



No. 2610

No. 2610

Oken-type autoclave

The pulp manufacturing processes are roughly classified under three categories: timber cut-up, pulping and refining. Among these, the pulping process is the most important. According to the pulping method, produced pulp is classified as DP, KP, SP, SCP, GP or MP. Among these, the KP type is the most commonly used in paper manufacturing, and is produced in the greatest volume, preferred because of its quality and cost advantages. Unlike the GP or MP method using mechanical shearing force, the KP method mainly resorts to chemical treatment using a chemical agent (mix liquid of sodium hydrate and sodium sulfide solutions). Autoclaves are used in the pulping process for testing and studying digestion of various wood chips and yield measurement as well as bleaching/deinking of used paper, collection of chemicals and treatment of waste cooking liquid. This autoclave is easy to handle since the chamber and lid are made of stainless steel that can resist chemical corrosion even after long years of service.

<Features>

1. Provided with handles on the chamber to allow the operator to hold and shake the chamber, helping permeation of chemicals into chips to take out specimens or to clean the autoclave body
2. Provided with two valves, one on the top and the other on the bottom, helping easy sampling of gas and the liquor.

Capacity: 4 ℓ

Maximum pressure: 1.5 MPa

Heating: electric 2 kW (3-stage changeover)
or gas burner (city gas or LPG)

Material of cooker and cover: SUS-316

Heater cover: SUS-304

Pressure gauge: 2 MPa, resistant to acid

Inspection of vessel: inspected by a third party organization according to the regulation for small-size pressure vessels

Outer dimensions: 450×420×1140 mm

Instrument weight: electric type 61 kg, gas type 58 kg



No. 2611

No. 2611

Horizontal type rotating autoclave (with program-based control)

This autoclave is used in digestion experiments on various wood chips. In order to strictly comply with the temperature setting according to a preset cooking schedule, a thermometer device is installed on the chamber body for program-based control, enabling automatic control via the control unit. This mechanism significantly contributes to higher accuracy of digestion experiments, improved reproducibility and labor saving.

Temperature controller: digital, program-based setting
 Temperature range: 0 to 300 °C,
 temperature accuracy ±2 %
 Set time: 1 minute to 99 hours/step,
 number of steps max. 99 steps
 Number of programs: max. 7
 Control method: PID

Temperature detector: PT 100 Ω

Recorder: electronic, record paper 60 mm wide

Outer dimensions: autoclave 590×450×900 mm

Controller: 590×490×900 mm

Reversing device: 530×420×780 mm

Instrument weight: autoclave 133 kg

controller 69 kg

reversing device 46 kg

No. 2612

Horizontal type rotating autoclave

This autoclave is used in a range of chemical experiments as well as for cooking of various wood chips. It is designed to allow reactions to take place adequately and uniformly even with a very low liquid ratio, providing an advantage that allows experiments under conditions close to the site conditions. In addition, in an effort to control environmental problems, it is widely used in studies of oxygen bleaching and oxygen digestion.

Capacity: 4, 10, 30 ℓ

Max. pressure: 1.5 MPa

Liquor ratio: 1:1.5 or 1:2

Material of cooker: SUS-316 (molybdenum stainless steel)

Heating: electric furnace (divided in two parts)

Heater: for 4 ℓ ; single-phase 200/220 VAC, 20 A,
for 10 ℓ ; three-phase 200/220 VAC, 30 A,
for 30 ℓ ; three-phase 200/220 VAC 60 A

Temperature control: by slide regulator

Heater cover: SUS-304

Pressure gauge: 2 MPa, acid resistant

Rotation speed: 10 rpm

Geared motor: for 4 ℓ ; single-phase 100 VAC 0.035 kW,
for 10 ℓ ; three-phase 200 VAC 0.1 kW,
for 30 ℓ ; three-phase 200 VAC 0.4 kW

Standard accessories: upright cooker bench for operation, four handles for cooker transportation, rod type mercury thermometer

Optional: baffle plate for pulp agitation

Inspection of vessel: inspected by a third party organization according to the regulation for class 1 or small-size pressure vessels

Outer dimensions: 750×540×840 mm (4 ℓ)
800×670×960 mm (10 ℓ)
1140×835×1085 mm (30 ℓ)

Instrument weight: 163 to 250 kg



No. 2612

No. 2613

Autoclave chamber inversion device

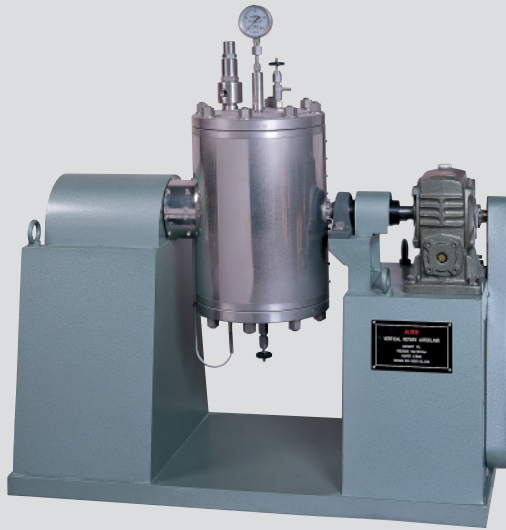
This device aims to enhance safety and ease operations before and after a chip digestion test, such as preparing chips into the cooking chamber and taking them out upon completion. Chips can be fed into the chamber as it is erected. After cooking, the lid is removed and the autoclave is inverted using the handle for easy retrieval of digested pulp.

Outer dimensions: 530×420×780 mm (for 4 ℓ cooker)
590×420×815 mm (for 10 ℓ cooker)
795×580×1050 mm (for 30 ℓ cooker)

Instrument weight: 46 kg (4 ℓ)



No. 2613



No. 2615



No. 2616

No. 2615

Vertical type rotating autoclave

Like the horizontal type rotating autoclave, this cooker also performs efficient cooking tests on various types of chips. Its advantage lies in that the chamber body rotates slowly in a vertical direction, achieving quick and even permeation of the cooking liquid into chips. It consists of a chamber, rotating system and electric heater. The chamber is provided with a pressure gauge, safety valve, thermometer, needle valve, etc. Temperature is controlled with a sliding regulator.

Capacity: 15 ℓ

Pressure: max. 1.5 MPa

Material: SUS-316 (stainless steel)

Heating: electric, three-phase 200 VAC, 5 kW

Temperature control: by slide regulator

Pressure gauge: 2 MPa, acid resistant

Rotation speed: 2 rpm

Power source: three-phase 200/220 VAC 50/60 Hz

Inspection of vessel: inspected by a third party organization according to the regulation for small-size pressure vessels

Outer dimensions: 1160×600×1240 mm

Instrument weight: 336 kg

No. 2616

Mini-size autoclave

This autoclave is for timber chip cooking tests in a university laboratory, etc. As such, the cooking chamber is small-sized and can be heated on a gas burner, which is suited for a simple pulping experiment. By removing the fixing pins supporting the chamber body, it can be shaken sideways, helping even permeation of the liquor into chips.

Capacity: 500 cc

Material: SUS-316

Pressure: max. 1.5 MPa

Pressure gauge: 2 MPa

Heating: by gas burner

Accessories: safety valve, gas purge valve, thermometer pocket, rod-type mercury thermometer 300°C, Bunsen burner

Outer dimensions: 240×240×540 mm

Instrument weight: 10 kg