

Microplastic Automatic Preparation Device

# MAP-100



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This automatic preparation device isolates microplastics contained in environmental surface water.



The presence of microplastics in environmental surface water such as oceans, rivers, and lakes has attracted international attention as an environmental problem, and many monitoring results have been reported. The analysis of microplastics requires multiple steps, including sample collection, digestion and filtration, and qualitative and quantitative (size, number of particles, mass or concentration) analysis. To accurately analyze microplastics in aqueous samples, an essential step is to isolate the particles from other components in the sample. This process normally involves digestion and separation steps. The MAP-100 automates the typical steps needed to isolate microplastics. This improves the reproducibility of the analytical workflow, enables lab technicians to focus on other tasks, and makes handling of reagents safer.

## Labor savings

Automating the complicated preparation process significantly reduces the number of man-hours required.

## Reproducibility

Manual tasks by the operator are reduced, enabling highly reproducible preparation. This improves accuracy when comparing data across analysts and laboratories.

## Safety

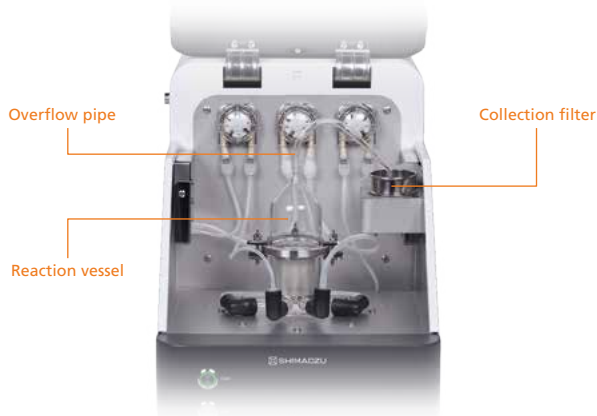
Simplified handling of reagents by operators.

Product



## Operation of the Automatic Preparation Device

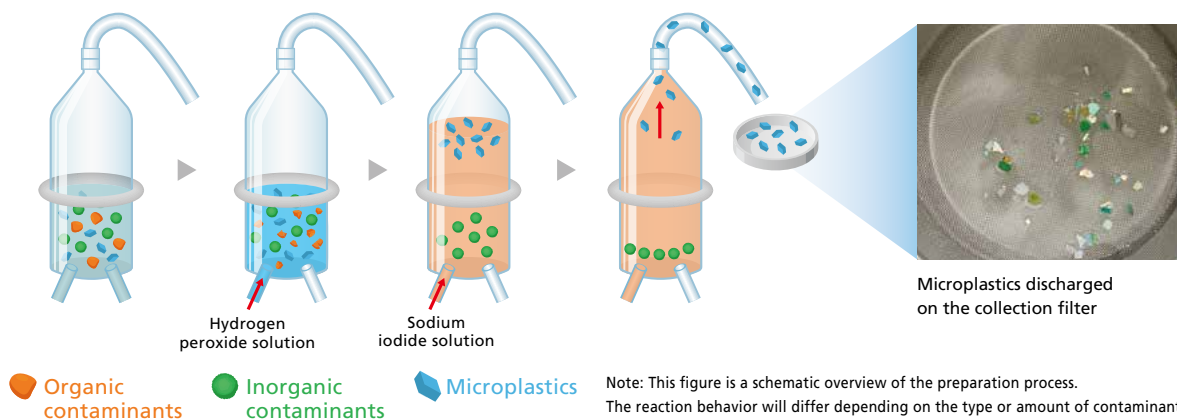
The sample collected from the environmental surface water is placed inside the reaction vessel in the automatic preparation device. The control software is used to configure the conditions for each preparation step via digestion, separation, and overflow. When the preparation process is started, the microplastics are automatically collected through the processes of (1) Digestion, (2) Separation and (3) Filtration as shown below.



### Automated preparation steps

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1 Digestion process</li> <li>2 Separation process</li> <li>3 Filtration process</li> </ol> | <p>Digestion of organic compounds via an hydrogen peroxide solution.</p> <p>Density separation via an sodium iodide solution.</p> <p>The supernatant fluid discharged by the overflow is filtered out by the collection filter.</p> |
|---|---|

Sample injection → 1 Digestion → 2 Separation → 3 Filtration → Automation



## Simple Control Software

The operator configures the conditions for the automated preparation process in the simple software window. The progress during preparation is displayed in a monitoring window, and the estimated completion time can be checked in the status area. This user-friendly control software simplifies the preparation process.

**Setting**

The operator can easily configure the conditions for the digestion, density separation, and overflow processes.

**Maintenance**

The operator can rinse the flow lines and check the sensor status.

**Monitor**

The progress of each preparation step is shown.

**Status**

The estimated completion time and the consumption of reagents are shown.

Note: Tablet PCs that make it easy to secure installation space are recommended.

## Specifications

Model Name	MAP-100
Applicable Samples	Samples collected from rivers, oceans, lakes, and other environmental water. (Incompatible with samples containing a lot of sand or mud from riverbeds, the ocean floor, or sandy beaches)
Sample Volume	45 mL (The maximum amount of sample should be up to 3cm from the bottom of the strainer.)
Digestion Reagent	Hydrogen peroxide solution (Concentration: 30 % (w/w) max.)
Separation Reagent	Sodium iodide solution (Concentration: 5.3 mol/L)
Temperature Setting Range*1	30 to 100 °C (This instrument does not have a cooling function)
Stirring Speed	50 to 900 rpm
Extracted Plastic Size	Major axis 0.3 to 5 mm in length
Extracted Plastic Density	1.5 g / m <sup>3</sup> max.
Power*2	AC220 to 230 V±10 %, 50/60 Hz, 850 VA AC115 V±10 %, 50/60 Hz, 850 VA
Ambient Temperature	15 to 30 °C
Size	W300×D550×H400 mm (excluding protrusions)
Weight	Approx. 25 kg

\*1 This is the set temperature in the software, which is different from the liquid temperature in the reaction vessel. Liquid temperature is also affected by ambient temperature. Please adjust the temperature according to the operating environment. (For example, with an ambient temperature of 15 °C and a set temperature is 80 °C, the liquid temperature will be about 55 °C.)

\*2 The voltage varies depending on the model.

## Recommended PC Specifications (Control Software Device)

OS	Windows® 10 Pro or Windows® 11 Pro
CPU	Dual core 10th generation Intel®Core™i3-10100Y processor or later
Storage	8 GB or more
Memory	128 GB or more
Display	10.5 inches or larger
External terminal	1000BASE-T/100BASE-TX/10BASE-T LAN interface, or those which can realize the above interface with USB-C-LAN converters

## Related Products

Related products are available for the observation and qualitative analysis of microplastics.



Stereoscopic Microscope  
**STZ-171-TELD**  
(Shimadzu Rika Corporation)

\*Only available as a package sales with MAP-100.



Fourier Transform Infrared Spectrophotometer  
**IRspirit™/QATR™-S**



Infrared Raman Microscope  
**AIRsight™**

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