

ULTRAFILTRATION MEMBRANE

The sheet provides basic guideline for the use of GRAFiL Ultrafiltration membranes for industrial water and waste water management applications for removal of small particulates, colloids and microbial contaminations.

1. Flux GUIDELINE

Type of Feed Water	Unit	Operational Flux Guidelines						
		Filtration Cycle						Backwash l.m ⁻² .h ⁻¹
		Dead End		Cross-Flow				
		Time, min	Flux, l.m ⁻² .h ⁻¹	With Media Filter		Without Media Filter		
Time, min	Flux, l.m ⁻² .h ⁻¹			Time, min	Flux, l.m ⁻² .h ⁻¹			
Bore Water	l.m ⁻² .h ⁻¹	0.5	80	NA	NA	NA	NA	160
Surface Water	l.m ⁻² .h ⁻¹	0.5	50	1	85	0.5	70	160
Treated Sewage	l.m ⁻² .h ⁻¹	NA	NA	1	70	0.5	50	160
Treated Effluent	l.m ⁻² .h ⁻¹	NA	NA	0.5	60	0.5	40	160
Effluent with Solvent*	l.m ⁻² .h ⁻¹	NA	NA	0.5	50	0.5	40	160
Sea Water	l.m ⁻² .h ⁻¹	NA	NA	0.5	40	0.5	30	160

*Use of GRAFiL depends on the type of solvent present in the effluent. For example we don't recommend GRAFiL for effluent having solvents like DMF, DMAc, DMSO and NMP.

2. Process ENGINEERING

Ultrafiltration Module	Unit	All Model
Mode of Operation		Out - In
Maximum Applied Feed Pressure	kg.cm ⁻²	2
Maximum Trans-membrane Pressure	kg.cm ⁻²	< 1.5
Backwash Duration	s	30-60
Backwash Frequency	min	15-60
Backwash Flux	l.m ⁻² .h ⁻¹	160
Typical Clean water Flux Range	l.m ⁻² .h ⁻¹	200 - 250
Minimum Operating Temperature	°C	5
Maximum Operating Temperature	°C	40
Operating pH Range		3.5- 10.5
Cleaning pH Range		2-12
Instantaneous Chlorine Tolerance	mg.l ⁻¹	200
Maximum Instantaneous Feed Turbidity	NTU	100-300
Maximum shell inlet pressure	kg.cm ⁻²	3.5
Continuous FRC	mg.l ⁻¹	0.2
Process Cycle		Process-Backwash
Chemical Cleaning Method		CIP

3. Physical PROPERTIES

Ultrafiltration Module	Unit	All Model
Configuration		Cross-flow / Dead End
Membrane Type		Hollow Fibers
Membrane Material		PolyNorbit
Housing Material		UPVC
Fiber Dimensions OD ID	mm	1.2 0.8
Pore Size	micron (μ)	0.02
MWCO (Nominal)	kDa	75
System Integration		Modular Rack

