



## WHAT IS YOUR LOAD TYPE?

### High risk research

Biosafety Level Category 3 (Cat III, BSL-3) covers highly regulated containment areas that could be working with harmful human diseases, viruses and bacteria that would cause a serious health and safety hazard. Waste from these facilities is potentially hazardous and could contain pathogens that are harmful, meaning effective sterilization is required before anything is discarded.

Examples of microbes worked with in a BSL-3 regulated environment include; botulism, yellow fever, and the bacteria that causes tuberculosis.

In certain circumstances a double-door (or 'pass-through) autoclave may be desirable whereby the loading ('dirty' or non-sterile) end is often separated from the unloading ('clean' or sterile) end by a wall, which often contains an SPF seal (Bio seal) to prevent bacteriological migration.

In BSL-3 laboratories an effluent retention system would also be a requirement, which would include a bacteriological HEPA filter on the exhaust, preventing dangerous pathogens from entering the atmosphere.

### FAQs

#### Are there any specific requirements regarding the pressure or quality of an in-house (separate) steam supply?

Typically autoclaves require a steam dryness fraction of 0.95; anything below this may impede the autoclaving cycle. We can offer a steam separator option for in-house supplies should it be required.

## THE CHALLENGES

### Challenges of hazardous waste loads

For hazardous loads a heated jacket would often be fitted to ensure the best possible temperature distribution within the vessel/chamber.

Microorganisms tend to become more active as the temperature of their surroundings rises, - most, but not all, die at above 80°C. In the case of Prions the temperature and time requirements for deactivation are much higher. High temperature or custom cycle settings may be required to ensure hazardous waste is effectively and thoroughly sterilized.

### Recommended options

- **Heated Jacket** – adds a secondary external layer to the autoclave allowing steam to circulate outside the sterilization chamber whilst insulating the main vessel.
- **Vacuum** – a vacuum option is essential for porous loads (e.g. wrapped instruments and fabrics) or other cycles where air pockets could easily become trapped within the load e.g. mixed discard.
- **Custom Load Cycle** – the touchscreen controller stores multiple sterilization cycle settings, and allows parameters to be edited to ensure suitability for different load types. Astell can create a custom cycle for a specific load. Using validation services it is possible to ensure the reliability and repeatability of the autoclave for almost any load.
- **IQ/OQ/PQ Validation** – Astell can provide detailed validation packages carried out to UKAS standards (ISO 17025:2005) by our fully trained engineers.
- **Category III filter** – a bacterial retentive filter is fitted to the exhaust, ensuring nothing leaves the chamber without being sterilized.



CHOOSING AN AUTOCLAVE BY LOAD TYPE

# HAZARDOUS WASTE

Inc. Category III/BSL-3 classification



## ASTELL RECOMMENDED PRODUCTS\*



### Top Loading Range

95 – 135 litres

- Vertical chamber with gas strut assisted door and fast-action locking mechanism
- Size optimised baskets and discard containers ensuring maximum chamber usage. Optional integral hoist for heavy loads
- Compact design with castors for easy movement
- Full range of options comparable with much larger machines

### Front Loading Range

120 – 344 litres

- Horizontal chamber provides easy loading access
- 5 standard chamber sizes up to 344 litres in capacity
- All units feature Astell's 'Swiftlock' secure door closure system
- Optional shelves and discard containers provide chamber loading flexibility

### SQUARE Range

125 – 735+ litres

- A choice of 7 standard chamber sizes and either a manual or automatic door
- Integral Steam Generator fitted as standard
- Fully customizable design built to customer requirements
- Ideal for high throughput laboratories

\*Please note these are suggested model ranges. Other products and options are available. Please contact us for a personal recommendation, providing a description of the load type(s).

### Product highlights

All Astell autoclaves have the following features:

'Heaters in chamber' models have 'media holdwarm', a feature that uses the heaters to hold sterilized media at a set temperature until it is to be used.

Autoclaves are manufactured to the principles of the Medical Devices Directive and in accordance with Pressure Equipment Directive (PED 2014/68/EU) and ISO 9001:2015 quality standards.

5.7" colour touchscreen controller with USB connectivity; allows users to edit cycle parameters, store and recover historic cycle data, add security levels with user passwords and more.

316L-grade stainless steel pressure vessels with electro-polished finish.

LSPT probe features 316L stainless steel conduit to protect the probe whilst inside the autoclave, and during unloading/unloading.

Industry-standard safety features to ensure the well-being of both the sterilizer and its operators; including external pressure gauge, over pressure and over temperature protection, a safety-linked door mechanism and thermally insulated doors.

**Optional** stainless steel pipework and panel work if required.

**Optional** controller software that meets the guidelines of FDA 21 CFR Part 11 Electronic Records; Electronic Signature final rule legislation.

### When asking for a quotation...

Remember to answer these four questions when asking for a quotation.

- What size of autoclave do you need?
- What items will you (or your customer) be sterilizing?
- Does the load need to be dry at the end of the cycle?
- How many cycles do you wish to run per day?



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