

COVID-19 GOOD PRACTICE GUIDE

for music stores / workshops / manufacturers / musicians



WOOD & BRASS

WIND INSTRUMENTS



Edit June/04/2021 - Sources : CSFI - ITEM - Makers - UVE

These recommendations are made on the basis of current knowledge and, for the time, necessary to manage the COVID crisis.

Observe a minimum distance of 1m between people in any common masked situation.
Increase this distance to 2m when a person has to remove their mask
(to try an instrument) making sure to put the mask back on as soon as possible.



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PREAMBLE

1/ IMPORTANT NOTES

This guide contains recommendations for the disinfection of wind instruments and is to be applied only when in doubt about contact with the virus.

This guide is not intended to be exhaustive; other solutions, which are not included here, could also prove to be effective.

The information presented here comes from discussions / tests carried out with a certain number of products or processes on instruments. These recommendations are made on the basis of current knowledge, and for the time necessary to manage the COVID crisis. The actual effectiveness of the solutions presented against this virus cannot yet be guaranteed. These are considered to likely be effective in reducing the transmission of viruses.

This new version of the guide is based on various data:

- The information on the compatibility of the protocols with the materials comes from tests carried out by the member manufacturers of the CSFI during the months of April and May 2020.
- Virucidal efficacy tests were carried out at the Unit for Emerging Viruses as part of the PIC project (Protocols for Instruments facing the Coronavirus). These tests have been performed with SARS-CoV-2 virus and some have specifically tested the effectiveness of the protocol on instrument materials or directly on musical instruments.



The update of this guide is based on the results of tests conducted in the UVE laboratory carried out with the SARS-CoV-2 virus.

In all cases, it is essential to ensure the proper maintenance of your instrument / accessory and to ensure regular cleaning.

Generally speaking, when handling an instrument or accessory in a store, if the musician / technician washes / disinfects his hands well, wears a mask and washes / disinfects again hands after handling the instrument, this greatly minimizes the risk of the virus being transmitted between the musician / technician and the instrument / accessory.

However, in the case of wind instruments, if the instrument or accessory is the subject of a test during which the musician blows air inside, a mask cannot be worn and additional measures should be implemented to ensure the trial does not cause transmission of CoVid-19.

Summary of situations in which possible contamination of the instrument / accessory can take place. These cases vary depending on whether you are a musician, a manufacturer or store:

- **In store / workshop.**

If the instrument / accessory is played (blown into) by different people.

During a return (sale / rental).

During a repair.

- **During an exhibition / show type event.**

Once the instrument / accessory has been played (blown into) by a person.



PREAMBLE

- Other cases.

As soon as the instrument / accessory has been used by a person other than its owner (loan, shared instrument / accessories, etc.). In all other cases, as long as the instrument does not change users, it is not useful to disinfect. Cleaning and maintaining the instrument / accessory regularly remains a good practice, even outside of an epidemic period.

2/ COMMON PRACTICES: COMMON SENSE

- Before disinfecting, wash / disinfect hands thoroughly and clean each part of the instrument / accessory with a clean or disinfected dry cloth / swab ¹. Disinfection will be more effective if the instrument / accessory is dry and clean.
- Before applying any of the products or processes described in this guide to the entire instrument / accessory, carry out a test on part of it.

There are mainly two types of processes.

- **Contact methods:** in this case, a virucidal disinfectant is generally used associated with mechanical cleaning (mechanical action of rubbing or wiping a surface).
- **No-contact methods,** which include electromagnetic waves (UV-C for example), heat treatments, treatments using a gas or mist (ozone for example) or quarantine. To date, contactless methods are not recommended / utilized (except in the medical or industrial fields) and present risks requiring important precautions. Contact methods are therefore more recommended, their virucidal effectiveness being more easily controllable.

[1] Do not use a cloth several times without having either disinfected with an effective product, or washed at 60°C less, for more than 30 minutes, with detergent. Otherwise, throw it in an airtight container.



DISINFECTANT PRODUCTS AND PROCESSES

1/ DISINFECTANT PRODUCTS FOR THE CONTACT METHOD

- Alcohol greater than 70%. Alcohol is a recognized and confirmed virucidal on SARS-CoV-2; the recommended alcohols are ethanol (the most common) and isopropyl alcohol. Their concentration must be at least 70% (drugstores) and if possible without additives such as camphor so as not to leave deposits. Alcohol-based solutions (ethanol CAS 64-17-5, isopropyl alcohol CAS 67-63-0, certain NF EN 14476 products) which also have degreasing properties will impact the shine of polished materials (wood or plastic) and result in a more matte effect. They are also very flammable and irritating to the eyes, which can cause drowsiness.
- Chlorine derivatives from 0.05% up to 0.5% active chlorine, the most common chlorine-based product being bleach. CAUTION: mixed with other products such as acids, this type of product can release chlorine, a dangerous gas. So do not mix bleach with other products. Bleach (CAS 7681-52-9) and other chlorine-based products should not be used with silver-plated instruments, keywork or accessories: it darkens them and greatly deteriorates aluminum, steel and others ferrous alloys.

How to prepare a solution of chlorine at about 0.5 % from bleach?			
Gloves and goggles are recommended when handling the stock solution.			
Stock solution		Dilution to be achieved	
% active chlorine (C.A.)	% sodium hypochlorite (NaClO)	Vol. bleach	Vol. Water
1.00	1.05	1	1
2.60	2.73	1	4
3.60	3.78	1	5
4.80	5.04	1	7
5.00	5.25	1	8
5.86	6.15	1	10
9.60	10.07	1	15

The value corresponds to the concentration of active chlorine. Usually it is found in 2.6%. For example a dilution of 5 times (a dose of product at 2.6% for 4 doses of cold water) if a final concentration of about 0.5% is desired, taking care not to drop below a concentration 0.05%. Its vapors are irritating to the skin, eyes and respiratory tract...

- Didecylmethylammonium chloride (CDDA, of the quaternary ammonium family) from 0.45%. This active ingredient is common in household products in the form of sprays or wipes.
- Products in accordance with standard EN 14476 (Sanytol®, SaniCloth®, CleaniSept®, Arsilom®, Virunet®, etc), generally, the active ingredient is water oxygenated, an alcohol, a quaternary ammonium, didecylmethylammonium chloride (CDDA) or derivatives based on chlorine. Attention must be paid to the protocol of use (duration of contact for example).



DISINFECTANT PRODUCTS AND PROCESSES

- **Soap or neutral detergent:** on some instruments, soap cannot be applied with friction equivalent to that of the hands, or with the same amount of water. Its use is probably not as effective as the previous products. However in cases where its use is possible, some soaps have been shown to be effective in deactivating the SARS-CoV-2 virus after a contact time of 3 minutes. Products tested and validated by our work are:

Pure KLINTE D[®] soap, effective up to 10 times diluted
Savon Little Marcel green soap[®] pur

BE CAREFUL to follow the instructions of the disinfectant manufacturers, especially concerning the necessary contact times. The products are indeed effective after a certain duration of contact with the affected surface. Tests carried out indicate that alcohol and chlorine in these concentrations was effective in 1 minute, while soaps were only effective in 3 minutes.

- **Invalid products:** The first version of the guide carried out before laboratory tests also recommended the use of oxygenated water at 3% (or 10 volumes) and products based on it. However, the tests revealed that its efficacy was insufficient on SARS-CoV-2 to be considered as virucidal within the meaning of the standard. This is why this product is no longer listed in the compatibility tables given for each instrument; the other products mentioned above having a much higher efficiency.

Notes on cloths and wipes

- **Microfiber cloths.** They do not scratch varnishes and are reusable after disinfection or washing (> 30 min, > 60°C, with a detergent product).
- **Dry polishing cloths or wipes.** Reusable after disinfection or washing (> 30 min, > 60°C, with a detergent)
- **Pre-moistened wipes.** Ensure that they meet standard EN 14476² and that they contain one of the active ingredients cited as effective in the previous section, that they are not abrasive as well, and use them according to the protocol on the label.
- Avoid paper towels with cellulose, which can scratch the surfaces.

2/ NO-CONTACT DISINFECTION METHODS

Some unverified UV or ozone-based processes to disinfect musical instruments or other products have already been publicized on the internet and social media. Extreme caution should be exercised as to the health risks posed by the use of these no-certified methods by professional, scientific and independent bodies.

- **Ultraviolet.** Ultraviolet (UV-C only) treatments should be handled with extreme caution because they can be harmful for the skin and the eyes, as well as being able to produce ozone in the air which is toxic. In addition, these are not a guarantee of full effectiveness, especially when areas of the instrument cannot be directly exposed. It is important to take into account the wavelength of the UV-C lamp (220 to 280 nm), its power, its distance and the duration of exposure. It is advisable to refer to the document “UV-C warnings” available on the [CSFI](#) and [ITEMM](#) websites.

[2] Standard EN 14476 means that the product disinfects, deactivating 99.99 % of viruses (division by 10000), in the protocol specified by the manufacturer.



DISINFECTANT PRODUCTS AND PROCESSES

- **Ozone** in the gas phase can inactivate viruses, but only at a high concentration that is harmful to humans. Its use requires very specific knowledge and skills and is not recommended to date. It is advisable to refer to the document “Warnings for ozonated solutions” available on the websites of the [CSFI](#) and the [ITEMM](#).
- **Heat treatments.** Various laboratory tests have shown inactivation of the virus when exposed to high temperatures (at least 90 degrees celsius) for 30 min according to our own tests on different copper alloys) Only certain instruments / accessories could be compatible with these types of treatments . More information on the use of thermal processes is given in the brass section (page 36).

