
T-Series cassette

WITH DELTA MEMBRANE

Low protein binding Delta membrane used in the proven T-Series cassette design optimizes process economics.

- **Improved process performance.** Cassettes are designed to provide optimal mass transfer to improve your process economics.
- **Increased safety, reliability, and reproducibility.** Materials of construction are durable and stable, and exhibit very low extractables. Membrane is backpressure resistant up to 4.1 barg (60 psig).
- **Easy scale-up for robust purification processes.** Available in scalable formats with the same materials of construction from development to production-scale processes.
- **High flux, high selectivity, and low protein binding** are achieved through the use of Delta regenerated cellulose membrane.



Fig 1. A selection of T-Series cassettes with Delta membrane.

Applications

The T-Series cassette with Delta membrane are designed for development, pilot, and production-scale tangential flow filtration (TFF) applications in diverse biological and biopharmaceutical processes. They are especially useful in:

- Concentration and diafiltration of mRNA and saRNA
- Antibody fragments (Fab)
- Purification and recovery of antibodies
- Concentration and diafiltration of recombinant proteins
- Blood plasma fractionation and purification

Product platforms

T-Series cassettes complement Centramate™ and Centrasette™ products. T-Series cassettes for Centramate holders are offered in scalable membrane formats with effective filtration areas (EFA) from 93 cm² (0.1 ft²), making them ideal for process development and small-scale production of 50 mL to 125 L. Centrasette T-Series cassettes, in combination with Centrasette holders, can process thousands of liters with installations incorporating hundreds of square meters of EFA.

Delta regenerated cellulose membrane

The Delta regenerated cellulose membrane offers high flux and selectivity. The membrane has been specifically developed to minimize protein binding to the surface and interstitial structure of the membrane. Inherently hydrophilic, this membrane shows low protein adsorption properties and is optimal for processes involving very hydrophilic proteins. The Delta regenerated cellulose membrane shows low fouling characteristics, allowing a constant performance or flux during a production run. It is easy to clean and typically recovers normalized water permeability (NWP) by using only 0.8 N saline solution.



T01
93 cm² (0.1 ft²) EFA



T02
186 cm² (0.2 ft²) EFA



T12
0.1 m² (1.1 ft²) EFA



T06
0.5 m² (5.4 ft²) EFA



T26
2.5 m² (27 ft²) EFA

Fig 2. The T-Series cassettes with Delta membrane are scalable from 93 cm² to 2.5 m².

The T-Series advantage

The materials of construction and cassette design increase process safety, reliability, reproducibility, and productivity:

- The feed and permeate screen material for T-Series cassettes is made from polypropylene which is highly resistant to sodium hydroxide.
- Large feed and permeate ports provide low pressure drops.
- T-Series cassettes have been designed to provide maximum mass transfer through the membrane, resulting in fast processing times or reduced area installations compared to existing similar cassette formats.

To test the T-Series cassettes with Delta membrane in your process, contact us today.

Technical specifications

Materials of construction

Membrane	Delta regenerated cellulose
Support	Polyolefin
Screens	Polypropylene
Encapsulant	Polyurethane with white pigment (TiO ₂)
Permeate seals	Medical grade, platinum cured silicone
Gaskets	Medical grade, platinum cured silicone

Operating limits

Maximum pressure ⁽¹⁾	6 barg (87 psig) at 23°C 4 barg (58 psig) at 55°C
Maximum trans-membrane pressure (TMP)	4 barg (58 psig) at 55°C
Temperature range ⁽²⁾	4°C to 55°C
pH range	2 to 13

⁽¹⁾ Pressure rating will be dependent on rating of the lowest system component.

⁽²⁾ Cassettes must not be allowed to freeze.

Typical operating parameters

Cross flow rate for processing	5 to 7 L/min/m ² (0.5 to 0.7 L/min/ft ²)
Cross flow rate for cleaning	5 to 8 L/min/m ² (0.5 to 0.8 L/min/ft ²)

Integrity test

10 kDa and 30 kDa molecular weight cut off (MWCO)	
Test pressure	4.1 barg (60 psig)
Maximum air forward flow	< 538 sccm/m ² (< 50 sccm/ft ²)
100 kDa nominal molecular weight cutoff (NMWC)	
Test Pressure	2.1 barg (30 psig)
Maximum air forward flow	< / = 409 sccm/m ² (< / = 38 sccm/ft ²)

Shelf life

The shelf life of cassettes packaged in preservative is expected to be three years from the date of manufacture when the cassettes are stored unopened in the original packaging at 4°C to 25°C and protected from direct light.

Biological safety

The materials of construction in the T-Series cassettes have been tested and meet requirements for United States pharmacopeia (USP) biological reactivity test, *in vivo* <88> at 70°C.

Ordering information

This is a guide to the product code structure and availability of T-Series cassettes. For example, the product code DC010T12 is a Delta regenerated cellulose membrane, 10 kDa nominal molecular weight cutoff, 0.1 m² (1.1 ft²) Centramate screen channel cassette.

Code	Membrane	Description
DC	Delta	Low protein binding, regenerated cellulose

Documentation

Each T-Series membrane cassette has a unique serial number for full traceability. Each cassette is supplied with:

- Certificate of quality
- Membrane cassette care and use procedures
- Material safety data sheet (MSDS) for the cassette preservative
- Two platinum-cured silicone gaskets

The full validation guide is available on request from your local Cytiva contact. We also offer a comprehensive validation service for specific tests (such as compatibility) in your process fluid. Our downstream processing specialists are available to train and support you in the optimization of your TFF processes.

Code	NMWC	Code	Type and nominal membrane area
010	10 kDa	T01	Centramate 93 cm ² (0.1 ft ²)
030	30 kDa	T02	Centramate 186 cm ² (0.2 ft ²)
100	100 kDa	T12	Centramate 0.1 m ² (1.1 ft ²)
		T06	Centrasette 0.5 m ² (5.4 ft ²)
		T26	Centrasette 2.5 m ² (27 ft ²)



Fig 3. A selection of T-Series cassettes with Delta membrane.

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