Flatsheet Modules

Model Code: NPC-FMO-XX-XX

Flatsheet Modules for Ceramic membranes By Nano Palayesh Ceram

Model Code	Body Material	Sheet Qty. per Module	Sheet Type Used	Filtration Area(m^2) (For each module)
NPC-FMO-12-30	S.S.304L, S.S.316L, Duplex, Super Duplex, Titanium	200	NPC-F-120	30
NPC-FMO-20-84	S.S.304L, S.S.316L, Duplex, Super Duplex, Titanium	200	NPC-F-200	84

- **Body Material:** S.S.304L, S.S.316L, Duplex, Super Duplex and Titanium
- **Sheet Types Used:** NPC-F-120 and NPC-F-200
- **Sheet Dimensions:**
  - NPC-F-120: 120 *mm* width, 3 *mm* channel width, 8 *mm* thickness, 600 *mm* length
  - NPC-F-200: 200 *mm* width, 3 *mm* channel width, 11 *mm* thickness, 1000 *mm* length
- **Filtration Area per Sheet:**
  - NPC-F-120: 0.153 m^2
  - NPC-F-200: 0.422 m^2
- **Membrane Material:** Alumina or SiC
- **Coated Layer:** Zirconia, Alumina, SiC
- **Pore Sizes:** 50, 100 and 200 *nm*
- **Operating temperature limit:** Up to 85°*C* depending on chemistry
- **Continuous pH limit:** typical ceramics allow full pH 2–12
- **Sheet Qty per Module:** 200 sheets or according to system design
- **Filtration mode:**
  - Submerged suction operation for MBR and similar systems
- **Driving force:** Low pressure suction or low pressure circulation, with transmembrane pressure set by system design and application
- **Hydraulic management:** Air scouring and backpulse options available to control fouling and maintain stable flux
- **Cleaning:** Compatible with acidic, alkaline and oxidizing cleaning chemicals and hot water CIP
- **Engineered for long term durability in harsh wastewater and industrial conditions where polymeric flatsheet membranes fail.**

www.npceram.com
linkedin.com/company/nano-palayesh-ceram-npc/
Tel.: +98 21 88590873-Int.243
Fax: +98 21 88686168
Info@npceram.com
Office: 3rd Floor, No. 2, East 32nd Street, South Allameh Ave., Sa'adat Abad, Tehran, Postal Code: 1997816154, Iran.

Flatsheet Modules

Model Code: NPC-FMO-XX-XX

Application

FlatSheet ceramic membrane modules are designed for submerged or low-pressure filtration in biological and physico-chemical wastewater treatment systems. Their high mechanical strength, chemical resistance and stable permeate quality make them suitable for a wide range of municipal and industrial water reuse applications.

1- Municipal Wastewater Treatment and Water Reuse

FlatSheet modules are widely used in new and upgraded municipal wastewater treatment plants where compact footprint and high effluent quality are required. Typical applications include:

- Membrane bioreactors for secondary treatment
- Upgrading conventional activated sludge plants to meet stricter discharge limits
- Wastewater reclamation for irrigation and non-potable reuse
- Decentralized and small community treatment systems

These modules operate at high MLSS concentrations and provide low-turbidity, low-SDI permeate suitable for downstream disinfection and reuse.

2- Industrial Biological Wastewater Treatment

Flatsheet ceramic membranes are well suited to industrial effluents with high suspended solids, fats, oils and greases and variable organic loads, especially where a biological treatment step is included. Typical applications include:

- Food and beverage industries such as dairy, meat processing, brewery and soft drinks
- Pharmaceutical and cosmetics wastewater with high COD and surfactant content
- Landfill leachate and high-strength organic waste streams treated in MBR or aerobic reactors
- Industrial estates and mixed industrial parks using common wastewater treatment facilities

The ceramic surface resists abrasion and frequent cleaning, providing stable flux under demanding conditions.

www.npceram.com
linkedin.com/company/nano-palayesh-ceram-npc/
Tel.: +98 21 88590873-Int.243
Fax: +98 21 88686168
Info@npceram.com
Office: 3rd Floor, No. 2, East 32nd Street, South Allameh Ave., Sa'adat Abad, Tehran, Postal Code: 1997816154, Iran.

3- Decentralized, Compact and Mobile Treatment Systems

Because of their robustness and compact design, flatsheet ceramic modules are often used in:

- Package MBR plants for hotels, resorts, labor camps and remote sites
- Containerized treatment units for emergency or temporary installations
- On-site treatment and reuse systems in buildings and industrial facilities

The modules offer high reliability and simple operation in systems with limited operator attention.

4- Tertiary Filtration and Polishing

FlatSheet ceramic modules can be installed downstream of biological or physico-chemical treatment steps to produce very low suspended solids and low turbidity effluent. Typical uses include:

- Polishing of secondary effluent prior to disinfection
- Pretreatment before RO or NF in reuse schemes
- Replacement or upgrade of sand filters and conventional clarifiers where space is limited

The rigid ceramic structure tolerates hydraulic shocks and frequent backpulse or air-scour cycles.

5- Utility and Process Water Recycling

In industrial facilities, flatsheet ceramic modules facilitate recovery and reuse of lightly contaminated water streams, such as:

- Cleaning and washing water from production lines
- Cooling tower blowdown and utility-water sidestreams after suitable pretreatment
- Mixed low-to-moderate strength wastewaters where stable permeate quality is required

They provide consistent water quality for internal reuse, helping to reduce fresh water demand and wastewater discharge volumes.