3/ QUARANTINE

The concept of quarantine is not yet well defined because it depends on several factors (the survival of the virus depends on different parameters such as the material, its texture, the humidity rate, temperature, protein and bio-film...). It is for this reason that we had the quarantine times necessary for spontaneous inactivation of the virus tested in the UVE laboratory on materials or coatings commonly used in instrumental manufacture⁵.

As a reminder, if the quarantine of instruments is not an option, it is possible to disinfect them effectively against Covid-19 by following the protocols recommended in this guide.

GENERAL QUARANTINE TIME RECOMMENDATION

In view of the values indicated at the end of this document which were determined by our experimental work, we observe an inactivation time of the virus which differs according to the surfaces and can go up to 4 days. This time may vary depending on the surrounding conditions, the concentration or the amount of virus deposited. In addition, the instruments are often made of different materials and coatings at the same time. That is why we recommend a quarantine period of 5 days for all instruments.

In addition, other more specific surfaces have been tested, namely the reeds and papers (ordinary or sheet music):

On the cane the inactivation time is estimated at 6 days.

Work on the papers indicates that a certain amount of infectious virus is still found after 6 days. We therefore recommend a one-week quarantine for shared papers (scores, etc.).

[3] Each material was seeded in triplicate with 5.8 logTCID₅₀/μl, stored at 19-21 °C (50-60% relative humidity).



RECOMMENDATIONS DURING INSTRUMENT TESTING

Alloys and metals	Duration (mini.)
Brass	3 days
Nickel silver	3 days
Silver plating	3 days
Nickel plating	3 days
Gold plating	4 days

Varnishes	Duration (mini.)
Polyurethane	2 days
Nitrocellulose	3 days
Linseed oil	4 days
Shellac	4 days
Epoxyde	4 days

Others	Duration (mini.)
Ebonite	4 days
ABS (polymer)	2 days

Note: Due to technical difficulty, the duration on raw (unvarnished) wood surfaces could not be estimated. Specific work on the propensity of different woods to absorb the virus and the possibility of infectious release should be closed and will be the subject of a future publication.

4/ WIND INSTRUMENTS

The choice of the process depends on its compatibility with the materials and coatings that make up the instrument / accessory. In the case of wind instruments, the primary parts to be disinfected are those in contact with the mouth (mouthpiece, flute lip plate), then the air column of the instrument which may have been exposed to droplets or saliva, and condensation water formed during the playing / operation of the instrument. The outside of the instruments, as well as the cases, can also be disinfected, but the risk of transmission of CoVid-19 is less likely in those locations.

This recommendation guide applies to modern instruments / accessories. No tests have yet been carried out on very old instruments whose materials and coatings may differ.



RECOMMENDATIONS DURING INSTRUMENT TESTING

1/ RECEPTION ORGANIZATION

- Preferred method of instrument trial is by appointment.
- Suggest symptom screening at entry to facility: refer to the national protocol for deconfinement of the French Ministry of Labour. If in doubt, do not allow the instrument to be tried.

2/ SPACE LAYOUT

- Recommended types of tryout spaces

The risk related to musical practice decreases with the increase in the size of the room, as this facilitates the dispersion of particles in ambient air. Large rooms are thus to be favored when possible, as well as rooms with windows or mechanical ventilation fitted with high-performance filters (see below).

- Facilities

Plexiglas walls such as those used at the cash desks of certain businesses are often recommended to prevent the diffusion of large drops or spray towards the front. However, they can be an obstacle to air renewal by creating areas for aerosol accumulation.

- Ventilation / aeration / air conditioning

It is essential to ensure a renewal of air as often as possible, utilizing natural and / or mechanical means. One should not utilize indoor air recycling systems if they are not equipped with high-performance filters (example: HEPA filters) and cleaned regularly. Currently, there are no specific measures for wind instruments and the principles are the same than in the general case (full information)

Natural ventilation : It is recommended to ventilate the room where the instruments are tested as often as possible, ideally after each person who has played. There is no official recommendation on the duration or the aeration method; however, a duration of 10 to 15 minutes after each individual who has played seems prudent, depending on the intensity of the air renewal.

Mechanical ventilation:

- The use of a CMV should be supplemented as much as possible by natural ventilation. For example: twice a day for 10 to 15 min.
- Fans are to be avoided since they can transport particles from one person to another.
- The ideal situation would be to have a vertical circulation, ensuring air movement from the bottom to the top to evacuate the aerosols emitted, or from the top of the room to the bottom in order to lay aerosols on a surface that can be disinfected.
- Air purifiers may be considered as a backup solution in case one is unable to renew the air in any other way. They seem to be relevant in the case of small parts but hardly effective in areas of large volume. However, we must be vigilant as for the model and its specifications.



RECOMMENDATIONS DURING INSTRUMENT TESTING

- Number of people and distances

If possible, it is best if the musician tries the instrument alone in the room or area provided for this purpose. In the presence of other people, it is advisable to keep a safe distance; the distance currently recommended when practicing a wind instrument is generally 2 meters. You should also stand on the side or behind the player rather than facing him / her.

3/ PRECAUTIONS

- Before and after the test

The instrument and accessories must be clean, handled while wearing a mask and with clean hands as much as possible. Instruments must be positioned / placed in the designated tryout space prior to the musician's arrival.

After testing, disinfect the instrument and accessories. The musician must clean his hands before and after the test.

- Playing Time

Avoid playing for more than 15 minutes on the same instrument to avoid the formation of too much condensation inside of it.

- Condensation

Before testing an instrument, it is strongly recommended that you bring it to room temperature beforehand. An instrument stored in a "cold" environment will promote the formation of condensation when it begins to be played. Condensation should be removed as often as possible to avoid the buildup of potentially infectious drops and the re-emission of droplets. It is advisable to dispose of the condensed water in a closed container and / or containing a disinfectant solution. It is advisable to clean the floor and other surfaces where the instrument was played. Wet cleaning is preferred and vacuum cleaner usage should be avoided (which can resuspend particles deposited on the floor).



RECOMMENDATIONS DURING INSTRUMENT TESTING

- Protection on the instrument

Several studies, as well as our own experimental work, have shown that the particles emitted by a wind instrument follow the main air flow and come out mainly through the bell, even if there are side holes open upstream (saxophone, clarinet, oboe ...). Since the emergence of the epidemic, several brands have developed protections generally called “bell covers”, fabrics that completely cover the bell of an instrument. These devices, available for all sizes of bells, aim to reduce the amount of particles that can escape through the bell of the instruments. Various studies, including ours⁴, now indicate that the concentration of particles measured at the end of the instrument is strongly lessened when wearing a bell cover.

Like masks, the effectiveness of these devices depends on their composition, namely the fabrics used and the number of layers, which vary according to the commercial references. As the fabric fibers become loaded with moisture as you play, it is assumed that their effectiveness decreases after prolonged playing time and it is therefore advisable to change the protection when it appears too wet.

As explained elsewhere, it is also advisable to be vigilant on the liquid droplets which accumulate in the bell cover following a period of play, and to handle the protection with precaution after having used it (avoid splashing, do not put the protection used on other surfaces that will be touched, wash your hands, etc.).

It seems to date that the protections available on the market have a minimal effect on the comfort and sound reproduction of instruments..

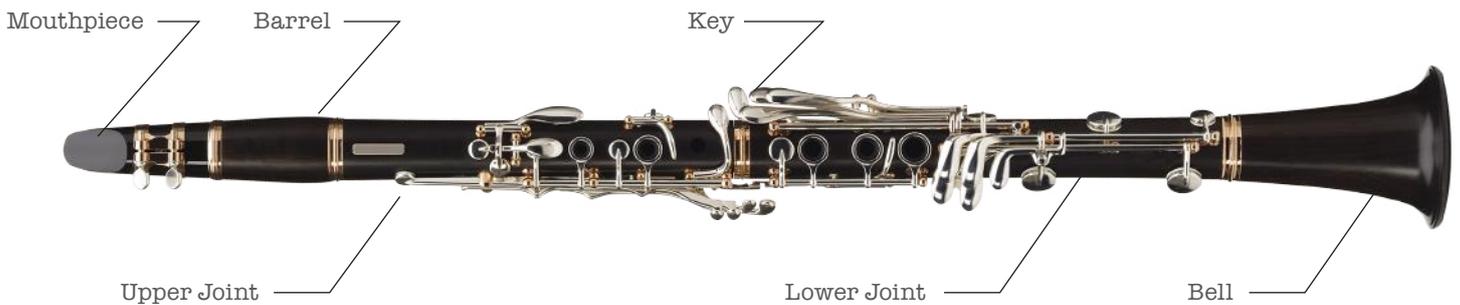
[4] Studies carried out within the framework of the PIC-PIV project (Instrumental and Vocal Practices), more information on the [CSFI](#) or [ITEMM](#) websites.





