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DOW™ XUS290908 and XUS290904 Nanofiltration Elements

Description

DOW™ XUS290908 and XUS290904 Nanofiltration Elements offer an industry wide unique combination of features:

- Designed to treat high viscous liquids as well as improve cleaning effectiveness
- 48-mil feed spacer to reduce the pressure drop across the pressure vessel DOW HYPERSHELL™ Reverse Osmosis technology, a machined polypropylene rigid outer shell:
    - Minimize channeling and prevents premature element failures throughout product lifetime
    - Improve hydrodynamics of the element compared to mesh wrapped elements, which results in energy savings (see Figure 1), improved processing as well as efficient Clean In Place (CIP).
    - Safer and faster loading and unloading of elements from a system due to the rigid HyperShell case which doesn't 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 DOW FILMTEC™ NF245 membrane sheet designed to reject organics with a molecular weight above 300 amu while passing monovalent salts.

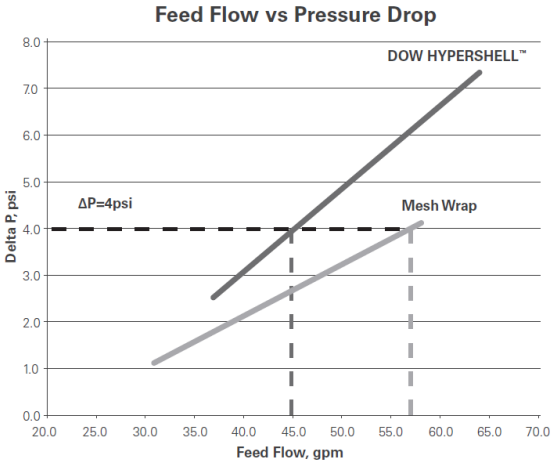

Figure 1. Pressure Drop vs. Feed Flow for Mesh wrap and DOW™ HYPERSHELL 8038 Elements

DOW 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 delta P. Energy can be saved by reducing flow.

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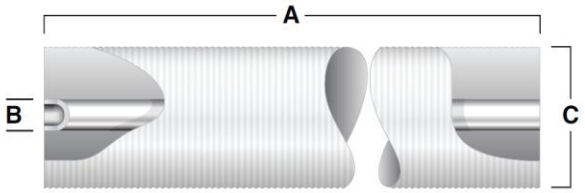
Product Specifications

DOW™ Specialty Membrane	Active Area (ft^2)	Active Area (m^2)	Feed Spacer Thickness (mil)	Minimum ATD OD (inch)	ATD included
DOW XUS290908	270	25	48	7.9	No
DOW XUS290904	50	4.7	48	3.8	No

1. Permeate flow and salt (NaCl) rejection based on the following standard test conditions: 2,000 ppm NaCl, 150 psi (10.3 bar), 77°F (25°C), pH 8, 15% recovery.
2. Sales specifications may vary as design revisions take place.

Element Dimensions



DOW™ Specialty Membranes	A (in.)	A (mm)	B (in.)	B (mm)	C (in.)	C (mm)
XUS290908	38	965	1.125 ID	28.58 ID	7.9	201
XUS290904	38	965	0.83 ID	21.08 ID	3.8	97

DOW HYPERSHELL™ elements are designed to fit Schedule 40, 8 inch stainless pipe (nominal 7.98 inch ID).

Operating Limits

Maximum Operating Pressure	800 psig (54.8 bar)
Maximum Operating Temperature	
pH2 – pH10	122°F (50°C)
Above pH10	95°F (35°C)
pH Range	pH2 – pH11
Free Chlorine Tolerance	Below Detectable Limits
Hydrogen Peroxide Limit, Cont. Operation [a] [b]	20 ppm

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 – pH11.2
Free Chlorine Tolerance	Below Detectable Limits
Hydrogen Peroxide Limit	
Cont. Operation	20 ppm
Short-Term Cleaning	1,000 ppm

[a] Please refer to Dow Food & Dairy Cleaning Guide form 609-00077-0910 for more information.
[b] Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature membrane failure. Dow Water & Process Solutions recommends removing residual free chlorine using pretreatment, prior to membrane exposure. Please refer to Technical Bulletin form 609-22010 for more information.

Design Guidelines

Maximum	
DOW™ XUS290908	13 psi (0.9 bar)
DOW™ XUS290904	15 psi (1.0 bar)
Maximum Pressure Drop (ΔP) per vessel	60 psi (4.1 bar)
Maximum Cross-Flow	
DOW™ XUS290908	80 gpm (18.2 m^3/h)
DOW™ XUS290904	30 gpm (6.8 m^3/h)

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 Dow Food & Dairy Cleaning Guide, form 609-00077 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.
- Any concentrate or permeate obtained from the first hour of operation should be discarded.

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: Dow Specialty Membrane Prorated Element Warranty.
Before use or storage, review these additional resources for important information:

Regulatory Note

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

Product Stewardship

Dow 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 Dow products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support.

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Notice: 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.

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