.

**2. Sake rice (*sakamai*) refers to rice used as an ingredient for brewing sake. Officially it is called “rice suitable for making sake” (*shuzokoteki-mai*).**

**3. The final mash (*moromi*) tank is the brewing tank in which steamed sake rice, water, and yeast starter (the basic mash made in a small tank by adding yeast to a mixture of steamed rice, koji, and water and cultivating it) are added three times and allowed to ferment.**



After steaming, the rice, which had a gem-like whiteness after washing, seems to have been given the warmth of life.

- Video of the process from steaming vat to cooling machine <https://youtu.be/jMqpmtuO1tw>

### What about the koji production process?

Koji, which is made by propagating *koji-kin* (*Aspergillus oryzae*) mold on steamed rice, changes the starch into sugars. There are various types of koji, but Mr. Nishida told me, “You don’t need to know the details.” Agreed!

Cooled to an extent by a cooling machine, the steamed rice is wrapped in small hemp bags, which are placed in wheeled box containers and taken to the special koji room.<sup>4</sup> Here it is laid evenly on large tables filling the room, and there is a wait until the temperature falls to a certain level. Then koji-kin mold is sprinkled evenly on the steamed rice. After a while, the steamed rice is turned over, and more mold is sprinkled before it is wrapped in cloth. A few hours later, the koji rice is broken up and divided into small lots with large spatulas before being manually kneaded to rub in the mold spores. After that, in a machine, the temperature is gradually raised to 42 degrees Celsius to cultivate the mold. When the koji is produced, the temperature is lowered and it is dried and then, at an appropriate time, transferred to the basic mash tank and final mash tank.

In the trade, sprinkling the mold spores onto the steamed rice is called “cutting the koji.” At Nishida Sake Brewery, previously, for sake with a lower grade than ginjoshu (including tokubetsu junmaishu), koji was “cut” in the cooling-machine process. Today, however, koji for all sake is produced in the special koji room. Although this greatly prolongs the process, it guarantees that all koji, which is so crucial for sake brewing, is on a par with ginjoshu.

**4. The special koji room (*koji muro*) is a climate-controlled room with high temperature and humidity to cultivate the mold spores. The temperature is maintained at around 30 degrees Celsius and humidity at about 60%.**





Unlike other facilities in the brewery, the special koji room has a shrine-like atmosphere with walls and doors made of cedar.

- Video of the process from cooling machine to koji production <https://youtu.be/qMSfOvXqqJI>

### What about making the basic mash?

The basic mash (*shubo*), literally the mother culture, or yeast starter, necessary for brewing Japanese sake, cultivates yeast using steamed rice, koji, and water. The koji changes the starch into sugars, and the yeast transforms the sugars into alcohol. The yeast cultivated as the mother culture ferments the final mash, as explained below, to produce sake.

There are various types of koji and yeast, but, as Mr. Nishida said, the story would become too technical with this information, so it is omitted here. Suffice to say that by combining koji and yeast in different ways, various types of sake can be brewed. The temperature of the room in which the basic mash is made is set low, but Nishida Sake Brewery also uses specially ordered thermal tanks enabling fine temperature adjustments to be made in each tank.



Thermal tank in the basic mash room

- Video of the basic mash room

[https://youtu.be/GHgXK\\_Mvxgg](https://youtu.be/GHgXK_Mvxgg)

### What about the process of making the final mash?

The final mash (*moromi*) is made by adding *kakemai* rice to water and mixing in the basic mash to ferment the mixture. Water, kakemai, and the basic mash are added three times until the tanks are full. In this process, at Nishida Sake Brewery all 30 tanks are thermal tanks enabling separate temperature adjustment. It deliberately does not use

the air-shooters explained above in the section on steaming. The steamed rice taken from the cooling machine is caught in hemp cloth in small lots, which are loaded evenly and in a layer on a wheeled box container with a hose emitting cool air. After waiting until the temperature drops to the scheduled level, the mixture is then transferred to the final mash tank for fermentation.

5. *Kojimai* is rice used for making koji; *kakemai* is simply steamed rice not used for making koji.



The final mash room is so spotless and modern, it makes you think of a clean room.