CLARINETS

CLARINET NOMENCLATURE



MATERIALS USED

- Body, barrels and bells

Clarinets are generally made of grenadilla wood, also called African Blackwood (*Dalbergia melanoxylon*). Less frequently, they can be made from another species of dense wood such as boxwood or other *Dalbergia* as well as material composites such as Green Line[®], which behaves like polished wood. Wood is minimally polished but it can also be stained, oiled or varnished. Clarinets can also be made from plastic type ABS (Acrylonitrile Butadiene Styrene copolymer) often used for student instruments. More rarely, they will be made of ebonite or metal (nickel silver or silver).

- Keys

The keys are usually made from a brass-type copper alloy (copper + zinc) or nickel silver (copper + nickel + zinc). They are almost always plated. The two most common finishes are: silver plating or nickel plating. There are also keys with a gold or rhodium silver plating, but these are less common.

- Pads

The most commonly used materials are fish skin, cork, leather, Gore-Tex. There are also pads in synthetic materials.

- Corks and key bumpers

The corks of the tenons and the key bumpers can be of natural origin (natural cork) or synthetic. They may also include felt.

- Neck and metal bell

In the case of the bass clarinet, basset horn, etc., the neck and the bell are made from a copper alloy (brass or nickel silver), or even pure copper. They are generally plated with silver or nickel or sometimes directly varnished.



CLARINETS



COMPATIBILITY TABLES

As a reminder, the list of recommended products is available in the «disinfectant products» section for contact method page 5.

Again, and as a reminder, always test the selected and compatible product on a small part of the instrument in order to see the result, before applying it to the whole instrument.

Finish	Bore	Bodies / Barrel / Bell			Keys / Neck / Bell		
	Oiled	Wood polished / Composite	Stained wood	Varnished wood	ABS	Silver plated	Nickel plated
Ethanol (>70 %)	yes	yes	no	not tested	yes	yes	yes
Isopropyl alcohol (>70 %)	yes	yes	no	not tested	yes	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	no	no	not tested	no	not tested
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	no	yes	yes, without alcohol	yes	yes	yes	yes
Soapy water / neutral detergent	no	no	no	no	yes	yes	yes

Finish	Pads & key bumpers				Mouthpieces *		
	Leather, fish skin	Cork	Synthetic	Gore-Tex	Hard rubber	ABS	PMMA
Ethanol (>70 %)	yes	yes, but dry up material	not tested	it appears, yes	yes, if cold water and soft soap only	yes	yes
Isopropyl alcohol (>70 %)	yes	yes, but dry up material	not tested	it appears, yes	yes, if cold water and soft soap only	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	no	no	yes	yes	yes
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	yes	yes	yes	yes	not tested	not tested	not tested
Soapy water / neutral detergent	not tested	not tested	not tested	not tested	yes, if cold water and mild soap only	yes	yes

* The specific case of mouthpieces is addressed in the mouthpieces section, page 42.



CLARINETS



RECOMMENDATIONS FOR DISINFECTION

To disinfect, we encourage you to use a virucidal product such as those previously mentioned. If you do not want to use this type of product on your instrument, you must dry / swab it with clean material, then respect a quarantine period (see quarantine section on page 6).

- Bore

The inside of the instrument (barrel or bore), upper body, lower body and bell must be systematically cleaned / dried after each use, even within the framework of individual practice. According to tests and feedback currently collected, solutions such as ethanol and isopropyl alcohol are the products that degrade the bore of clarinets the least, whatever their material. In addition, the use of a swab soaked in one of these two products passed several times in the instrument does not seem to modify the sealing / adjustment of the instrument, nor the geometry of the bore.

AN EXAMPLE OF THE PROTOCOL

- Wash your hands.
- Take a clean swab.
- Soak in alcohol (ethanol or isopropyl alcohol > 70 %).
- We recommend using a sprayer to better control the amount of product applied. For example, five sprays on each side of the swab.
- Pass the soaked swab at least five times in the direction of the bell towards the barrel.

WARNING: Be careful when handling swabs and alcohol that could damage the aesthetics of the outside (see next point).

- It is suggested to pass another dry, clean swab to remove excess product.
- Do not reuse the swabs after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.

NB: The protocol set out above has been tested in the laboratory and validated as effective on ABS plastic clarinets, and with the following products: Ethanol 70%, Isopropanol 75%, 0.5% decyldimethylammonium chloride (tested in the form of household spray) or 0.45% (tested in the form of a wipe).

By extension, using products validated in the laboratory, it is estimated that this protocol for disinfecting the bore by swabbing is effective regardless of the instrument on which it is applied.



CLARINETS



- The outside of the instrument

This section addresses the outside of the instrument (barrel, body, bell, keys, etc.). According to tests and feedback currently collected, solutions such as ethanol and isopropyl alcohol are products compatible with the different key finishes (silver, nickel) but can alter the aesthetics of the instruments. In the case of polished wood, the use of alcohol, which has a degreasing power, will remove oil from the surface of the wood and, in the case of stained clarinets, dissolve the stain. It is for this reason that we recommend using a product having as active principle hydrogen peroxide (at 10 vol.) or a quaternary ammonium (this is the case for most EN 14476 products). Avoid using products that have glycine or glycerol additives, which can have a “sticky” effect.

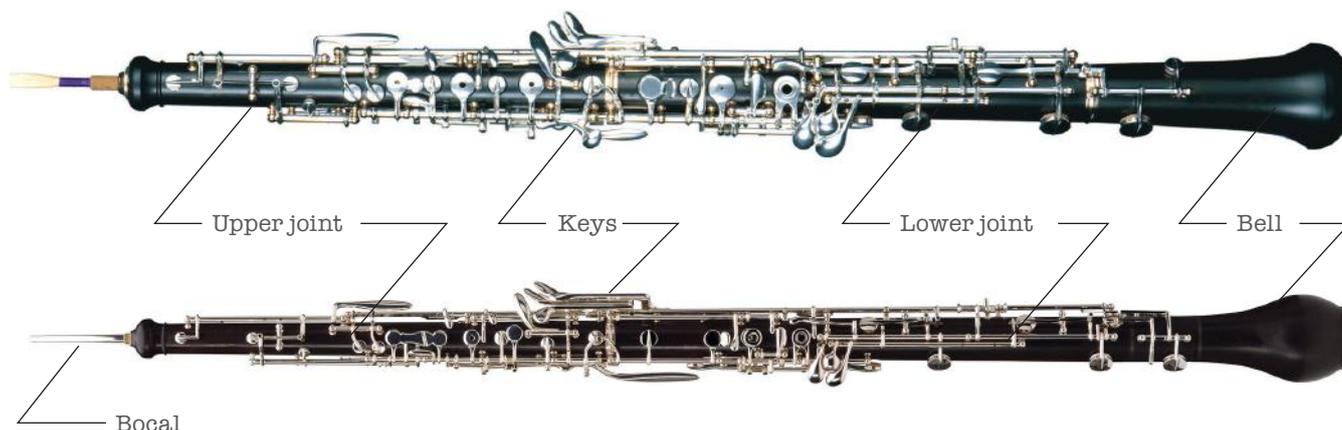
AN EXAMPLE OF THE PROTOCOL

- Wash your hands.
- Take a clean cloth.
- Soak in hydrogen peroxide (10 vol.).
- We recommend using a sprayer to better control the amount of applied product (for example five sprays on the cloth).
- Wipe the outside of the instrument (keys, body, sockets, posts).
- It is suggested to pass another dry, clean cloth to remove excess product.
- Do not reuse rags after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



OBOES & ENGLISH HORNS

NOMENCLATURE OF OBOE AND ENGLISH HORN



MATERIALS USED

- Body and bell

The oboes are generally made of grenadilla wood, also called African Blackwood (*Dalbergia melanoxylon*). Less frequently, they can be made from another species of dense wood such as boxwood or other *Dalbergia* (rosewood, violet wood) or composite materials such as Green Line[®], which behaves like polished wood. There are also professional models in PMMA (polymethyl methacrylate, or plexiglas[®]). The wood is minimally polished but it can also be stained, oiled or varnished. The oboe can also be made of ABS plastic (acrylonitrile butadiene copolymer) styrene) often used for student instruments or Delrin (POM: PolyOxyMethylene). They are very rarely made of metal (nickel silver or silver).

- Keys

The keys are usually made from a copper alloy such as brass (copper + zinc) or nickel silver (copper + nickel + zinc). They are almost always plated. The two most common finishes are: silver plating, and nickel plating. There are also keys with a gold or rhodium silver plating, but these are less common.

- Pads

The most commonly used materials are fish skin, cork, leather, Gore-Tex. There are also pads in synthetic materials.

- Corks and key bumpers

The corks of tenons and key bumpers can be of natural origin (natural cork) or synthetic. They can also include felt.

- Bocal

In the case of English horn, oboe d'amore or baritone oboe, the bocal is made from a copper alloy (brass or nickel silver) or even pure copper. It is generally plated in silver, gold or even nickel.



COMPATIBILITY TABLES

As a reminder, the list of recommended products is available in the «disinfectant products» section for contact method page 5.

Again, and as a reminder, always test the selected and compatible product on a small part of the instrument in order to see the result, before applying it to the whole instrument.

