



## FilmTec™ Hypershell™ NF245N-8038/48-FF and FilmTec™ Hypershell™ NF245N-3838/48-FF Nanofiltration Elements

### Description

FilmTec™ Hypershell™ NF245N-8038/48-FF and FilmTec™ Hypershell™ NF245N-3838/48-FF Nanofiltration Elements offer an industry-wide unique combination of features:

- 48-mil feed spacer : Designed to treat high-viscosity liquids and improve cleaning effectiveness. Reduces the pressure drop across the pressure vessel.
- Up to 70°C continuous operating temperature capability due to distinct element and membrane design.
- Hypershell™ technology: A machined polypropylene rigid outer shell providing multiple benefits:
  - Minimization of deformation and channeling, which prevents premature element failure throughout the product lifetime.
  - Improved bypass control compared to mesh wrapped elements, which results in energy savings (see Figure 1), improved processing, and efficient Clean In Place (CIP).
  - Safer and faster loading and unloading of elements due to the rigid Hypershell™ exterior, which does not expand over time.
  - Easy and permanent identification due to laser-etched model names and serial numbers.
- Sanitary element design: All materials of construction are compliant with U.S. Food and Drug Administration regulations for indirect contact with food. It is the responsibility of the user to meet any if there are additional regulatory requirements required for specific applications.
- Robust FilmTec™ NF245 membrane sheet designed to reject organics with a molecular weight above 300 amu while passing monovalent salts.

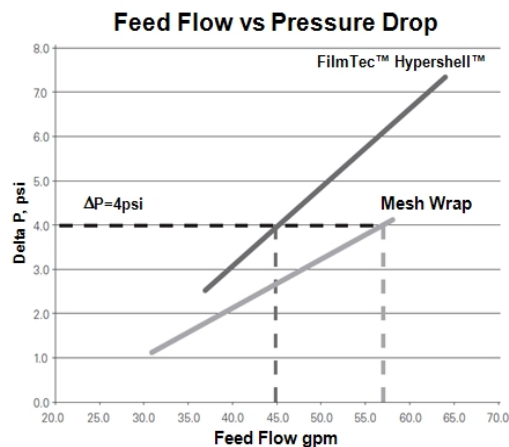


Figure 1: Pressure Drop vs. Feed Flow for Mesh wrap and FilmTec™ Hypershell™ 8038 Elements

**Description (Cont.)**

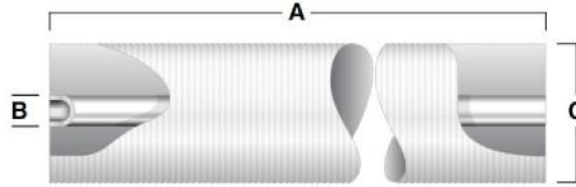
FilmTec™ Hypershell™ Elements have less exterior bypassing and require approximately 30% less flow than mesh wrap for an equivalent pressure drop. The graph indicates the flow comparison at 4psi ΔP. Energy can be saved by reducing flow.

**Typical Properties**

| FilmTec™ Specialty Membranes  | Active Area        |                   | Feed Spacer Active Thickness (mil) | Minimum ATD OD |              |
|-------------------------------|--------------------|-------------------|------------------------------------|----------------|--------------|
|                               | (ft <sup>2</sup> ) | (m <sup>2</sup> ) |                                    | (inch)         | ATD included |
| Hypershell™ NF245N-8038/48-FF | 275                | 25.5              | 48                                 | 7.9            | No           |
| Hypershell™ NF245N-3838/48-FF | 46                 | 4.3               | 48                                 | 3.8            | No           |

Sales specifications may vary as design revisions take place.

**Element Dimensions**



**Figure 2: Element Dimensions**

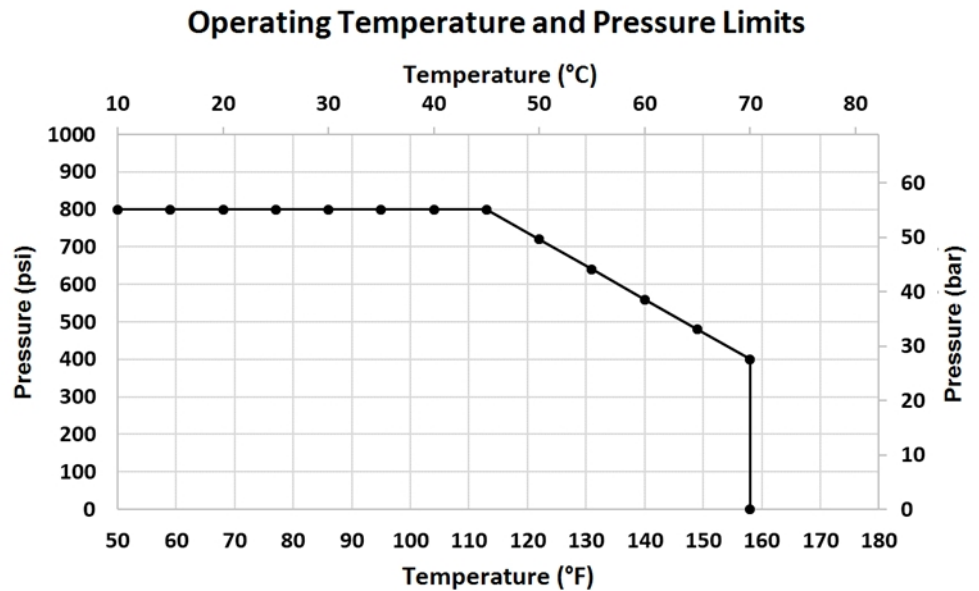
| FilmTec™ Specialty Membranes  | A     |      | B        |          | C     |      |
|-------------------------------|-------|------|----------|----------|-------|------|
|                               | (in.) | (mm) | (in.)    | (mm)     | (in.) | (mm) |
| Hypershell™ NF245N-8038/48-FF | 38    | 965  | 1.125 ID | 28.58 ID | 7.9   | 201  |
| Hypershell™ NF245N-3838/48-FF | 38    | 965  | 0.83 ID  | 21.08 ID | 3.8   | 97   |

