



**ALP Co.,Ltd.**  
TOKYO JAPAN

Retort Sterilizer

# RK/RKZ-Series



RK-3030

For Packaging Evaluation



RKZ-40

For Small-Lot Food Production



# What is retort (pressurized heating) sterilization?

In general, the surface and the interior of the food always mold, yeast, microorganisms such a bacteria is adhered or mixed, if the water is large causes rot variation.

Thus far drying as a method for storing food, salting, but such as low-temperature storage has been carried out for a long time, the microbial complete interception by film packaging is facilitated, heat sterilization after packaging it is widely used as an effective storage method.

The simplest method of sterilizing the microorganism in wet heat is boiled sterilization (Hot water sterilization). However, the heating time is long to cause the heat degradation of the food, the bacteria has a heat-resistant bacteria that does not die even at 100°C, complete sterilization is impossible in such atmospheric pressure conditions. Therefore pressurized heat sterilization exceeding 100°C. If necessary has been performed.

When using the water bath, it is not possible to heat the boiling temperature of the water (100°C) or more, it is possible to heat exceeding 100°C when using steam or pressurized hot water. This is retort sterilization.

However, when heated at a temperature exceeding 100°C, since the bag internal pressure is increased at the time of cooling, pressurized more than the time of heating, it is necessary to cool while adjusting the pressure. (Fig1)

Therefore, it is necessary to different “Retort sterilizer” from the general autoclave.

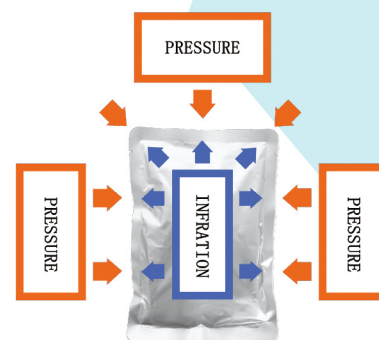
Sterilization temperature is 120°C, is the most common, a semi-retort of 105 ~ 115°C, 130°C or higher retort (HTST\*1) are also carried out.

Sterilization time when raising the temperature is drastically shortened in the sterilization of microorganisms. For example, whereas it takes 400 minutes at 100°C. To kill the spore fungus, at 120°C maybe 4 minutes, deterioration due to the heat of the contents is much less (Table 1). Furthermore, since the retort sterilized products can be in a commercial sterile state, it is possible to normal temperature distribution.

**Table1. Sterilization temperature and spore lethal time, food component residual rate**

Temperature(°C)	Spore lethal time(sec.)	Food component residual rate(%)
100	24000	0.7
110	2160	33
120	240	73
130	30	92
140	4.8	98
150	0.6	99

**Fig1. Pressurized Pouch**



In general retort food, the center temperature\*2 120°C, 4 minutes heating (F value\*3= 4.0) is the minimum condition. In fact, there are also many bacteria that do not completely die out in this sterilization conditions, when trying to commercial aseptic, it is often carried out in F value 5-10 to see the safety.

\*1 HTST : High temperature, Short time

\*2 About the center temperature of retort food,

In sterilization conditions, for example, 120°C, for 4 minutes, the central portion of the object to be sterilized, in a certain temperature (120°C), a certain time(4 minutes) that it is held, the time from the start of heating to the end it is necessary to note that it is not.

\*3 About F value,

Although the term F value of the retort sterilization is often used, the F value means the heating time required to kill a certain number of bacteria at a constant temperature, botulinum is 120°C, because it kills in 4 minutes F value is 4.

Therefore, in table 1, the same sterilization conditions as the F value 4, it is required 36 minutes at 110°C, it will be good in 30 seconds at 130°C.

# RK/RKZ Series

Just a Sterilizer for Retort  
Research and Development Purpose  
Not suitable for Mass Production

## Features & Possible item in each series

Features/ Sterilized items	RKZ series
Features	Auto-Pressurize control system
	Cooling shower with pressurization
	Auto- water supply system
	Fully-auto operation
	Compressor - Standard equipped
	F-value monitoring (Option)
Sterilized items	Suitability(YES/NO)
	Max load RKZ-40(82L)
	YES
Retort Pouch(Regular)	130 × 180mm Pouch 128pcs.
	NO
Retort Pouch(HTST)	
	YES
Jam Bottle	Ø66 × 120mm 92pcs.
	YES
Aluminium Can	350ml 92pcs.
	YES
Steel Can	Ø75 × 110mm 64pcs.
	NO
Jelly Pack	
	NO
Plastic Pack(Ex:Contact Lens)	

Extra  
functions

RK series
HTST operation available
Hot water sterilization mode
Pre-heating function
Multistage pressure control
Variable program setting (up to 3 patterns)
F-value operation control system (Option)
Suitability(YES/NO)
Max load RK-3030(32L)
YES
130 × 180mm Pouch 32 pcs.
YES
130 × 180mm Pouch 32 pcs.
YES
Ø66 × 120mm 24pcs.
YES
350ml 24pcs.
YES
Ø75 × 110mm 16pcs.
YES
Ø75 × 62mm 32pcs.
YES
Depend on the size

# FAQ

## How long the Operation?

About 100 minutes with Max. Capacity (In case of 121°C sterilization Temp., 20 minutes time and 15 minutes Cooling).

## Can I sterilize my actual Item?

Sample Evaluation upon request. Please contact your Representative for more detail.

## What is the quantity that can be sterilized once?

We will answer the questions individually. Please contact your Representative for more detail (sample's material, size, quantity, weight).

## What should I prepare?

Purified Water Supply (Water pressure 0.2 MPa or above) and Drain Water Supply (In the case of vinyl chloride piping, a cooling device is necessary) and Power Source(Single Phase AC200-240V, 50/60Hz).

## How do I log cycle data?

By using an optional Recorder to save each cycle (Temperature and Pressure). And it is also possible to monitor F Value by inserting each object temperature sensor into retort pouch.

## What are the consumables of this equipment?

Just Lid gasket. All you need a spanner to replace it.

## What can be sterilized other than Food?

Packed product can be sterilized (Contact Lens pack etc) as well as able to evaluate retort pouch, film pack etc's durability of printed surface and seal strength.

## Can this Equipment be used in high Altitudes?

Less than 1000m possible. Above that, please contact your Representative.

## Can this Equipment be washed?

No. Power System will be damaged.

Dealer/Distributor Contact: \_\_\_\_\_



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