Typical product-family data for preliminary selection. Each table applies only to its stated product form. Ranges describe selectable variants, not a single formulation or simultaneous endpoint guarantees. Part acceptance follows the agreed drawing and test schedule.

Sintered filter-media families - pore specifications

Parameter	Unit	Corundum-based	High-alumina-based	SiC-based
Filter-element nominal pore options	µm	0.1-100	0.1-200	10-30
Membrane-medium porosity	vol.%	38-45	30-50	38-45
Product architecture	-	Porous filter element	Porous filter element	Bonded porous filter element

Pore windows are nominal designations; they do not establish a maximum through-pore diameter or an absolute particle-removal rating. Membrane-medium porosity above is not whole-element open porosity. Pore options span different filter constructions; coated elements require separate support and active-layer specifications. These families are not the 90% tube configurations on page 2.

Bonded-aggregate microporous plates / bricks - separate product family

Property	Unit	Typical value	Property	Unit	Typical value
Bulk density	g/cm^3	1.4-1.6	Nominal pore size	µm	10-500
Compressive strength	MPa	12-16	Flexural strength	MPa	≥ 5.3
Material form	-	Bonded ceramic aggregate	Product form	-	Filter plate / brick

This plate/brick family is not a high-purity alumina grade. Strength values are selection data, not allowable pressure or design stresses; define specimen geometry, loading direction and acceptance method for the finished part.

Selection route: use sintered media for filtration or controlled gas distribution; an active membrane layer for finer separation; a porous chuck face for vacuum distribution; and an open-cell foam for molten-metal filtration. Zirconia foam data appear on page 4 and must not be assigned to a microporous zirconia filter or membrane.

Oxide membrane route: α-Al_2O_3 support with ZrO_2, TiO_2 or α-Al_2O_3 active-layer options. The mean-pore-size family spans 10-1200 nm (0.01-1.20 µm). This spans separate layer formulations and pore grades; it is not the full range for every layer material.

Microfilter Formats & Vacuum Media

Representative dimensions and nominal pore choices

GEOMETRY AND PORE GRADE MUST BE SELECTED TOGETHER

90% alumina filter tubes - representative paired configurations

Parameter	Unit	Closed-end A	Closed-end B	Open-ended A	Open-ended B
Alumina content (nominal)	%	90	90	90	90
Outside diameter	mm	35	60	20	100
Inside diameter	mm	15	40	12	60
Overall length	mm	500	1500	200	1000
Nominal pore-size choices	μm	0.5-5	10-50	0.8	1-200

Configurations A/B are table references, not performance grades. Effective filtration area follows the wetted porous surface defined by the drawing; exclude sealed or non-permeating zones. Other geometries are drawing-defined.

SiC microporous discs / plates - not reticulated foam

Parameter	Unit	Disc A	Disc B	Disc C	Square plate
Diameter × thickness / L × W × T	mm	50 × 5	61.8 × 5	100 × 10	100 × 100 × 8
Nominal pore designation	μm	3	5	30	10

Porous vacuum-chuck faces - alumina or SiC base

Selection parameter	Unit	Specification options / design requirement
Nominal pore choices	μm	1-2; 5; 10; 20; 30; 50; 100
Nominal chuck diameter classes	inch	2; 3; 4; 5; 6; 8; 12
Finished-face acceptance	-	Specify flatness over the working diameter, mounting state, sealed perimeter and vacuum-flow uniformity.

Pore and diameter choices are a family menu, not an assertion that every combination is interchangeable. Do not apply positive-pressure blowback to an assembled vacuum chuck unless designed for it. Do not heat-clean a chuck mounted on an aluminium base.

Ceramic Membrane Elements

Active-layer pore size is distinct from support porosity and channel size

FLAT-SHEET AND TUBULAR FORMATS ARE SEPARATE PRODUCT CONFIGURATIONS

Membrane format selection

Parameter	Unit	Alumina flat sheet	SiC flat sheet	SiC tubular membrane
Ceramic construction	-	Alumina-based ceramic	SiC layer / SiC support	SiC layer / SiC support
Nominal pore / filtration designation	μm	0.05-0.2 (active-layer pore)	0.10 (active-layer pore)	0.04; 0.10; 0.50; 1.00 (filtration designation)
Element dimensions	mm	1046 × 250 × 6	600 × 145 × 6	OD 30; 7 channels × 6 Length 100-1200
Nominal membrane area	m^2	0.50 per plate	0.177 per plate	Defined by active length and end sealing

Dimensions are L × W × T for flat sheets; tubular channel values are count × diameter. The tubular geometry is one example, not a universal option for every pore grade. Membrane area uses the specified active-surface boundary, not simply the external envelope. Tubular pore entries are nominal filtration designations. These pore sizes alone do not establish virus removal, sterile filtration or removal of dissolved salts.

