



# The Process of cleaning and sterilizing

## ~ Basic Steps ~

①Cleaning ②Rinsing ③Drying ④Sterilization・Disinfection ⑤Drying・Storage

- cleaning spray
- immersion cleaning/ultrasonic cleaning
- autoclave sterilization
- EOG(ethylene oxide gas)sterilization
- glutaral formulation, chemical disinfection

### ①Cleaning

- Basically cleaning and disinfection are different.
- We recommend to clean instruments immediately after use.  
It can prevent sticking dirt and improve the efficiency of cleaning and antirust effect.
- It is better to unlock a ratchet and open a joint during the cleaning process.  
Also removable part is better to be removed.
- After cleaning, please rinse instruments under the flowing water. Afterwards dry them completely and sterilize them in the right way for each of them.

#### ■The importance of cleaning

Many people tend to think that cleaning process is less important than sterilization and disinfection to avoid the infection. However appropriate and immediate cleaning after use can eliminate 99.99% of bacteria and there is almost no possibility of infection through uninjured hands. Cleaning can be expected to work in the same way as disinfection and can reduce the risk of infection. Conversely, the insufficient cleaning would remain some protein containing microbes on instruments. It would make the sterilization and disinfection process insufficient.

#### ■The abolition of primary disinfection just after use

There is no meaning of doing disinfection and sterilization without cleaning process at all. Any liquid medicine makes protein its properties change and adhere. Therefore it would be hard to remove them by cleaning. Doing primary disinfection repeatedly may cause rust on instruments.



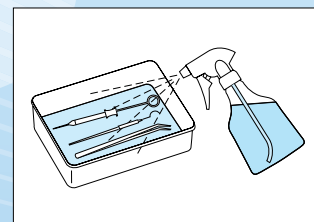
#### Pre-rinse spray

Preliminary spray after the use of instruments can prevent adhering.

Under the situation such as visit treatment that we can't do immersion cleaning to instruments after use immediately, instruments are easy to get adhered dirt. Then putting the spray evenly on instruments can prevent the adhered dirt and blood. Those instruments have to be put on a container during the spray. Those instruments have to be put on a container during the spray.

\*Please make sure whether the spray you chose is suited to cleaning instruments or not from a manual.

\*We recommend "Z-1 eco FINE LIQUID(13-538)" for cleaning instruments.



## Immersion cleaning / Ultrasonic cleaning

Remove protein and blood on instruments by using detergent.

Protein or blood sticking to instruments should be completely removed by anti-rust medical detergent. Immersing instruments in cleaning liquid can float the stubborn dirt and invisible protein from the instruments. This cleaning process is effective for the delicate instruments or the ones which have some parts where we can't reach our hands or fingers.



### ■Cleaning by your hands

Cleaning instruments by your hands may cause external injuries and rough hand. It also increases the risk of infection. In addition, cleanser, wire brush and steel wool may cause some damage for instruments. Please do not use such materials when you clean instruments.



### ■Caution points for cleaning

- We recommend to clean up instruments immediately after use.  
Remaining dirt may decline the efficiency of sterilization and cause corrosion for instruments.
- Please do not use ultrasonic cleaning machine for Mirror or Periodontal Probe.  
Also please avoid the contact with other instruments during cleaning process.
- Household detergent is invented only for rubbing off starch on dirty dishes.  
Therefore we can't expect household detergent to clean the blood including protein effectively.  
In addition, coloring agent and fragrance material contained in household detergent have the possibility of corroding and rusting your instruments.
- Acidic cleaner has strong corrosion against instruments.  
Please use anti-rust medical detergent for medical equipment for cleaning.
- Enzyme cleaning needs to be done under the condition of approximately 40 degrees to activate enzyme.  
Please use thermos under a low temperature to keep around 40 degrees Celsius.

**\*We recommend "Z-1 eco Fine Liquid (13-538)" which doesn't require temperature management and has dissolving power against blood and protein.**



Anti-rust alkaline cleaning liquid for medical equipment "Z-1 eco Fine Liquid (13-538)"

## ②Rinsing

Please rinse your instruments adequately after immersion cleaning or ultrasonic cleaning because there must be some cleaning liquid and solvent dirt on instruments. If you dry your instruments after the cleaning process directly, it'd cause the sticking dirt, especially for the instrument which has a joint part.

Purified water (no impurities) is ideal for rinsing. Tap water contains chlorine. This chlorine may corrode the metal. Impurities contained in tap water, such as mineral, also may remain on instruments and could be the cause of rust and stain. Especially the tap water from aging water pipe may contain the particles of rust and it also could be the cause of rust and corrosion.

## ③Drying

After cleaning and rinsing, please dry your instruments immediately and completely. Remaining moisture could be the cause of rust and stains. This moisture declines the effectiveness of sterilization.

We recommend to use delicate soft cloth when you wipe off the moisture remaining on instruments. Then please do not rub your instruments to avoid getting scratches.



