



**Titanium Modules for Ceramic membranes By Nano Palayesh Ceram**

<b>Model Code</b>	<b>Element Qty. per Module</b>	<b>Filtration Area(m<sup>2</sup>)</b> (Based on Largest possible element)
NPC-TMO-001	1	Up to 1.2
NPC-TMO-003	3	Up to 3.6
NPC-TMO-007	7	Up to 8.4
NPC-TMO-012	12	Up to 14.4
NPC-TMO-019	19	Up to 22.8
NPC-TMO-037	37	Up to 44.4
NPC-TMO-061	61	Up to 73.2
NPC-TMO-076	76	Up to 91.2
NPC-TMO-091	91	Up to 109.2
NPC-TMO-138	138	Up to 165.6
NPC-TMO-241	241	Up to 289.2

- **Titanium Grades:** Grade 2, Grade 7, Grade 12, or other titanium alloys depending on application requirements.
- **Diameter of Ceramic Membrane Elements:** 25, 30, 40, 50 mm
- **Element Qty. per Module:** 1, 3, 7, 12, 19, 37, 61, 76, 91, 138, 241 pcs.
- **Length of Elements:** 500, 1000 and 1200 mm
- **Sealing Material:** EPDM, Rubber, Silicon, PTFE or any other grade by customer application.
- **Interface:** Flange, Clamp, Custom nozzle configurations available upon request.
- **Pressure Vessel:** 0-1.0, 0-1.6 Mpa , 0-2.5 Mpa and 0-4.0 Mpa
- **Operating TMP:** 0.5 – 3 bar (typical)
- **Filtration mode:** Crossflow
- **Crossflow velocity:** 2–5 m/s (depending on design)
- **Compatible With:**
  - MF / UF ceramic membrane elements
  - Single-channel and multichannel designs
  - Alumina / ZrO<sub>2</sub> / SiC membrane materials
- **Engineered for long-term durability in harsh conditions where polymeric membranes and conventional stainless-steel housings fail.**





### Application

Titanium ceramic membrane modules are engineered for the most corrosive, high-salinity and chemically aggressive liquid-filtration environments. Their exceptional resistance to chloride-induced corrosion, seawater conditions, oxidizing agents and extreme pH makes them ideal for applications where stainless steel, duplex, or super-duplex housings may experience reduced lifetime or structural degradation.

The combination of high mechanical strength, chemical inertness and long service life enables titanium modules to deliver stable filtration performance across several critical industries.

#### **1- Seawater Desalination & Brackish Water Pretreatment**

Titanium modules are widely used in saline and marine environments due to their outstanding corrosion resistance. Key applications include:

- Pretreatment for SWRO & BWRO desalination systems
- Filtration of high-salinity feedwater
- Removal of suspended solids, colloids and fine particles
- Clarification of seawater with variable turbidity
- High-chloride industrial intake water
- Protection of downstream RO membranes from fouling

These modules maintain structural integrity where chloride stress cracking limits the lifetime of stainless-steel housings.

#### **2- Offshore, Marine & Shipboard Water Systems**

Titanium is the preferred material for long-term performance in offshore and maritime conditions. Typical uses include:

- Produced water and deck-drain filtration on offshore platforms
- Treatment of bilge water and ballast water
- Cooling-water filtration for marine engines
- High-salinity or contaminated seawater pretreatment

Titanium's resistance to seawater corrosion ensures reliable performance over extended service periods.





### **3- Chemical & Petrochemical (High-Corrosion Environments)**

In highly corrosive chemical environments, titanium modules offer superior resistance compared to stainless steel. Applications include:

- Acidic and chloride-rich wastewater streams
- Oxidizing and solvent-containing effluents
- Chemical process-liquid clarification
- Catalyst and fine-solid removal
- Pretreatment for membrane polishing units

Their tolerance to aggressive CIP chemicals and extreme pH conditions supports stable, continuous operation.

### **4- Power Generation & High-Purity Water Systems**

Titanium modules provide reliable filtration performance where water quality is critical and corrosion risk is high. Applications include:

- Boiler-feedwater pretreatment
- Condensate polishing and protection of heat exchangers
- Turbine cooling-water filtration
- High-temperature, high-purity water loops

Their thermal stability and anti-corrosion properties help maintain consistent water purity with minimal maintenance.

### **5- Pharmaceutical, Biotech & Electronics (Ultra-Low Contamination)**

Titanium housings eliminate metal ion leaching, making them ideal for sensitive processes requiring ultra-low contamination:

- Electronics cooling-water filtration
- Semiconductor utility water treatment
- High-purity process-water systems
- Clarification of chemical solutions in sensitive production lines

They provide long-term purity without risk of corrosion byproducts entering the process.





### **6- Mining & Metals (Aggressive and High-Salinity Streams)**

Titanium modules are used where both abrasion and corrosion coexist:

- Treatment of acidic mine drainage
- Removal of fine solids and heavy metals
- Filtration of chloride-rich slurries
- Pretreatment for reuse or downstream recovery

Titanium housings preserve integrity even under extreme chemical and solid loads.

### **7- Industrial Water & High-Salinity Wastewater**

For industries exposed to saline, corrosive or variable-quality streams, titanium modules offer long-term performance:

- Clarification of cooling-tower blowdown
- Treatment of high-salinity industrial wastewater
- Closed-loop cooling systems
- Harsh process-water pretreatment

Their corrosion resistance ensures consistent operation despite harsh water chemistry.