Finish	Bore	Bodies / Bell			Keys / Bocal		
		Wood Polished / Composite	Stained Wood	Varnished Wood	ABS	Silver plated	Nickel plated
Ethanol (>70 %)	yes	yes	no	not tested	yes	yes	yes
Isopropyl alcohol (>70 %)	yes	yes	no	not tested	yes	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	no	no	not tested	no	not tested
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	no	yes	yes, without alcohol	yes	yes	yes	yes
Soapy water / neutral detergent	no	no	no	no	yes	yes	yes

Finish	Pads & key bumpers			
	Leather, fish skin	Cork	Synthetic	Gore-Tex
Ethanol (>70 %)	yes	yes, but dry up material	not tested	it appears, yes
Isopropyl alcohol (>70 %)	yes	yes, but dry up material	not tested	it appears, yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	no	no
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	yes	yes	yes	yes
Soapy water / neutral detergent	not tested	not tested	not tested	not tested



OBOES & ENGLISH HORNS



RECOMMENDATIONS FOR DISINFECTION

To disinfect, we encourage you to use a virucidal product as mentioned above. If you do not want to use this type of product on your instrument, you must dry / swab it with clean material and then respect a quarantine period (see quarantine section on page 6).

- Bore

The inside of the instrument (body / horn / bell), the upper body, lower body and bell must be systematically cleaned / dried at least after each use, even as part of individual practice. According to tests and feedback currently collected, solutions such as ethanol and isopropyl alcohol are the products that degrade the integrity of oboes the least, whatever their material.

In addition, the use of a swab soaked in one of these two products passed several times in the instrument does not seem to modify the pad sealing/adjustment of the instrument, nor the geometry of the bore.

AN EXAMPLE OF THE PROTOCOL

- Wash your hands.
- Take a clean swab.
- Soak in alcohol (ethanol or isopropyl alcohol > 70 %).
- We recommend using a sprayer to better control the amount of product applied. For example, five sprays on each side of the swab.
- Pass the soaked swab at least five times in the direction of the bell towards the barrel. **WARNING:** Be careful when handling swabs and alcohol that could damage the aesthetics of the outside (see next point).
- It is suggested to pass another dry, clean swab to remove excess product.
- Do not reuse the swabs after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



OBOES & ENGLISH HORNS



- Outside of the instrument (bocal, body, bell)

This part concerns the outside of the instrument (bocal, body, bell, keys, etc.). According to tests and feedback currently collected, solutions such as ethanol and isopropyl alcohol are products compatible with the different key finishes (silver, nickel) but can modify the aesthetics of the instruments. In the case of polished wood, the use of alcohol which has a degreasing power will remove oil from the surface of the wood and, in the case of stained instruments, dissolve the stain. It is for this reason that we recommend rather using a product having as active principle hydrogen peroxide (at 10 vol.) Or a quaternary ammonium (this is the case for most EN 14476 products). Avoid using products that have glycine or glycerol additives, which can have a “sticky” effect.

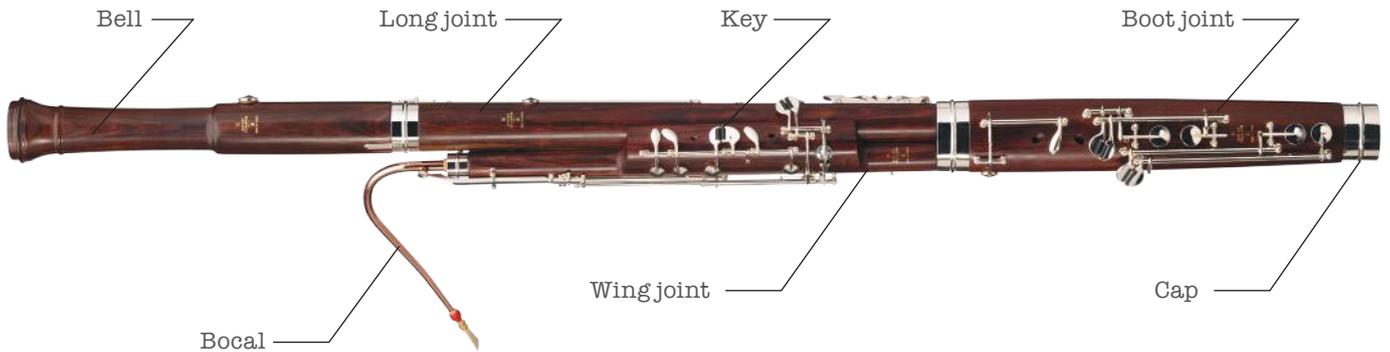
AN EXAMPLE OF THE PROTOCOL

- Wash your hands.
- Take a clean cloth.
- Soak in hydrogen peroxide (10 vol.).
- We recommend using a sprayer to better control the amount of applied product (for example five sprays on the cloth).
- Wipe the outside of the instrument (keys, body, socket, post).
- It is suggested to pass another dry, clean cloth to remove excess product.
- Do not reuse rags after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



BASSOONS (FRENCH & GERMAN)

NOMENCLATURE OF THE BASSOON



MATERIALS USED

- Wing joint, boot joint, long joint, and bell

In the case of the German bassoon, all these elements are made of sycamore maple (*Acer pseudoplatanus*) sometimes wavy. The maple is always varnished on the outside and the wing joint and boot joint are lined with epoxy resin.

For the French bassoon, these elements are usually of the rosewood family (*Dalbergia* spp) and especially of the Amazon rosewood (*Dalbergia spruceana*) or Honduran rosewood (*Dalbergia stevensonii*). Until 1992, Rio rosewood (*Dalbergia nigra*) was also used. The wood is usually unstained or varnished; it is just polished and brightened. The wing joint and tone holes are usually lined with ebonite.

- Keys, bocal, capuchon

The keys and the bocal are usually made from a brass-type copper alloy (copper + zinc) or nickel silver (copper + nickel + zinc). They are almost always plated. The two most common finishes are silver plating and nickel plating. The boot cap is also made of nickel silver. Under the cap, the U-shaped plug is made of brass.

- Pads

The French and German bassoon pads are made of leather.



BASSOONS FRENCH & GERMAN



COMPATIBILITY TABLES

As a reminder, the list of recommended products is available in the «disinfectant products» section for contact method page 5.

Again, and as a reminder, always test the selected and compatible product on a small part of the instrument in order to see the result, before applying it to the whole instrument.

Finish	Bore	Pads & key bumpers		
	Resin-lined or hard rubber	Polished wood	Stained wood	Varnished wood
Ethanol (>70 %)	yes	yes	no	not tested
Isopropyl alcohol (>70 %)	yes	yes	no	not tested
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	no	no
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	yes	yes	yes, without alcohol	yes
Soapy water / neutral detergent	no	no	no	no

Finish	Keys / Bocal / Bell		U tube	Pads
	Silver plated	Nickel plated	Brass	Leather
Ethanol (>70 %)	yes	yes	yes	yes
Isopropyl alcohol (>70 %)	yes	yes	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	yes	no
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	yes	yes	yes	yes
Soapy water / neutral detergent	yes	yes	yes	not tested



BASSOONS FRENCH & GERMAN



RECOMMENDATIONS FOR DISINFECTION

To disinfect, we encourage you to use a virucidal product as mentioned above. If you do not want to use this type of product on your instrument, you must dry / swab it with clean material and then respect a quarantine period (see quarantine section on page 6).

- Bore

The inside of the instrument must be systematically cleaned / dried as a minimum after each use, even as part of individual practice.

AN EXAMPLE OF THE PROTOCOL

- Clean your hands and disassemble the instrument.

Wing joint

- Take a clean swab suitable for the wing joint.
- Soak in alcohol (ethanol or isopropyl alcohol > 70 %).
- We recommend using a sprayer to better control the amount of product applied. For example, five sprays on each side of the swab.
- Pass the soaked swab at least five times in the direction of the end of the instrument towards its entry. BE CAREFUL handling the wing joint to not damage the aesthetics of the outside (see next point).
- It is suggested to pass another dry, clean swab to remove excess product.

Boot joint

- Take a clean swab of suitable size.
- As with the wing joint, soak it in alcohol and pass it at least five times through the boot joint, bringing it in through the widest bore and out through the other bore.
- Then remove the cap and the U.
- Wipe the inner surface of the U with the soaked swab.
- It is not recommended to apply alcohol to the parts containing cork; alcohol may have a drying effect. For the cork surface, use a cloth soaked in hydrogen peroxide as you would for the outside of the instrument.
- Do not reuse the swabs after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



BASSOONS **FRENCH & GERMAN**



- The outside of the instrument (bell, body, cap, keys...)

According to tests and feedback currently collected, solutions such as ethanol and isopropyl alcohol are products compatible with the different key finishes (silver, nickel plated) but can modify the aesthetics of the instruments. In the case of polished wood, the use of alcohol, which has a degreasing power, will remove oil from the surface of the wood and, in the case of stained wood, dissolve the stain. It is for this reason we recommend using a product having as active principle hydrogen peroxide (at 10 vol.) or a quaternary ammonium (this is the case for most EN 14476 products). Avoid using products that have glycine or glycerol additives that can have a “sticky” effect.

AN EXAMPLE OF THE PROTOCOL

- Wash your hands.
- Take a clean cloth.
- Soak in hydrogen peroxide (10 vol.).
- We recommend using a sprayer to better control the amount of applied product. For example five sprays on the cloth.
- Wipe the outside of the instrument (keys, body, sockets, posts).
- It is suggested to pass another dry, clean cloth to remove excess product.
- Do not reuse rags after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



SAXOPHONES

NOMENCLATURE OF THE SAXOPHONE



MATERIALS USED

- Neck, body, bow and bell

The saxophones are generally made of copper alloy and most often brass (copper + zinc). But it is also found in nickel silver (copper + nickel + zinc) and in solid silver. Occasionally, they can be made from other plastic materials such as PC polycarbonate. Metals are most often lacquered. The type of lacquer depends on the manufacturer and when the instrument was manufactured. They can also be plated, most often silver.