- Video of the process from cooling machine to insertion in tank and mixing

[https://youtu.be/T\\_gvYBZjq-4](https://youtu.be/T_gvYBZjq-4)

### What does Mr. Nishida think about low-alcohol sake?

Japanese sake has a higher alcohol content than wine, and some people say that makes it difficult to drink. Recently low-alcohol sake made not by diluting with water but by restricting the production of alcohol has appeared. When asked about this trend, Mr. Nishida was clear in his reply. “I know that making low-alcohol sake is becoming popular,” he said, “but I think there are risks. Pyruvic acid remains in the sake, so there tends to be an unpleasant rice-like smell. I think sake with an alcohol content of 15%–16% tastes best. I want to sell sake that I personally think is good.”

### What about the pressing and filtering processes?

“When pressing the fermented mash at a low temperature,” Mr. Nishida explained, “if the released sake comes into contact with air, it will oxidize. To transfer it to a tank while preventing oxidation as much as possible, we attach a hose to the exit and inject from the bottom of the tank. By doing so, we can hide the liquid from outside air and transfer fresh sake without any foaming.” Hearing this, I remembered Denshu’s crispness and fizzy freshness. I’ve also heard that when the sake is pressed at a low temperature, the carbonic acid does not escape.



Pressing machine

“Regarding filtering,” Mr. Nishida went on convincingly, “we use a large filter so that the flavor of the sake remains.” Unfortunately, on the day of my visit the processes of pressing and filtering were not being implemented.

### **What about the pasteurization process?**

“The purpose of pasteurization [*hi-ire*],” Mr. Nishida said, “is to halt the work of enzymes that harm the sake and impair its taste and fragrance. Pasteurization kills microbes, stabilizes quality, and enhances the sake’s preservability. At our brewery, we bottle fresh sake and, before storage, conduct low-temperature sterilization on each bottle with hot water of 65 degrees Celsius. This is called ‘one-time pasteurization for bottle storage.’ Apart from unpasteurized sake, we pasteurize all sake by this method.” For bottle storage, Nishida Sake Brewery has 30 refrigerated containers and a large refrigerated warehouse with a capacity of about 360,000 liters (200,000 bottles).

Regardless of such grades as daiginjoshu, ginjoshu, and tokubetsu junmaishu, Denshu has “Keep refrigerated” written on its label. For some time I had wondered whether the brewery makes refrigeration essential for retail stores as well, so I asked Mr. Nishida. “Of course,” he replied without hesitation. “However much sake is pasteurized, it is going to deteriorate due to the outside temperature. We don’t supply Denshu to liquor stores that do not properly store it in refrigerators.”

Unfortunately, on the day of my visit there was no pasteurization either. They had just finished preparing new rice harvested this year, so it would be a little while longer before new sake was produced.

### **What is the Nishida Brewery’s aim for tasty sake?**

“The sake that I am aiming for,” Mr. Nishida remarked, “is midway between clear sake made from highly polished rice and tasty sake with a strong flavor. In terms of the polishing ratio, I think midway between 40% and 50%, around 45%, is best. Just because the rice is milled a lot does not mean that the sake is going to be good. The protein part on the outer portion of the rice has an unpleasant taste. Personally, I think that with a polishing ratio of under 55%, this protein part changes into flavor. If you polish the rice too much, the sweetness of the starch takes over, and the flavor components in the protein, such as glutamic acid, become weaker.”

Finally, I asked Mr. Nishida what his brewery’s flagship sake was. The word “flagship” refers to a ship carrying the commander of a fleet. In business parlance, therefore, it means the most important or top-quality item—in other words, the *crème de la crème*. After thinking for a moment, he replied confidently, “Undoubtedly our

flagship brand is Denshu tokubetsu junmaishu. We produce various types of high-grade sake. When asked which one constitutes our foundations, I would have to say this sake, which has been a long seller for half a century and accounts for half of our production volume. Its strong sales even today are testimony to its flagship status.” For me personally, this was the happiest moment of the day. I felt as though I were aboard the flagship.



My visit to the brewery was in late October 2022. It was a fine autumn day in Aomori Prefecture, with a crisp blue sky. Feeling in a refreshed mood, just like the weather, I boarded the Hayabusa Shinkansen bullet train to head home. Needless to say, I was carrying bottles of Denshu tokubetsu junmaishu in both hands.

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### **Cooperation**

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The brewery does not offer tours, sake tasting, or sales.

### **History of Nishida Sake Brewery**

1878: Establishment

1974: First sale of Denshu junmaishu

1981: Denshu is selected as the best sake in Japan in a tasty sake contest organized by the magazine *Tokusengai*.

2003: Began making only premium sake; abolition of activated carbon filtering

2018: Realization of one-time pasteurization of all products