## ④ Sterilization • Disinfection

- Please sterilize or disinfect your instruments after you confirm that dirt is removed thoroughly.
- Please sterilize or disinfect your instruments in proper way, for example by Autoclave sterilization, EOG sterilization or Glutaral formulation disinfection. It depends on your instruments.

### Autoclave sterilization

**For every instrument which is heat-resistant.  
(Except the instrument which is apt to rust.)**

An autoclave is a pressure chamber used to sterilize equipment and supplies by subjecting them to high pressure saturated steam. Please set up the heating temperature not to be over the recommended temperature indicated by manufacturer. If you are using a machinery which gives off heat over the recommended temperature, please skip drying process and dry them by pre-heating. High temperature may decline the efficiency of instruments. Upper temperature limit is different from each instruments. Please refer to the product information.

- **Advantage**
  - Fast temperature rise and steam can sterilize deep part of instruments.
  - Effective for spore.
  - Nonpoisonous inside an autoclave equipment.
  - Low running cost.
- **Disadvantage**
  - Deterioration of instruments through the wet heat.
  - Have to ensure that all of trapped airs be removed completely from an autoclave for the efficiency of sterilization.
  - Can use only for heat-resistant instruments.



- ⚠ **Caution**
  - Please do not put too many instruments in an autoclave so the steam can pass through inside an autoclave from top to bottom. Heat source can be above the preset temperature. Please check an upper temperature limit of instruments and keep away from the heat source.
  - Please use purified water as much as you can. Tap water contains chlorine. This chlorine may corrode the metal. Impurities contained in tap water, such as mineral, also may remain on instruments and could be the cause of rust and stains.
  - Making use of liquid medicine such as alcohol for autoclave could be the cause of corrosion against the materials of instruments. Please do not use such liquid medicine for autoclave.

### ■ Regarding the cleaning of inside an autoclave

Please clean up inside an autoclave on a regular basis. Doing autoclave sterilization with dirt could be the cause of rust, stain and scorch. Please refer to an instruction manual.

\*Below pictures and descriptions are the differences from "sterilize after cleaning inside an autoclave" and "sterilize without cleaning inside an autoclave"



## EOG(ethylene oxide gas)sterilization

For non-heat-resistant instruments or non-autoclavable instruments due to rust.

EOG(ethylene oxide gas) alkylates protein and kills germs.

- Advantage
  - Can do sterilization without high temperature.
  - Can use for non-heat-resistant instruments.
  - Can sterilize instruments which are packed into materials or sealed up thanks to osmosis of EOG.
- Disadvantage
  - Sterilization time is comparatively long.
  - Running cost is high.
  - Aeration( the process of exposing to air after use) takes time.
  - Possibility of poisonous is high.

## Glutural formulation and chemical disinfection

For non-heat-resistant instruments and non-autoclavable instruments.

A lot of disinfectants are on the market those are not high effective against germs.  
We recommend to use high effective disinfectant which is able to kill germs extensively.

Glutural formulation (glutaraldehyde) is a disinfectant which can kill almost all germs.  
Glutural formulation is an easy way of disinfection to introduce since it doesn't require particular tool and is low cost.

Now there are around 20 types of disinfectants from over 10 companies on the market in Japan.  
In Japan, realistic concentration of the solution is indicated from 2.0 ~ 3.6%  
The minimum effective concentration is also indicated around 1.0 ~ 1.5%

Normally 2.0% concentration of solution needs to be changed on a weekly basis.  
According to the notification from "Ministry of Health, Labor and Welfare" in Japan, it is required to ventilate the room when the concentration of glutaral exceeds 0.06ppm. WHO mentioned that over 30 minutes of immersion is effective for instruments. However, recent information from pharmaceutical company mentions about the criteria for use as follows.

- 1) <Instruments with body fluid(ex. blood)> Over 1 hour.
- 2) <Instruments not with body fluid > over 30 minutes.

Dental instruments are inevitable to get body fluid(ex. saliva) therefore we recommend to immerse instruments over 1 hour.

- ⚠ Caution
- Please rinse them adequately after chemical disinfection.
  - Please refer to an instruction attached by manufacturer.
  - Sodium hypochlorite, benzalkonium chloride, chlorhexidine gluconate, tincture of iodine, Iodoform and peracetic acid may corrode metal. Please do not use them for your instruments.
  - Acid water (such as Oxidized water ) corrodes materials of instruments. Please avoid using.
  - Formalin, phenol, gluconic acid, ethanol and isopropanol may deteriorate resinous products. Please do not use them to resinous products.

## ⑤Drying・Storage

- Please dry instruments completely after sterilization and disinfection.  
Sterilized packaging bag also has to be completely dried to avoid getting rust and insufficient sterilization.
- Please do not store instruments with other metal materials or rusty instruments to prevent rust.
- Please do not store instruments with chemicals.
- Please do not do ultraviolet sterilization with resinous products. It may cause deterioration.
- Please store instruments away from not medical health care providers



## ◆How to keep instruments during the processes of cleaning,sterilization,and storage

It is better to unlock a ratchet and open a joint for more sufficient effect of cleaning and sterilization. Removable part is better to be removed too. Unlocking a ratchet can keep instruments long time because then instruments can be free from stresses. Also we recommend to unlock a ratchet during storage.