SiC 0.10 μm flat-sheet configuration - element and module boundaries

Parameter	Unit	Single ceramic element	Matched 42-element module
Operating temperature	°C	4-50	5-45
Dimensions	mm	600 × 145 × 6	746 × 715 × 160
Maximum suction pressure	bar	-0.6	-0.6
Maximum backwash pressure	bar	1.2	1.2

Element chemistry: pH 2-12. This is an element-level selection range, not blanket compatibility for every chemical, temperature or module seal. The assembled module has the narrower 5-45°C operating window. The matched module contains 42 elements at 8 mm spacing and has a dry weight of 44.8 kg. Suction is shown with a negative sign, not as absolute pressure; specify pressure references and measurement points on the assembly drawing.

Operation: use a defined suction/TMP and backwash schedule for the complete assembly. Set liquid flow against water quality, temperature, membrane area and pressure difference; select backwash, air scour or chemical cleaning for the actual foulant and assembly materials.

FOAM CELL COUNT (PPI) IS NOT A MICROMETRE FILTRATION RATING

Product-family selection data

Parameter	Unit	Alumina-based foam	SiC-based foam	Zirconia-based foam
Typical appearance	-	White	Grey / black	Yellow
Bulk density	g/cm^3	0.30-0.45	0.35-0.50	0.9-1.5
Cell-density selection window	PPI	8-60	8-60	8-60
Maximum filtration temperature	°C	≤ 1100	≤ 1500	≤ 1700
Compressive strength	MPa	> 0.8	> 0.9	> 1.2
Flexural strength	MPa	> 0.6	> 0.8	> 1.0
Primary melt selection	-	Aluminium and aluminium alloys	Grey / ductile iron; copper alloys	Carbon steel; stainless steel

Compressive and flexural strength are different tests. Neither value is a pressure rating. For this SiC family, open porosity is **80-90 vol.%**; the alumina family has nominal porosity of **80-90 vol.%** without a separate open/closed breakdown. Define porosity for the selected zirconia foam variant.

SiC foam - representative paired shapes

Parameter	Unit	Round	Square
Overall dimensions	mm	Diameter 100 × thickness 22	100 × 100 × 20
Listed cell-density choices	PPI	8; 10; 15; 20; 25; 30	8; 10; 15; 20; 25; 30

Temperature boundary: the ceilings above concern molten-metal filtration, not a continuous furnace rating. Select the alloy, contact time, metal head, filter area, priming/preheat and gating support together. Density and porosity ranges describe different variants and must not be combined as arbitrary endpoints.

Use boundary: PPI is a linear cell-count designation. It has no universal conversion to a through-pore diameter or particle retention. Foundry foams are casting consumables; do not assign the multi-year service-life or backwashing claims of liquid membrane elements to them.

Test Definitions & Purchase Specification

Acceptance criteria for a useful, reproducible porous-ceramic specification

DEFINE THE PORE METRIC, FLUID, PRESSURE AND FINISHED-PART GEOMETRY

Specify the measurement, not only the number

Characteristic	Unit / reporting basis	Required test scope
Pore size and integrity	µm; bubble-point pressure in kPa or bar	State pore metric, wetting liquid, temperature and method. Test the finished flow path and identify active layer/support. Bubble point does not measure particle-removal efficiency.
Particle retention	µm plus removal efficiency (%)	State challenge particles, concentration, flow, pressure and removal efficiency. A pore label alone is not an absolute filtration rating.
Porosity and bulk density	vol.%; g/cm^3	Distinguish open, closed and total porosity. Define envelope volume, dry state and saturation method; foam drainage can bias immersion results.
Liquid flux / permeance	$J = Q/A$; $Lp = J/\Delta p$	Report J in $L/(m^2 \cdot h)$ and Lp in $L/(m^2 \cdot h \cdot bar)$, with fluid, temperature, effective area, pressure difference, stabilization time and clean/fouled state.
Gas flow / pressure drop	m^3/h; kPa	Record gas, temperature, upstream/downstream absolute pressure, exposed area, thickness and flow direction. State reference conditions for normalized volume; provide the flow-pressure-drop curve.
Strength and pressure capability	MPa; assembly pressure limit	Specify test type, specimen dimensions, direction and sample count. Validate allowable operating and reverse pressure on the sealed assembly.
Chemical / thermal durability	Medium, concentration, °C, time	Evaluate binder, active layer, seals and frame. Define retained strength, mass loss, cracking and flow change after exposure or thermal cycling.

Method selection: ASTM E128 covers maximum pore diameter and air-flow performance of rigid porous laboratory filters, including ceramics. ASTM F316 covers specified membrane pore tests in the 0.1-15 µm maximum-pore range; do not assign it automatically to 0.04 µm membranes. ISO 18754 Method A is not appropriate above 10% apparent porosity; Method B measures geometric bulk density only. These are method-selection references, not a declaration that all listed values were tested to those standards.

Compatibility and regeneration: qualify HF, concentrated alkalis, oxidants and solvents against the complete construction. A chemical-resistance percentage is not an allowable reagent concentration. Establish cleaning frequency from pressure rise, flow recovery and integrity checks; service life is duty-dependent, not a fixed material constant.

Send ADCERAX: part drawing and quantity; fluid/alloy and solids; target pore or retention criterion; required flow and pressure drop; temperature/cycles; chemical exposure; flow direction; cleaning/backwash; seal, flatness and dimensional requirements. Thermal conductivity, expansion and electrical properties must describe the selected porous grade, not its dense parent ceramic.