1. FilmTec™ Hypershell™ 8-inch elements are designed to fit Schedule 40, 8 inch stainless pipe (nominal 7.98 inch ID).
2. FilmTec™ Hypershell™ 4-inch elements are designed to fit Schedule 80, 4 inch stainless pipe (nominal 3.83 inch ID).

## Operating and Cleaning Limits

|  |  |
|--|--|
| Maximum Operating Pressure <sup>a</sup>          | 800 psig (54.8 bar) at 45°C<br>400 psig (27.5 bar) at 70°C |
| Maximum Operating Temperature                    |  |
| pH 4 – 9   | 158°F (70°C)   |
| pH 3 – 10  | 122°F (50°C)   |
| pH 2 – 11  | 95°F (35°C)  |
| pH Range   | pH2 – 11   |
| Free Chlorine Tolerance                          | Below Detectable Limits                                    |
| Hydrogen Peroxide Limit, Cont. Operation         | 20 ppm   |
| Maximum Pressure Drop ( $\Delta P$ ) per element |  |
| Temperature < 50°C                               | 15 psi (0.9 bar)   |
| Temperature < 70°C                               | 8 psi (0.5 bar)  |
| Maximum Pressure Drop ( $\Delta P$ ) per vessel  |  |
| Temperature < 50°C                               | 60 psi (4.1 bar)   |
| Temperature < 70°C                               | 30 psi (2.0 bar)   |
| Maximum Cross-Flow                               |  |
| FilmTec™ Hypershell™ NF245N-8038/48-FF           | 80 gpm (18.2 m <sup>3</sup> /h)                            |
| FilmTec™ Hypershell™ NF245N-3838/48-FF           | 30 gpm (6.8 m <sup>3</sup> /h)                             |

a. See Figure 3, Maximum allowed temperature and pressure for FilmTec™ Hypershell™ NF245N-8038/48-FF and FilmTec™ Hypershell™ NF245N-3838/48-FF.



**Figure 3: Maximum allowed temperature and pressure for FilmTec™ Hypershell™ NF245N-8038/48-FF and FilmTec™ Hypershell™ NF245N-3838/48-FF**

## Clean in Place (CIP) Parameters

|                         |                           |
|-------------------------|---------------------------|
| Maximum CIP Pressure    | 15 to 75 psi (1 to 5 bar) |
| Maximum CIP Temperature |                           |
| pH1.8 to pH11           | 122°F (50°C)              |
| pH1.8 to pH11.2         | 113°F (45°C)              |
| pH Range                | pH1.8 – 11.2              |
| Free Chlorine Tolerance | Below Detectable Limits   |
| Hydrogen Peroxide Limit | 1,000 ppm                 |

1. Please refer to [DuPont Food Processing and Sanitary Element Cleaning Guide](#) (Form No. 45-D01865-en) for more information.
2. Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature membrane failure. DuPont Water Solutions recommends removing residual free chlorine using pretreatment, prior to membrane exposure. Please refer to [Dechlorinating Feedwater](#) (Form No. 45-D01569-en) for more information.

## Important Start-Up Information

Normally, new elements are cleaned prior to initial use. The cleaning procedure should be based on the application for which the elements are to be used. If cleaning with formulated agents is not available, an alkaline wash with a wetting agent is recommended prior to initial use. Please refer to [FilmTec™ Cleaning Guidelines](#) (Form No. 45-D01696-en) for more information.

Avoid any abrupt pressure or cross flow variations on the spiral elements during start-up, shutdown, cleaning or other sequences to prevent possible membrane damage. During startup, a gradual change from a standstill to operating state is recommended as follows:

- Feed pressure should be increased gradually over a 30-60 second time frame.
- Before initiating cross-flow at high permeate flux conditions (e.g., start-up with high temperature water), the set operating pressure should be maintained for 5-10 minutes.
- Cross-flow velocity at set operating point should be achieved gradually over 15-20 seconds.
- Avoid permeate-side backpressure at all times.

## General Information

- Keep elements moist at all times after initial wetting.
- To prevent biological growth during system shutdowns, it is recommended that elements be immersed in a preservative solution.

## Warranty Information

Reference warranty document: DuPont Specialty Membrane Prorated Element Warranty.

## Product Stewardship

DuPont has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with DuPont products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

## Customer Notice

DuPont strongly encourages its customers to review both their manufacturing processes and their applications of DuPont products from the standpoint of human health and environmental quality to ensure that DuPont products are not used in ways for which they are not intended or tested. DuPont personnel are available to answer your questions and to provide reasonable technical support. DuPont product literature, including safety data sheets, should be consulted prior to use of DuPont products. Current safety data sheets are available from DuPont.

Please be aware of the following:

- The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.
- Any concentrate or permeate obtained from the first hour of operation should be discarded.

## Regulatory Note

This product may be subject to drinking water application restrictions in some countries; please check the application status before use and sale.

Have a question? Contact us at:

[www.dupont.com/water/contact-us](http://www.dupont.com/water/contact-us)

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