- Keys

The keys are usually made of brass (copper + zinc), less commonly of nickel silver (copper + nickel + zinc). They are almost always lacquered; again, the type of lacquer depends on the manufacturing. They can also be plated, usually silver.

- Pads

The most commonly used material is leather with stainless steel resonators, sometimes plastic.

- Corks and key bumpers

The corks of the tenons and the key bumpers can be of natural origin (natural cork) or synthetic. They may also include felt.



SAXOPHONES



COMPATIBILITY TABLES

As a reminder, the list of recommended products is available in the «disinfectant products» section for contact method page 5.

Again, and as a reminder, always test the selected and compatible product on a small part of the instrument in order to see the result, before applying it to the whole instrument.

Finish	Bore	Bodies / Box / Neck / Keys		Pads & key bumpers	
	Brute	Vernie	Silver plated	Leather	Cork
Ethanol (>70 %)	yes	yes	yes	yes	yes, but dry up material
Isopropyl alcohol (>70 %)	yes	yes	no	yes	yes, but dry up material
Chlorine derivatives (0.05 to 0.5 % active chlorine)	not tested	not tested	no	no	no
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	yes	yes	yes	yes	yes
Soapy water / neutral detergent	no	no	no	not tested	not tested

Finish	Mouthpieces *		
	Hard rubber	ABS	Metal
Ethanol (>70 %)	yes, if cold water and soft soap only	yes	yes
Isopropyl alcohol (>70 %)	yes, if cold water and soft soap only	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	yes	yes	yes, if not silver plated
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	not tested	not tested	yes
Soapy water / neutral detergent	yes, if cold water and mild soap only	yes	yes

* The specific case of mouthpieces is addressed in the mouthpieces section, page 42.



SAXOPHONES



RECOMMENDATIONS FOR DISINFECTION

To disinfect, we encourage you to use a virucidal product as mentioned above. If you do not want to use this type of product on your instrument, you must dry / swab it with clean material and then respect a quarantine period (see quarantine section on page 6).

- Bore

The inside of the instrument (body, bow, bell and neck) must be systematically cleaned / dried as a minimum after each use, even as part of individual practice. According to tests and feedback currently collected, solutions such as ethanol and alcohol/isopropyl alcohol are the products that do not degrade the bore of saxophones, regardless of their material. In addition, the use of a swab soaked in one of these two products, passed several times through the instrument, does not seem to modify the sealing / adjustment of the instrument.

AN EXAMPLE OF THE PROTOCOL

- Wash your hands.
- Remove the neck
- Take a clean swab suitable for the neck of your saxophone.
- Soak in alcohol (ethanol or isopropyl alcohol > 70 %).
- We recommend using a sprayer to better control the amount of product applied. For example five sprays on each side of the swab.
- Pass the soaked swab at least five times in the body to neck direction.
- It is suggested to pass another dry, clean swab to remove excess product.
- Repeat the operation with the body / bow / bell
- Take a clean swab suitable for the saxophone
- Soak in alcohol (ethanol or isopropyl alcohol > 70 %).
- We recommend using a sprayer to better control the amount of product applied. For example five sprays on each side of the swab.
- Pass the soaked swab at least five times in the body, bell to neck direction.
- Do not reuse the swabs after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



SAXOPHONES



- The outside of the instrument (Neck, body, bow, bell, keys, etc.)

Based on the tests and feedback currently collected, solutions such as ethanol and isopropyl alcohol are products compatible with the different finishes of keys (lacquered, silver, nickel plated) and do not modify the aesthetics of the instruments. This is also the case of hydrogen peroxide (at 10 vol) and products meeting the EN 14476 standard. However, avoid using products that have glycine or glycerol type additives, which can have a “sticky” effect.

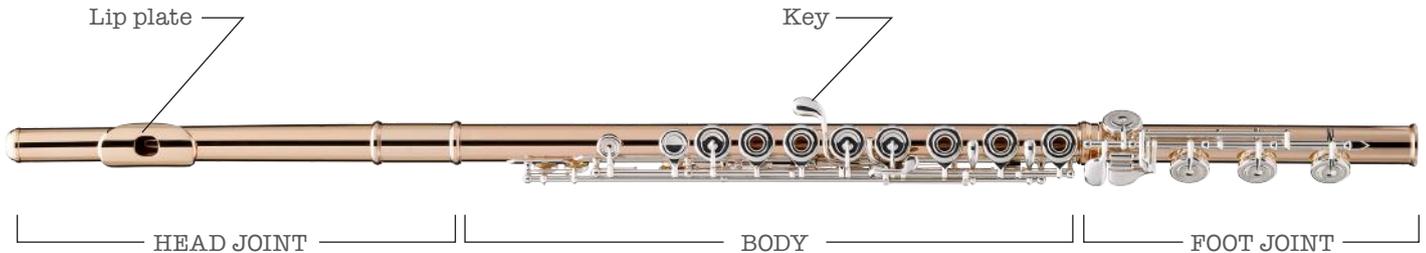
AN EXAMPLE OF THE PROTOCOL

- Wash your hands.
- Take a clean cloth.
- Soak in alcohol (ethanol or isopropyl alcohol > 70 %).
- We recommend using a sprayer to better control the amount of applied product. For example five sprays on the cloth.
- Wipe the outside of the instrument (keys, body, sockets, posts).
- It is suggested to pass another dry, clean cloth to remove excess product.
- Do not reuse rags after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



FLUTES, PICCOLO

NOMENCLATURE OF THE FLUTE



MATERIALS USED

- Head joint, body, foot joint

The transverse flutes are generally made of copper alloys (nickel silver or brass), covered with a silver plating, less commonly gold or platinum. The higher-end instruments are made of solid silver, gold alloys of different compositions (from 3 to 24 carats - 125 / 1000 to 1000 / 1000), or even platinum. There are also wooden flutes, most often made from African Blackwood (*Dalbergia melanoxylon*), mopane (*Colophospermum mopane*) and less commonly made from other rosewood species (*Dalbergias*). For the older wooden flutes or for the traditional transverse flutes, we can find other materials such as cocus wood (*Brya ebenus*), or boxwood (*Buxus*).

- Keys

The keys are made of copper alloy (CuZn brass or CuNiZn nickel silver) and most often plated with silver (sometimes gold or platinum). On traditional or old instruments, the keys are not always plated and can be made of raw copper alloy. For higher-end transverse flutes, the keys are made of solid silver or a gold alloy.

- Screws

The screws of the flutes are made of mild steel or stainless steel, and for certain components of copper alloy (CuZn brass, CuNiZn nickel silver, CuSn bronze).

- Springs

The springs are generally made of steel (blued or stainless steel), bronze or an alloy of silver or gold.

- Consumables

The pads consist of a cardboard, plastic (most often Delrin or POM for polyoxymethylene) or metal (most often brass) base on which rests a disc of natural or synthetic felt (chamois type), all covered with fish skin (natural or synthetic skin). We can also find cork or leather pads. The pads are either adjusted with paper or plastic wedges, or glued (hot-melt glue, shellac and very rarely with wax). The stops and bumpers are made of natural or synthetic felt, natural or synthetic cork, leather or paper, all bonded with contact adhesive or cyanoacrylate. The head plugs are made of natural or synthetic cork and in various types of polymers (mainly nitrile and silicone). Finally, we generally find natural or synthetic cork on the tenons, or string in the case of traditional or old instruments.



FLUTES, PICCOLO



COMPATIBILITY TABLES

As a reminder, the list of recommended products is available in the «disinfectant products» section for contact method page 5.

Again, and as a reminder, always test the selected and compatible product on a small part of the instrument in order to see the result, before applying it to the whole instrument.

Finish	Head Joint / Body / Foot / Bore				Keys	
	Silver	Gold	Platinum	Wood	Silver	Gold
Ethanol (>70 %)	yes	yes	yes	yes	yes	yes
Isopropyl alcohol (>70 %)	yes	yes	yes	yes	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	not tested	not tested	not tested	no	not tested
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	yes	yes	yes	yes	yes	yes
Soapy water / neutral detergent	yes	yes	yes	yes	yes	yes

Finish	Pads & key bumpers					
	Fish skin	Leather	Cork	Synthetic	Gore-Tex	Straubinger style
Ethanol (>70 %)	yes	yes	yes, but dry up material	not tested	it appears, yes	yes
Isopropyl alcohol (>70 %)	yes	yes	yes, but dry up material	not tested	it appears, yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	no	no	no	no
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	yes	yes	yes	yes	yes	yes
Soapy water / neutral detergent	not tested					



FLUTES, PICCOLO



RECOMMENDATIONS FOR DISINFECTION

To disinfect, we encourage you to use a virucidal product as mentioned above. If you do not want to use this type of product on your instrument, you must dry / swab it with clean material and then respect a quarantine period (see quarantine section on page 6).