## ◆Oiling for instruments which have joint part

Since instruments are made of metal, oiling is required for movable part. Lack of oil may cause a dull function and even fixation. Oiling can't recover instruments perfectly once instruments get a fixation because of the scratch on a joint part. Oiling also prevent instruments from rust as the oil spread to every corner of a joint part .

We can't notice rust if the rust has been caused inside a joint. Rust spreads gradually and suddenly breaks a part in two parts someday. Please do oiling before sterilization. Oiling every time before sterilization is the best way to keep your instruments live long.



\*We recommend to use Anti-rust oil for medical instruments [Instruments oil]

## ◆Cleaning and sterilization befor using New instruments

Creansing is applied to steel instruments after being manufactured. However, the high pressure steam during sterilization may float dirt and it could be a stain during sterilization process. So please clean up new instruments by anti-rust alkaline medical detergent.

Anti-rust oil is applied during manufacture especially for the instrument which has a joint part, such as forceps ,Therefore it'd be much better to remove this oxidized oil and put new Anti-rust oil for medical instruments before autoclave sterilization.

○Ultrasonic cleaning (\*1)→ Rinse → Dry → Oiling (\*2)→ Autoclave sterilization → Dry・Storage

\*1 Please do not use ultrasonic cleaning machine but immersion cleaning for Mirror or Periodontal Probe.

\*2 Please do oiling for the instrument which has a joint part



Anti-rust oil for medical instruments  
"Instruments oil"



# Deterioration of instruments

## Deterioration of instruments

Stainless steel which is the material of stainless instruments is resistant to corrosion.

However there is the possibilities to get rust because of specific chemical substances and conditions.

We recommend to do daily maintenance on instruments with the knowledge of the features of stainless for a long-term use.

<The main causes of rust>

- Chlorine contained in tap water. Particles of rust contained in tap water from aging water pipe.
- Specific chemical substances
- Use of functional water such as acid water
- Immersion with dirty detergent or drug solution
- Corosion from slight crack(There is no anti-rust treatment inside the crack)
- Storage with other rusty instruments (Rust stains)

We can't notice rust if the rust happened inside a joint ,especially forceps , Needle holder ,pliers and other instruments which have joint parts. Actually rust tends to be caused inside parts where we can't see from the surface of an instrument. Therefore sometimes we find some rust when we take an instrument apart. Rust spreads gradually and suddenly breaks a part in two parts someday. Please do oiling before sterilization. Oiling every time before sterilization is the best way to keep your instruments live long. This progression of invisible rust and metal fatigue can break instruments even though we use instruments under ordinaly usage. Below pictures are an example that an instrument looks clean but rust has ooccured inside a slight crack and broke the instrument.



Long-term storage also can be the cause of rust due to the storage conditions. Not only doing cleaning and drying properly but also oiling to a joint part are required. These processes can prevent rust and keep instruments moving smoothly. And please unlock a ratchet and open a joint part during sterilization.

## Stain and Scorch

Can be happened on the surface of metal

<The main causes of stain and scorch>

- Remaining detergent because of chemical reaction during the process of sterilization.
- Impurities such as mineral contained in tap water because of chemical reaction during the process of sterilization. Purified water (no impurities ) is ideal for rinsing and sterilizing. Please remove moisture before sterilization.

\*Some of the stain can be removed by detergent(Unless the stain doesn't erode inside an instrument )  
Below pictures are an example of removing stain on a mirror by detergent.



## Precautions for use of instruments

### Precautions for instrument

- Please check instruments before and after use. Please do not use instruments if there were any crack, scratch, damage or wide corrosion.
- Please remove the dirt which adhered to instruments as soon as possible. Such as chemicals and blood can be the cause of rust and performance deterioration.
- Please do not carve any instruments. It can be the cause of rust.
- Please do not expose any instruments to fire directly. If it was necessary, please keep the exposing time short. Metal can be melted and deformed.

### How to use

All of instruments are manufactured for their own use and purpose. Please do not use an instruments for inappropriate purpose even the instrument has a similar shape to others. It can break the instrument because of too much stresses.

Please clean , sterilize and disinfect instruments in proper way.

The proper ways of cleaning, sterilizing and disinfecting depend on each material feature of an instrument.

## ◆Repair and Maintenance

Basically we YDM can repair our steel instrumets unless there is no significant damage or wear. And we YDM repair only our products.

## ◆How to dispose

- We must apply appropriate cleaning, sterilizing ,or disinfecting befor disposal.(Only for Not infectious medical waste)
- Please do packing surely so the workers never get injured when they collect the waste ,especially sharp instruments.
- Please dispose infectious medical waste according to the manual of your own country .

〒114-0014 6-5-20 Tabata Kita-ku Tokyo  
YDM CORPORATION overseas div.  
Tel : +81338283161 FAX +81338283161  
E-mail : ydm@ydm.co.jp <http://www.ydm.co.jp/en-new/index.html>