thermo scientific

DHX Heat Exchanger

A new solution to heat transfer

ThermoFisher SCIENTIFIC

Sterile, efficient and modular

The Thermo Scientific™ DHX™ Heat Exchanger is a modular system that employs a plate-and-frame concept, using a single-use BioProcess Container (BPC) as the sterile fluid path. The BPCs fit tightly between five dimpled, stainless-steel plates efficiently transferring heat in a counter-current flow path. The system provides efficient, sterile heat transfer that easily integrates into any new or existing process.

Key features and benefits

- Completely isolated flow paths for process and heat transfer fluid
- Counter-current, serpentine flow patterns
- Dimpled jacketing on the plates provides turbulent flow
- BPCs fill in place with no operator interaction
- Modular design and small overall footprint allows for changing process needs
- Reduced infrastructure requirements
- Reduced processing time
- Improved product consistency

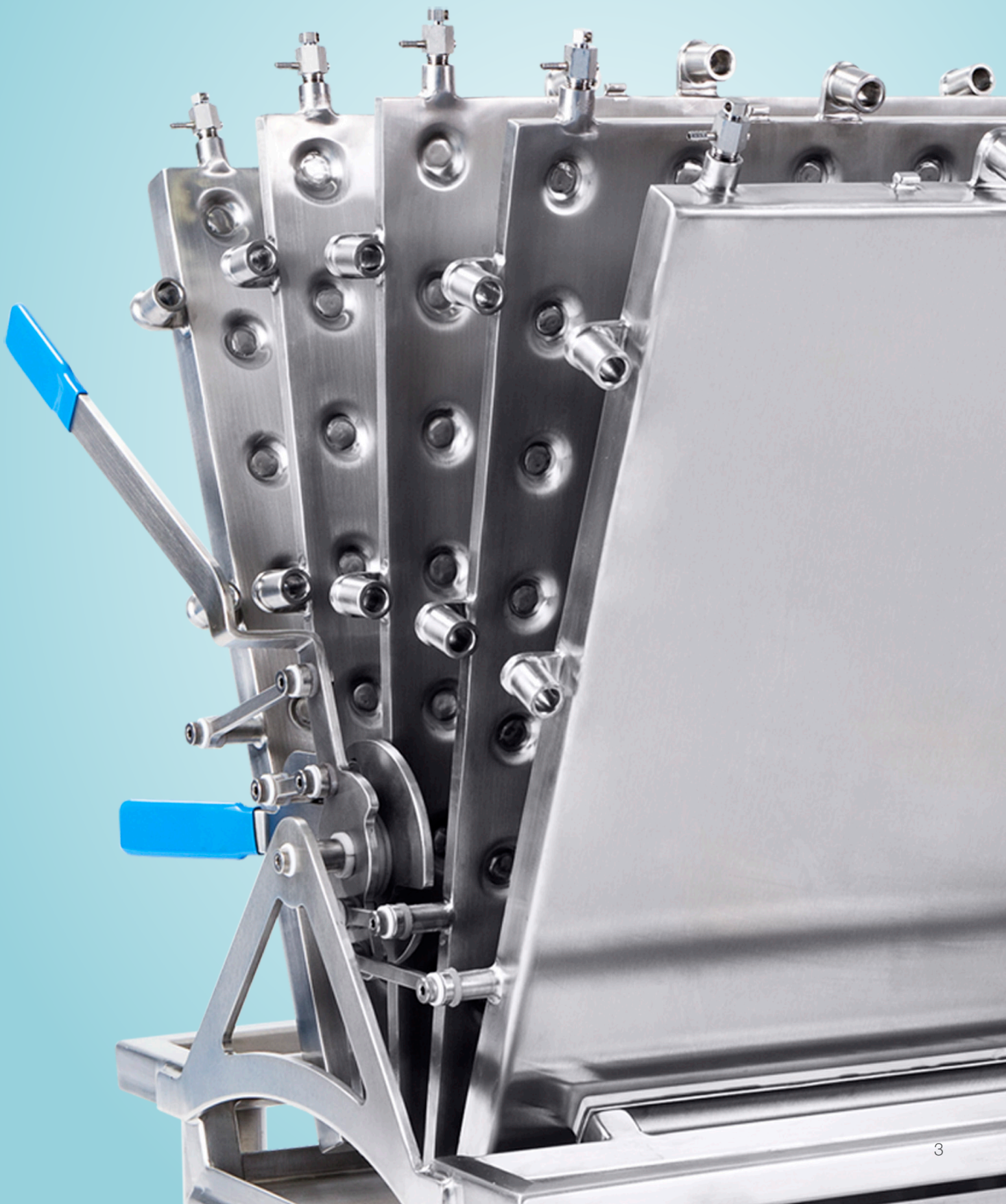
Applications

Upstream

- Media hold
- Mixing and fermentation
- Cell separation/protein harvest
- Harvest cooling
- Harvest hold

Downstream

- Harvest hold
- Buffers
- Protein purification
- Bulk drug substance



Technical specifications

DHX BPC assembly and plate system

Sterile fluid path for process fluid

Each single-use DHX BPC fits tightly between the stainless-steel plate assembly. In a completely isolated flow path, the process fluid flows through the BPCs counter-currently to the heating/cooling fluid within the plates. Once the BPCs are loaded in place, no further operator interaction is required.