- Bore

The inside of the instrument (head joint, body and foot joint) must be systematically cleaned / dried at least after each use, even in the context of individual practice. According to tests and feedback currently collected, solutions such as ethanol and isopropyl alcohol are the most suitable products because they generate little or no degradation on the materials that can constitute a transverse flute. In addition, the use of a swab soaked in one of these two products, passed several times through the instrument does not seem to modify the sealing/adjustment of the instrument, nor the geometry of the bore for wooden instruments.

AN EXAMPLE OF THE PROTOCOL

- Wash your hands.
- Take a clean swab and gauze.
- Soak the gauze with alcohol (ethanol or isopropyl alcohol > 70 %).
- We recommend using a sprayer to better control the amount of product applied. For example five sprays.
- Pass the swab with the soaked gauze at least five times in each part, making them “pass through” the body and the tab, and ensuring that the gauze applies as much as possible on the plug plate when cleaning the the head.
- It is suggested to pass another dry, clean swab to remove excess product.
- Do not reuse the swabs after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



FLUTES, PICCOLO



- The outside of the instrument

According to tests and feedback currently collected, solutions such as ethanol and isopropyl alcohol are products compatible with the various materials and key finishes (silver, gold, solid precious metal) without modifying the aesthetics of instruments. In the case of a flute with a wooden body, we recommend rather using a product having as active principle hydrogen peroxide (at 10 vol.) or a quaternary amine (this is the case for most EN 14476) because the use of alcohol, which has a degreasing power, will remove oil from the surface of the wood and in the case of stained wood, dissolve the stain. Avoid using products that have glycine or glycerol additives, which can have a “sticky” effect. The use of bleach is to be avoided because it breaks down the steel alloys constituting all or part of the hardware.

AN EXAMPLE OF THE PROTOCOL

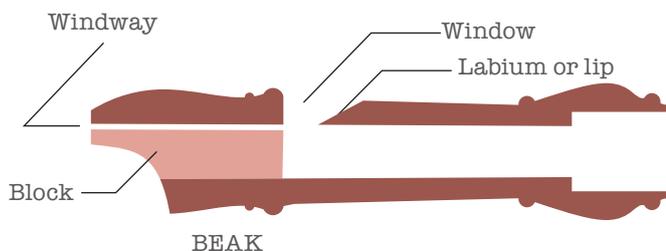
- Wash your hands.
- Soak the cloth in alcohol in the case of a metal flute, or hydrogen peroxide (10 vol.) in the case of a wooden flute.
- We recommend using a sprayer to better control the amount of product applied. For example five sprays on the cloth.
- Wipe the outside of the instrument (head, body and leg).
- It is suggested to pass another dry, clean cloth to remove excess product.
- Do not reuse rags after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.

NB: In the case of a wooden flute, cleaning the tenons can lead to a lack of grease on the cork or the string. Apply a film of grease if necessary after cleaning in order to protect these consumables during the next assembly of the instrument.



RECORDERS

NOMENCLATURE OF THE RECORDER



MATERIALS USED

- Head, body, foot joint

Industrial wooden recorders

Different species of wood, from the softest to the hardest: maple, cherry, pear, castelo boxwood (*Calycophyllum multiflorum*), olive and wood of the rosewood family (*Dalbergia spp*): rosewood, grenadilla. Some recorders are stained. Most industrial recorders are wax impregnated.

Hand made recorders

Very often in European boxwood (*Buxus sempervirens*), maple; fruit woods: pear, apple, cherry; tropical woods: ebony (*Dyospiros crassiflora*), grenadilla (*Dalbergia melanoxylon*). Rarely in ivory (old recorders). Wood stained or not, various staining processes (acid, alcohol, or water based). Frequent presence of decorative ivory (old), synthetic ivory or resin rings on the mouthpiece, head and foot of the recorder. Oiled or varnish finishes.

“Plastic” recorders

ABS type plastic, or “Ecodear” (bio-plastic). No problem for cleaning and disinfection.

- The block

The block is generally made of cedar or juniper wood (*Juniperus, Cupressus, etc.*), sometimes made of composite materials such as Synpor, rarely with a ceramic insert (some old models). The block is not glued into the recorder (except plastic recorders) and can be removed if necessary, with care, and preferably by a qualified person. However, you should know that removing the block from a recorder makes it lose the manufacturer’s or factory’s warranty.

- Keys and other metal parts

The keys are usually made from a copper alloy such as brass (copper + zinc) or nickel silver (copper + nickel + zinc). On handmade copies of original instruments, they are usually in polished brass. Silver keys can also be found. Connecting rings can be made from brass, copper or silver. On some models (large bass) there is a crook made from brass or another alloy, which can be polished, plated or varnished.

- Pads

Most pads are made of synthetic material or cork or leather.

- Joints

The tenon-mortise or tenon-tenon sockets assembled by a connecting ring are made of cork (industrial recorders and some hand made recorders), or of waxed thread (hand made recorders).



RECORDERS



COMPATIBILITY TABLES

As a reminder, the list of recommended products is available in the «disinfectant products» section for contact method page 5.

Again, and as a reminder, always test the selected and compatible product on a small part of the instrument in order to see the result, before applying it to the whole instrument.

	Bore	Windway and block		Joints	Keys
Finish	Raw wood	Varnished wood	Plated metal	Cork or thread	Brass or other alloys
Ethanol (>70 %)	not tested	not tested	not tested	not tested	not tested
Isopropyl alcohol (>70 %)	yes, but weakens the surface	yes, but weakens the surface	yes, but weakens the surface	yes, but damages cork	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	no	no	not tested
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	not tested	not tested	not tested	not tested	not tested
Soapy water / neutral detergent	yes, but only on plastic recorders				
Dry cloth (not virucidal)	yes	yes	yes	yes	yes

	Outside surfaces		
Finish	Oiled	Stained	Varnished
Ethanol (>70 %)	not tested	not tested	not tested
Isopropyl alcohol (>70 %)	yes, but dulls the surface (needs re-oiling)	risk of fading	risk of deteriorating the varnish
Chlorine derivatives (0.05 to 0.5 % active chlorine)	no	no	no
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	not tested	not tested	not tested
Soapy water / neutral detergent	yes, but only on plastic recorders		
Dry cloth (not virucidal)	yes	yes	yes



RECORDERS



RECOMMENDATIONS FOR DISINFECTION

To disinfect a recorder, we encourage you to use a virucidal product as mentioned above. If you do not want to use this type of product on your instrument, you must dry and swab it with clean material and then respect a quarantine period (see quarantine section on page 6).

Recorders are unfortunately among the instruments that are most prone to attracting the SARS-CoV2: in addition to being a woodwind instrument, into which we breathe directly with no reed or removable mouthpiece, it is complicated to clean and disinfect recorders completely, since certain areas are only accessible to qualified repairers (in particular by removing the block). Complete disinfection of the instrument implies, in addition to treating the outside and the bore surfaces, removing the block to access the windway, window and under labium area. In practice, this cannot be done in a music store because removing the block from a recorder will void the warranty. The same applies to a musician who has recently acquired a recorder. Removing the block from a recorder is a delicate and risky operation if precautions are not taken to protect this area, which is the most delicate part of the recorder and requires very fine adjustment. Repeated handling of the block is not recommended.

Quarantine therefore remains a solution to be considered as soon as possible. However, for reasons of technical feasibility, the survival times of the virus on different types of wood surfaces could not be assessed as was the case for other materials and coatings.

Other so-called «porous» materials were tested, namely reed and paper, and the results indicate that active virus can be recovered there up to a week after depositing it. Since this information is not available for the different wood species at the moment, the quarantine should be as long as possible, and if possible at least a week for wooden flutes as a precaution. (see quarantine section on page 6).

Another point: there is a real habit of exchanging instruments between recorder players, linked to the need to try instruments, to play several different recorders, which, not being owned by the same person, are often borrowed. This is also the case in educational establishments, where a significant example is that of consorts (family of recorders designed to be played together). Generally the establishment owns a consort of recorders, which students play in turn during their lessons or rehearsals.

Faced with the difficulty of finding a solution that is both effective and compatible with all parts of the flute, exchanging flutes remains a practice to be avoided if one cannot afford a time of quarantine in the meantime.

- The bore

The inside of the instrument (head, body and foot) must be systematically cleaned and dried as a minimum precaution every time an instrument has been played even in the case of individual playing.

The use of a swab / cloth soaked in 70 % alcohol passed several times through the instrument may be considered from time to time. Make sure to clean the holes as well. The use of alcohol use should remain sparing and occasional.

A low-concentration chlorine-based solution (0.05% active chlorine, or 10 times less concentrated



RECORDERS



than bleach), found to be effective by our tests on SARS-CoV-2, has been tested on surfaces of natural woods (without stain or varnish), and showed no significant impact, only a slight tarnishing of the wood. This solution can therefore be considered as an alternative to alcohol for the bore and the windway.

Again, for complete disinfection to be effective, all areas of the recorder would need to be disinfected, including those that are difficult or impossible to access except in a qualified workshop: especially the windway and underside of the labium. You must avoid removing the recorder block whenever possible, particularly if you are not familiar with the process (reminder: removing the block makes the recorders lose their guarantee).

AN EXAMPLE OF THE PROTOCOL to be applied after drying the instrument

- Wash your hands.
- Take a clean swab and cloth, and dampen it with alcohol.
- Pass the swab at least five times in each part with the dampened cloth, taking care not to damage the window area from the inside.
- Next, it is recommended to use another dry, clean swab to remove excess product.
- Do not reuse the swabs after disinfection (disinfect, wash or dispose of them).
- Allow the recorder to air dry.
- Wash your hands again.

