

Making the Saya

Scabbards (*saya*) are made as either a base for various metal mountings such as the guard (*koshirae shitaji*) or as a plain scabbard (*shirasaya*) designed to protect the blade. The former is designed for wearing the sword, and the latter is used for storing the blade.

Saya are made from *honoki* (Japanese big-leaf magnolia), left to dry naturally for 10 years.



Manufacturing Process

A saw is used to cut a piece of *honoki* to match the size of the blade. This piece is then cut in half. The shape of the blade is then copied onto the inside of the *honoki*, and various chisels are used to carve out the shape.

The two halves bearing the shape of the blade are then glued together using a glue paste made from rice (*sokui*). The pieces are tied together with string until the glue dries, and then a wedge is inserted to secure the pieces firmly together.

Sokui

Unlike artificial adhesives, the glue paste has no adverse effects on the blade. Due to its natural qualities, it also facilitates cleaning the inside of the *saya*, and, if necessary, its repair.

Shirasaya

A plane is used to shave the outside of the *shirasaya* before aligning the opening of the *saya*. The hole for securing the hilt (*tsuka*) and the tang are also aligned with the tang hole. The chamfered finish is then polished with a non-flowering rough horsetail plant as well as the leaves of a *muku* tree to bring out the luster.

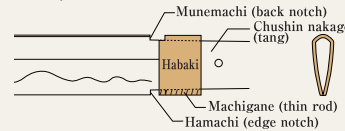
Koshirae shitaji

Taking into consideration all of the metal fittings and the lacquer finish, a base for mountings (*koshirae shitaji*) will be thinner than a *shirasaya*. A scabbard mouth (*koikuchi* - so named for resembling a *koi* fish's mouth) a knob, a hook-shaped fitting, and a scabbard tip made from buffalo horn or wood will be added to the *shitaji* at the end. Once fitted, the *saya* will be sent to one artisan to finish the handle wrap, and another artisan will paint the scabbard.

Making the Blade Collar

The blade collar (*habaki*) is a wedge-shaped piece used for support and to prevent the sword from falling out of its scabbard (*saya*). The blade is supported by the back and the *habaki* within the *saya*, while the *habaki* also helps keep the other components from falling off. When in the *saya*, the blade never touches the inside of the scabbard. This would not be possible without the *habaki*, which holds the root of the sword tight and supports the sword so that it does not hit the inside of the *saya*.

Although a single *habaki* is common, sometimes two are used so that a family crest or other pattern can be carved onto the sword.



1 Cutting out the Habaki

Copper is the most often used material, but it is not uncommon to see gold or silver *habaki*. This base material is first cut to the desired size.

2 Smithing through the fire

After heating the cut material, the blade side of the *habaki* is extended by hitting the piece with a hammer. The *habaki* must be folded to a shape that suits the blade. Depending on the sword, the portion of the *habaki* that comes into contact with the back notch may then need to be cut out.

3 Brazing

A thin rod is inserted along the blade side of the *habaki*, and the resulting two parts of the *habaki* are welded together by a heated mixture of silver and brass.

4 Upper decoration

When making a double *habaki*, steps 1 to 3 are repeated to match the upper decorative piece (*uwagai*) with the blade, while being kept separate from the lower functional piece (*shitagai*).

5 Forging

After brazing, the base is lined up with the tang and pushed upward while being hit with a metal hammer to fit the notch.

6 Gold plating

After the *habaki* is shaped and the *uwagai* is attached, it is fitted with a thin gold plate. The *habaki* is decorated using a file or a chisel at the end.

Polishing and Sharpening the Blade

How beautiful a sword forged by a swordsmith becomes depends on the skill of the polisher (*togishi*).

Besides being responsible for the polishing and sharpening of a newly crafted sword, a *togishi* may at times be called on to restore an old Japanese sword that has been sitting for years at home.

In addition to verifying the condition of the material, a *togishi* is responsible for analysing the history of a sword, discovering the story of the era and the location it was made, and then bringing out those features one by one.

Depending on the condition of the sword -including its appearance, structure, and extent of oxidation- the *togishi* may both polish and restore the blade.