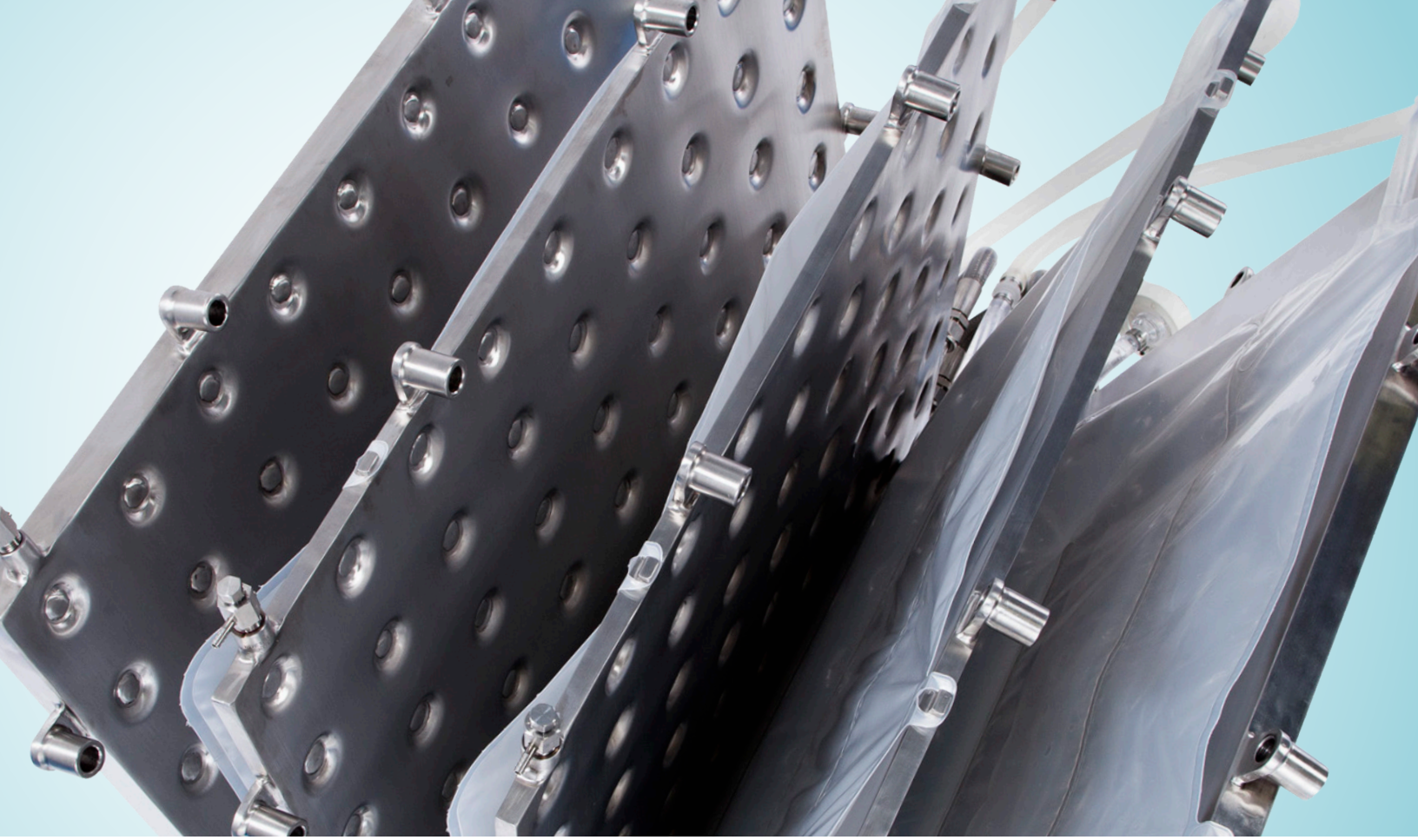
DHX BPCs	
General specifications	
Material of construction	Low-density polyethylene ASI™ 26/77 film
Interconnecting tubing	C-Flex
Connections	ReadyMate™ DAC 500 as standard; custom tubing and connections upon request
Flow rate capacity	Up to 15 L/min
Pressure/temperature rating (Installed in DHX plates)	20 psig at 122°F (50°C)