- **The outside surfaces of the instrument**

Before any disinfection procedure, the material it is made of (the species of wood, the type of finish, decorative rings, keys, plastic, etc.) must be taken into account. Natural wood can lose its colour (example: grenadilla by the use of alcohol, boxwood with hydrogen peroxide, etc.). Any stains and varnishes can be altered, depending on their composition.

We can recommend cleaning by vigorous rubbing with a dry cloth. The use of a chlorine derivative with 0.05% active chlorine seems to have a weak effect on raw wood and may be an alternative solution, as well as on the exterior of unstained and unvarnished flutes (therefore only on flutes in natural wood, oil and polished). If a slight tarnishing appears on these instruments, let dry well then apply a little oil (olive for example) on the surface and rub with a soft cloth.

Again, quarantining the instrument appears to be a necessary precaution..



BRASS

NOMENCLATURE OF THE BRASS INSTRUMENTS



Copper and its alloys are metals that could be less conducive to the virus than other materials. However, this biocidal property may not be effective on the inside of the instrument, provided that it is clean (biofilm-free, dirt) and cannot be considered effective for the outside of the instruments. The finish (lacquer or silvering) cancels the biocidal properties of copper and its alloys by direct contact.



BRASS



MATERIALS USED

- Mouthpiece, slides, valves casings and bell

Generally, the instruments of the brass family, from the cornet to the tuba, are made of brass (copper and zinc alloys), the composition of which can vary depending on the instrument/model. The most standard brass composition is 70 / 30 (70 % copper and 30 % zinc). We also find pink brass (85 % Cu / 15 % Zn). Some components more susceptible to corrosion are made of nickel silver (copper / nickel / zinc). There are also solid silver instruments. The outside of the instruments is most often lacquered, it can also be plated with silver.

- Pistons

Pistons require a harder, less ductile material than brass or nickel silver. This is why they are mostly made in monel (copper and nickel alloy) or stainless steel.

- Rotary valves

They are most often made of brass (copper + zinc) or bronze (copper + tin), sometimes made of titanium.

- Waterkeys

They are made of nickel silver or lacquered brass.

- Rotary valves and levers (French horn)

They are almost always in lacquered nickel silver.



BRASS



COMPATIBILITY TABLES

As a reminder, the list of recommended products is available in the «disinfectant products» section for contact method page 5.

Again, and as a reminder, always test the selected and compatible product on a small part of the instrument in order to see the result, before applying it to the whole instrument.

	Bore	Lead pipe, slides, valves casings, bell, waterkeys.		Pistons	Rotary valves
		Lacquered	Silver plated		
Finish	Raw	Lacquered	Silver plated	Monel	N/A
Ethanol (>70 %)	yes but requires a re-lubrication	yes	yes	yes	yes
Isopropyl alcohol (>70 %)	yes but requires a re-lubrication	yes	yes	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	not tested	not tested	no	not tested	not tested
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	not tested	yes	yes	yes	yes
Soapy water / neutral detergent	yes	yes	yes	yes	yes
Heat treatment	< 90°C				

Finish	Mouthpieces *		
	Brass	Silver	Gold
Ethanol (>70 %)	yes	yes	yes
Isopropyl alcohol (>70 %)	yes	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	yes	no	yes
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	yes	yes	yes
Soapy water / neutral detergent	yes	yes	yes
Heat treatment	< 90°C		

* The specific case of mouthpieces is addressed in the mouthpieces section, page 42.



B R A S S



RECOMMENDATIONS FOR DISINFECTION

To disinfect, we encourage you to use a virucidal product as mentioned above. If you do not want to use this type of product on your instrument, you must dry / swab it with clean material and then respect a quarantine period (see quarantine section on page 6).

- **Bore**

Obviously, the ideal is to be able to completely disassemble the instrument and to clean / disinfect each part with swabs soaked in virucidal product such as: alcohols (ethanol or isopropyl alcohol > 70 %), hydrogen peroxide at 10 volumes or disinfectant products complying with standard EN 14476 by following the manufacturer's recommendations (contact time for virucidal efficacy). But this is relatively tedious and leads to re-oiling / greasing each part, or even re-adjusting / adjusting the instrument. If you do not have access to the entire bore, you should at least eliminate the fluids present. For this, it is necessary to regularly empty the water key and the slides in a closed container and / or containing a disinfectant solution, a cloth or a towel which should then be thrown in a closed bin. Beware of any projections/moisture that may fall on the floor, especially when disassembling the slides. It is not advisable to dry the inside of the instrument using an air flow (for example compressed air or other method) which could disseminate fluids in the air. Before testing an instrument, it is strongly recommended that you bring it to room temperature beforehand. An instrument stored in a "cold" environment will promote the formation of condensation when it begins to be played. At a minimum, after "emptying", the mouthpiece must be disinfected. This can be done with a swab moistened with alcohol. For the specifics related to mouthpieces see the mouthpiece paragraph on page 42.

- **The outside of the instrument**

The outside of the instrument can be disinfected using a cloth dampened with alcohol (ethanol or isopropyl alcohol > 70 %), 10 volume hydrogen peroxide or a disinfectant meeting standard EN 14476, following the manufacturer's recommendations (contact time for virucidal efficacy).

AN EXAMPLE OF THE PROTOCOL inside outside

- Wash your hands.
- Take a clean cloth.
- Soak the cloth with alcohol
- We recommend using a sprayer to better control the amount of applied product. For example five sprays on the cloth.
- Wipe the outside of the instrument (mouthpiece, waterkeys, valve casing, horn).
- It is suggested to pass another dry, clean cloth to remove excess product.
- Do not reuse rags after disinfection (disinfect, wash or dispose of them).
- Wash your hands again.



BBRASS



HEAT TREATMENTS

Using heat treatments to inactivate the virus is a method that can be effective and has been scientifically validated under experimental conditions on SARS-CoV-2 and other coronaviruses. This method allows you to permanently deactivate the virus by subjecting it to a treatment that no longer allows it to replicate.

The effectiveness of this solution depends on many parameters, starting with the duration and temperature of the treatment, but also on the initial virus load and its form (for example, it will be more resistant if it is contained in a rich liquid / protein).

This method seems mainly suitable for instruments of the brass family and can possibly be extended to other instruments depending on their temperature resistance, without damaging the instrument or accessory. Dry heat methods should not be used on wooden instruments.

The advantage of this method for brass instruments, unlike the other methods and those presented in the previous paragraph, is that it makes it possible to disinfect the entire instrument, including the inside, without having to dismantle each part of the instrument. Instrument and does not need to grease / oil it again. It is obviously essential, as with disinfectants, to carry out small-scale tests before considering this solution.

INFORMATION ON EFFICIENCY

As with other decontamination methods, effectiveness is assessed based on the initial and final concentration of virus copies per ml. In the case of SARS-CoV-2, it is estimated that the initial concentration of virus copies may be, according to a high estimate, from 1 to 10 million copies per ml. The EN 14476 standard requires a reduction of 4 log (division by 10,000) to consider a product as virucidal. However, in view of the orders of magnitude (up to 10 million copies / ml and of the order of a few tens of copies sufficient to infect someone), we can aim for a reduction of the order of 6 log to ensure greater security.

In order to evaluate the effectiveness of different heat treatments by varying the temperature and time on several alloys, initial tests were carried out by depositing the virus on these materials in the form of plaques. The time-temperature pairs evaluated are given below (here too, a treatment allowing a division by 10,000 of the viral load is considered to be effective).



BRASS



HEAT TREATMENT EFFICIENCY

		Copper	Pink brass 85/15	Brass 70/30	Nickel silver
75°C	30 min.	no	no	yes	no
	120 min.	no	no	yes	yes
90°C	15 min.	no	no	yes	yes
	30 min.	yes	yes	yes	yes

NB: It is important to remember that these treatments are only effective if the entire instrument is subjected to the desired temperature for at least the duration indicated, and that the different materials may not heat at the same rate. The most “unfavorable material» (highest duration / temperature) must be taken into account.

The use of thermal protocols therefore requires prior work to determine a reliable way to achieve the desired temperature for the desired duration across the instrument (tests using temperature probes).

CAUTION: Treatment can only be considered effective if all areas of the instrument will undergo the indicated heat for the specified time. It is therefore necessary to make sure that the instrument rises to a sufficient temperature at all points.

RISK INFORMATION

The use of dry heat involves mastering the equipment used and applying usual prevention measures in the face of fire and electrical risks.

Workers should also be protected from heat-related risks (burns, for example).