A Complex Manual Process

A *togishi* generally begins by shaping the blade, using a coarse grinding stone and then gradually works toward finer whetstones, using around seven or eight different stones to complete the process. The blade and its edge require different finishing methods, with the edge ending up a whitish color and the remaining parts of the blade being polished to a bluish-black.

Various Kinds of Whetstones



6 Sword Engravings and Guard Crafting

During the *Kofun* period (mid-3rd to 7th century), it was believed that engravings on a blade were symbols of power.

As the *samurai* era (11th to 19th century) emerged, a slender groove was carved into the blade to reduce weight without sacrificing strength.

Buddhist images, such as depictions of *Fudo Myoo* and *Marishi-ten* or Sanskrit (*Bonji*) and the dragon god (*Kurikara*), were also carved for religious purposes.

As the *samurai* society became more peaceful, more decorative carvings such as pines, bamboos and plums, classical Chinese poetry, and Japanese poetry (*waka*) began to appear in engravings.



Painting

A composite sketch is drawn on Japanese paper (*washi*) and then copied directly onto the blade in ink.

Carving

As shown in the image, the lines are then carved using a chisel, and then through a process using rough engraving and fine engraving, a three-dimensional image is created.



Polishing

In the final step, the carved image is polished smooth to remove all traces of the chisel.

Inlaying

Inlaying is the process used to color the guard. This process includes incorporating many different materials into a single substance by hitting the added gold, silver or copper with a hammer.



Guard crafting

The guard (*tsuba*) is made with the same wrought iron as Japanese swords and undergoes the same process for engraving. Inlaying is applied before the guard undergoes final polishing. These inlays are then allowed to oxidize in order to protect the base metal.

5 Wrapping the Tsuka

In addition to adding decoration, the handle wrap makes the sword easier to hold for use while also reinforcing the handle.

Since the *Edo* period (1603 - 1868), the wood of the handle was covered with shagreen or rayskin (*samegawa*) and then wrapped with braids made from silk in a diamond pattern. To prevent the braids from slipping and for further reinforcement, *samegawa* is used on the base. The highest quality *samegawa* is made from a single sheet of a single ray.



Manufacturing Process

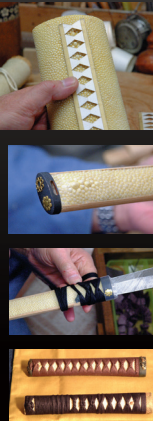
Based on the wooden handle base, the wood is removed with the finished product -including the *samegawa* as well as the thickness and number of times the rope will be wrapped around the handle- in mind. The *samegawa* is cut according to the size of the handle and then placed in water for softening before being pasted on using *sokui* (the same paste used by the *saya* artisan).



Approx. 1.5 cm wide piece of shaved wood, usually made from Japanese big-leaf magnolia is glued to the blade and back side of the tang using a mixture of pine resin and rapeseed oil.

After determining the length, the rope is then wound on the handle. In order to make a three-dimensional texture that is easy to hold, Japanese paper is placed under the rope before winding begins.

The wound rope -found in a variety of styles- serves not only as decoration but also adds functionality.



4 Lacquering the Saya

In addition to being light, durable, and waterproof for maximum practicality, *saya* are considered incomplete without a beautiful finish. As such, lacquer made from natural resin is used to strengthen and give beauty to the *saya* through thin layers painted, dried, and repeated multiple times. This process generally takes from two to three months.



1 Preparing the base

Raw lacquer, Japanese paper (*washi*), and other products are used to reinforce and paint the base.



2 Intermediate Coatings

After the lacquer is allowed to soak into the wood, a clear lacquer is applied using a brush and left to dry. Once dry, wet rubbing (polishing using ground charcoal and whetstones) is performed multiple times.



3 Finishing

After the surface has been polished, it is rubbed multiple times by hand using a glossy lacquer before being polished again and glossed.



Maki-e



The *maki-e* technique is employed to decorate the *saya* with various symbols and images including family crests, animals, plants, and landscapes. This technique involves drawing symbols using lacquer and then sprinkling metal powder such as gold to embolden the design.