BPC ordering information	Cat. No.
One BPC-26/77 film (DAC connections on outlet ports)	DX00006-I
Two BPC assembly-26/77 film (DAC connections on outlet ports)	DX00007-I
Three BPC assembly-26/77 film (DAC connections on outlet ports)	DX00008-I
Four BPC assembly-26/77 film (DAC connections on outlet ports)	DX00009-I
One BPC-26/77 film (DAC connections and drain tubing)	DX00010-I
Two BPC assembly-26/77 film (DAC connections and drain tubing)	DX00011-I
Three BPC assembly-26/77 film (DAC connections and drain tubing)	DX00012-I
Four BPC assembly-26/77 film (DAC connections and drain tubing)	DX00013-I

DHX bioprocess equipment: plate system	
General specifications	
Material of construction	316L stainless-steel
Effective heat transfer area	Up to 27 sq. ft.
Overall dimensions (WxDxH)	51 x 74 x 69 cm (20 x 29 x 27 in)
Number of plates/BPCs	5 plates/up to 4 BPCs
Dry weight	150 kg (331 lbs)
Full weight (includes 4 BPCs)	190 kg (419 lbs)
Pressure/temperature rating	FV/140 psig at 150°F
Pressure vessel code	ASME U-1
Connections	1/2” compression

Equipment ordering information	Cat. No.
DHX stainless steel unit	DHX1001

Please contact your Thermo Fisher BioProduction sales representative for more information regarding customizations.

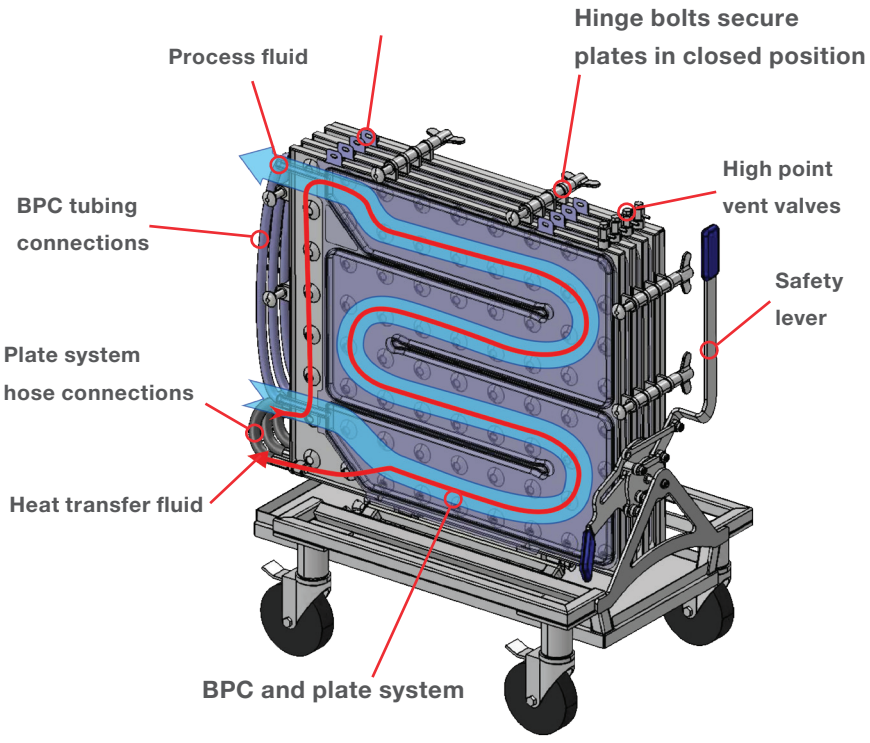


How it works

Efficient heat transfer

Single-use solution for heat transfer

The BPC and the plates each have a matching serpentine pattern. The heat transfer fluid flows through the plate system while the BPCs provide the sterile fluid path for the process fluid, each flowing counter-currently to the other. The temperature differential of the heat transfer fluid provides efficient heat transfer to the process fluid.