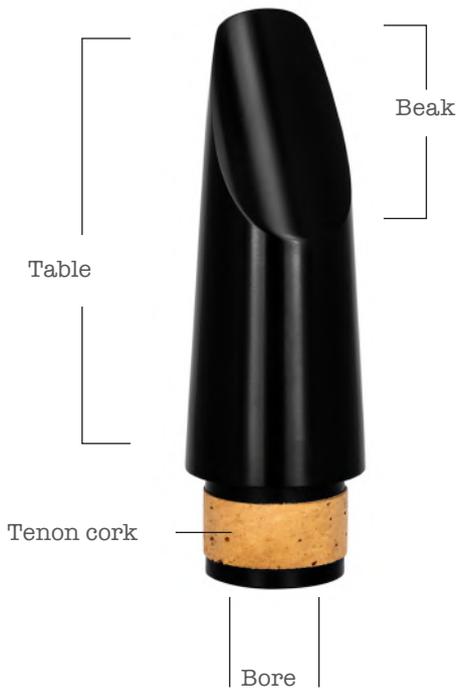
EQUIPMENT

In workshops or manufacturing plants, such heat treatments can be considered in existing furnaces. For stores, on the other hand, there is no ready-to-use device to date that allows the instruments to be fully heated. Some heating devices that project hot air may appear to be an attractive solution, but they present a risk of blowing potentially infectious particles via the generated air flow. These types of solutions should therefore only be used if you have the ability to control the air that will be blown in.



MOUTHPIECES & LIGATURES

NOMENCLATURE OF THE MOUTHPIECES



WOODWIND MOUTHPIECE



BRASS MOUTHPIECE

Mouthpieces are essential and personal accessories. In direct contact with the mouth, they require, in normal use, a simple and ordinary cleaning. It is not recommended to lend a mouthpiece to others. If it is absolutely necessary or useful, a rigorous disinfection is recommended each time the mouthpiece is exchanged between two musicians.

CONSTITUTIVE MATERIALS

Clarinet and saxophone mouthpieces are usually made of ebonite but can also be plastic such as PMMA (polymethyl methacrylate plexiglass®), ABS, even crystal. The clarinet mouthpiece has the additional feature of having a cork on its tenon. Saxophone mouthpieces are sometimes made of brass and are sometimes gold plated or silver. Brass mouthpieces can also be plastic or nickel silver.



REEDS, MOUTHPIECES & LIGATURES



RECOMMENDATIONS FOR DISINFECTION

To disinfect, we encourage you to use a virucidal product such as previously mentioned. If you do not wish to use this type of product on your instrument, you must dry / swab it with clean material and then observe a quarantine period (see quarantine section on page 7).

COMPATIBILITY TABLES

As a reminder, the list of recommended products is available in the section “disinfectants for contact method” on page 5.

Once again, and as a reminder, always test the selected and compatible product on a small part of the instrument in order to see the result, before applying it to the entire instrument.

Finish	Mouthpieces / Ligature				
	Hard rubber	Plastic	Brass	Silver	Gold
Ethanol (>70 %)	yes, if new or slightly used	yes	yes	yes	yes
Isopropyl alcohol (>70 %)	yes, if new or slightly used	yes	yes	yes	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	yes	not tested	yes	yes	yes
EN 14476 products (Ex. Sanytol® Sani-Cloth® etc.)	not tested	yes	yes	yes	yes
Soapy water / neutral detergent	yes, if cold water and mild soap only	yes	yes	yes	yes

CLARINET OR SAXOPHONE MOUTHPIECE

Ebonite mouthpieces are sensitive to UV and heat. They should be cleaned with cold water only and mild soap or pH neutral cleaning gel to prevent discoloration. For the disinfection of ebonite mouthpieces, we advise you to use either: bleach diluted to a concentration of 0.5 % of active chlorine with a contact time of 15 minutes, alcohol at 70 % with a contact time until complete evaporation in the case of new or little used mouthpieces.

The use of alcohol on used ebonite mouthpieces (which have been exposed to light for a long time) is not recommended as it may cause discoloration. For clarinet mouthpieces, dry and grease the cork after disinfection.

Immersion in bleach with 0.5% active chlorine is completely compatible with this material, and recommended for disinfection in view of the high virucidal efficacy of bleach.



REEDS, MOUTHPIECES & LIGATURES



PROTOCOL

- Immerse the nozzle in a 0.5% solution of sodium hypochlorite (bleach) for at least 30 seconds, stirring lightly.
- Remove the mouthpiece from the solution and allow it to air dry for 15 minutes.

An alternative option would be to apply 70% alcohol with a contact time until complete evaporation in the case of new or lightly used nozzles. However, the use of alcohol on used ebonite mouthpieces (which have been exposed to long-term light) is not recommended as it may cause discoloration. For clarinet mouthpieces, dry and grease the cork after disinfection.

For more information on cleaning and disinfection protocols: <https://vandoren.fr/fr/comment-desinfecter-son-bec/>.

For metal saxophone mouthpieces, refer to the following point: Mouthpieces for brass instruments.

MOUHPIECES FOR BRASS INSTRUMENTS

The brass mouthpieces can easily be cleaned and disinfected by several products. They can be cleaned with soapy water or another neutral detergent then rinsed with warm water. You can also use brushes adapted to each size mouthpiece to properly clean the inside. For disinfection, we encourage you to use a virucidal product such as:

- Alcohol (ethanol, C_2H_6O), must have a concentration of more than 70 % and without additives.
- Isopropyl Alcohol (C_3H_8O), must have a concentration of more than 70 % and without additives.
- Bleach (active chlorine, $NaClO$), must have a concentration of at least 0.5 %.

CAUTION: never use bleach on a silver or silver-plated mouthpiece.

- Disinfectant complying with standard EN 14476, must be applied according to the times recommended by the manufacturer.



REEDS, MOUTHPIECES & LIGATURES



REEDS

In the first edition of this guide, reeds were considered a consumable that does not require disinfection. In view of the difficulties encountered by some classes of double reeds, in which reeds were adjusted by teachers for their students, a module of our laboratory work was dedicated to testing a disinfection protocol specific to reeds.

Product tested in the laboratory on reeds:

This protocol used a disinfection solution for reeds composed of 0.05% active chlorine (in hypochlorite form, as with bleach but in much lower concentration), generated by electrolysis of salt water. This product is thus generally called “electrolyzed water”.

In view of its composition, the product has a limited stability over time; in other words, its concentration decreases. It should therefore be stored away from light and it is advisable to be vigilant on the expiration date of the product indicated by the manufacturer. As an indication, the product tested in the laboratory was RA.FILythe, also marketed under the name RiegerClean by Georg Rieger.





REEDS, MOUTHPIECES & LIGATURES



RECOMMENDATIONS FOR DISINFECTION

The protocol which has been validated in the laboratory is as follows:

- Immerse the reed used in a container containing this pure solution of electrolyzed water at 0.05% active chlorine, for 3 minutes.
- We recommend rinsing the reed with clear water before putting it back in the mouth. The product is designed to be applied to reeds, however it may leave an unpleasant taste and odor to the musician if not rinsed off.

The results of these tests, carried out on new and used oboe double reeds, demonstrated virucidal efficacy against SARS - CoV - 2 under the test conditions. This protocol can be applied with other products indicated as effective at the beginning of this guide, however it is advisable to test the possible effects of the product on the reed (see table of compatibility).

COMPATIBILITY CHART

	Reed	Synthetic (polypropylene)
Isopropyl alcohol (>70 %)	possible drying effect therefore distorting	yes
Chlorine derivatives (0.05 to 0.5 % active chlorine)	yes	yes
Didecyldimethylammonium chloride CDDA > 0.45%	untested	untested



ACCESSORIES

Much more than the instrument, the accessory is often passed from hand to hand, in store, in rehearsal or on stage. It is therefore advisable, for the sake of caution, not to lend your accessories during the crisis period or to disinfect them well before reuse.

For all the accessories below, choose between:

- Chlorine derivatives such as bleach with 0.5 % active chlorine
- Alcohols with a concentration higher than 70 %
- Products compliant with standard EN 14476 (Sanytol®, Sani-Cloth®, CleanSept®, etc.)

Accessories	Materials / finish	Specific recommendations
Swab	Fabric (microfibers)	Soaked / soaked in above product or washed > 60°C > 30 min. with detergent
Mouthpiece cap	Leather, plastic (ABS)	- Plastic: Recommended: bleach 0.5 % a.c. - Leather: recommended 70 % alcohol (check on a sample that it does not rub off)
Mute	Aluminum Copper Cork Wood / Plywood, polished Fibers Felt	- Liège: potentially drying alcohol - Wood: avoid alcohol if stained
Ligature	Plated metal (gold, silver,) Leather, composites, fabrics	Recommended: 70 % alcohol
Reed guard	Plastic	Recommended: 70 % alcohol or 0.5 % bleach AC
Neck strap & harness	Fabric (cotton), plastic, leather	Recommended 70 % alcohol (on leather, check on a sample that does not rub off)
Case / Case Cover (outside) *	Textile, plastic (ABS, polyethylene), tolex	
	Leather	- Alcohol: check on a sample that it doesn't rub off

* Specific situation of the inside of the case / cover

Do not neglect the inside of the case / cover which often consists of a plush, velvet or foam material. Proceed to quarantine, case open in a ventilated room. Remember to clean / disinfect the handles and straps after each use.

OTHER ACCESSORIES common to other instruments

- Tuner: plastic (ABS, polyethylene) alcohol, product standard EN 14476.
- Music folders and sheet music/paper: for the moment there is no solution to disinfect the folders, apart from quarantine between 6 and 9 days and UV-C with a validated protocol. We suggest covering them with plastic bags per page that can be cleaned with alcohol.
- Instruments stands / Music stands: metal and coating, plastic, foam: alcohol, product standard EN 14476.



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This guide has been written under French national law related to coronavirus crisis context. Therefore, it is important to adapt this guide's recommendations to the appropriate law in each country.