4. Chemical COMPATIBILITY

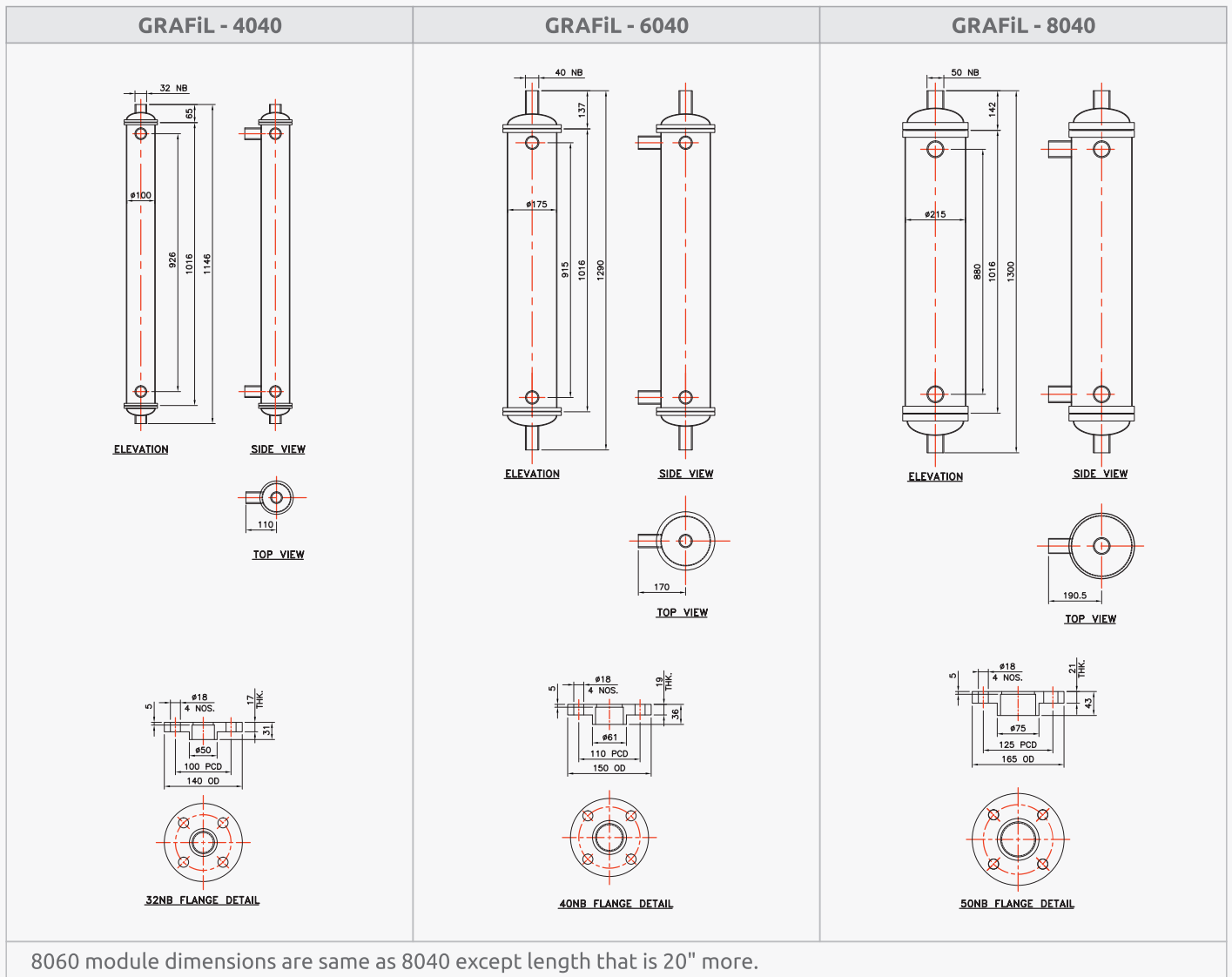
Ultrafiltration Module	All Model
Disinfection Chemicals	NaOCl / H ₂ O ₂
Cleaning Chemicals	Citric Acid
Cleaning Chemicals	Na ₂ CO ₃

5. Performance GUARANTEE

Ultrafiltration Module	Unit	All Model
Filtrate Turbidity	NTU	< 0.5
Bacteria Removal	log reduction	6
Virus Removal	log reduction	4
Total Suspended Solids	mg.l ⁻¹	<1
Silt Density Index SDI ₁₅		<3

6. Engineering SPECIFICATIONS

Ultrafiltration Module	Specification	GRAFiL 4040	GRAFiL 6040	GRAFiL 8040	GRAFiL 8060
Module Diameter	mm (inch)	100 (4)	175 (7)	215 (8.5)	215 (8.5)
Module Length	mm (inch)	1146 (45)	1290 (51)	1300 (51)	1524 (60)
Weight	kg	7	18	28	38
Nominal Membrane Area	m ²	9	26	37	55



8060 module dimensions are same as 8040 except length that is 20" more.

7. Storage PROTOCOL

GRAFiL pressurized UF Modules shall be stored between 5°C and 35°C (41°F to 95°F) intact in original factory packaging for up to 18 months. Do not expose the membrane module to sources of heat, ignition, flooded water or direct sunlight (UV light).