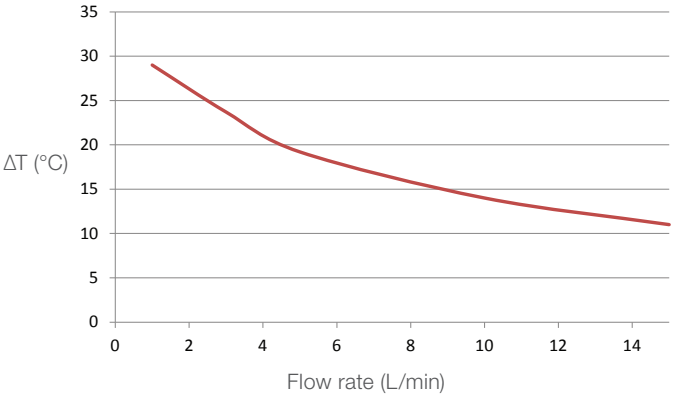


Heat transfer efficiency

Typical single-pass application

DHX cooling efficiency - from 37°C (single pass)

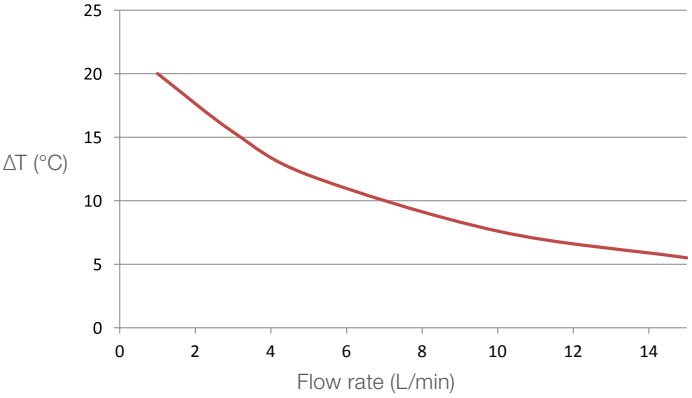
- Process fluid: Water at 37°C
- Heat transfer fluid: 30% propylene glycol at 2°C
- Heat transfer flow rate: 15 L/min
- Number of BPCs: 4



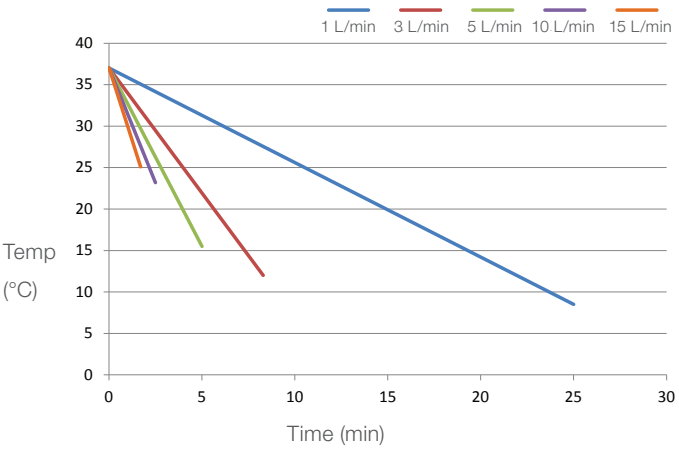
Represents the ΔT of process fluid (with a variable flow rate) as a result of a constant 15 L/min flow rate of the cooling fluid.

DHX heating efficiency - from ambient temperature (single pass)

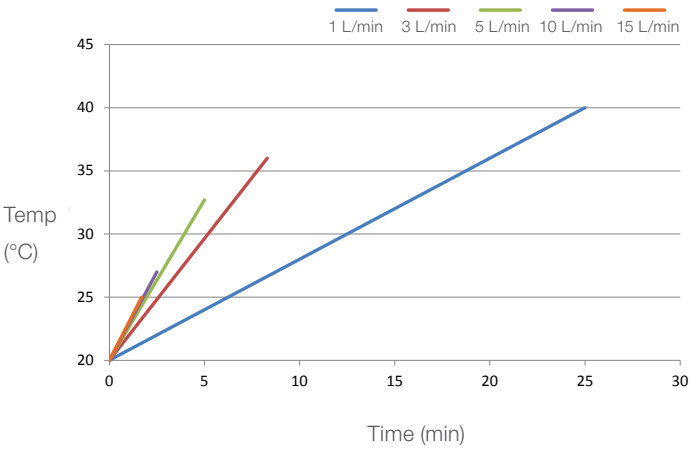
- Process fluid: water at 20°C
- Heat transfer fluid: 30% propylene glycol at 42°C
- Heat transfer flow rate: 15 L/min
- Number of BPCs: 4



Represents the ΔT of process fluid (with a variable flow rate) as a result of a constant 15 L/min flow rate of the heating fluid.



Cooling efficiency measured by temperature vs. time



Heating efficiency measured by temperature vs. time

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A variety of options up to 5,000 L for both upstream and downstream applications

Liquid- and dry-format media
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Sera
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Custom and standard buffers and process liquids, including Gibco™ Water for Injection (WFI)–quality water

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Logan, Utah 84321
United States of America
+(1) 435-792-8500

Cramlington NE23 1WA
United Kingdom
+44 (0) 1670-734093

Millersburg, Pennsylvania 17061
United States of America
+(1) 717-692-2104

Matamoros, Tamaulipas 01152
Mexico
+011 (52) 868-8109700

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