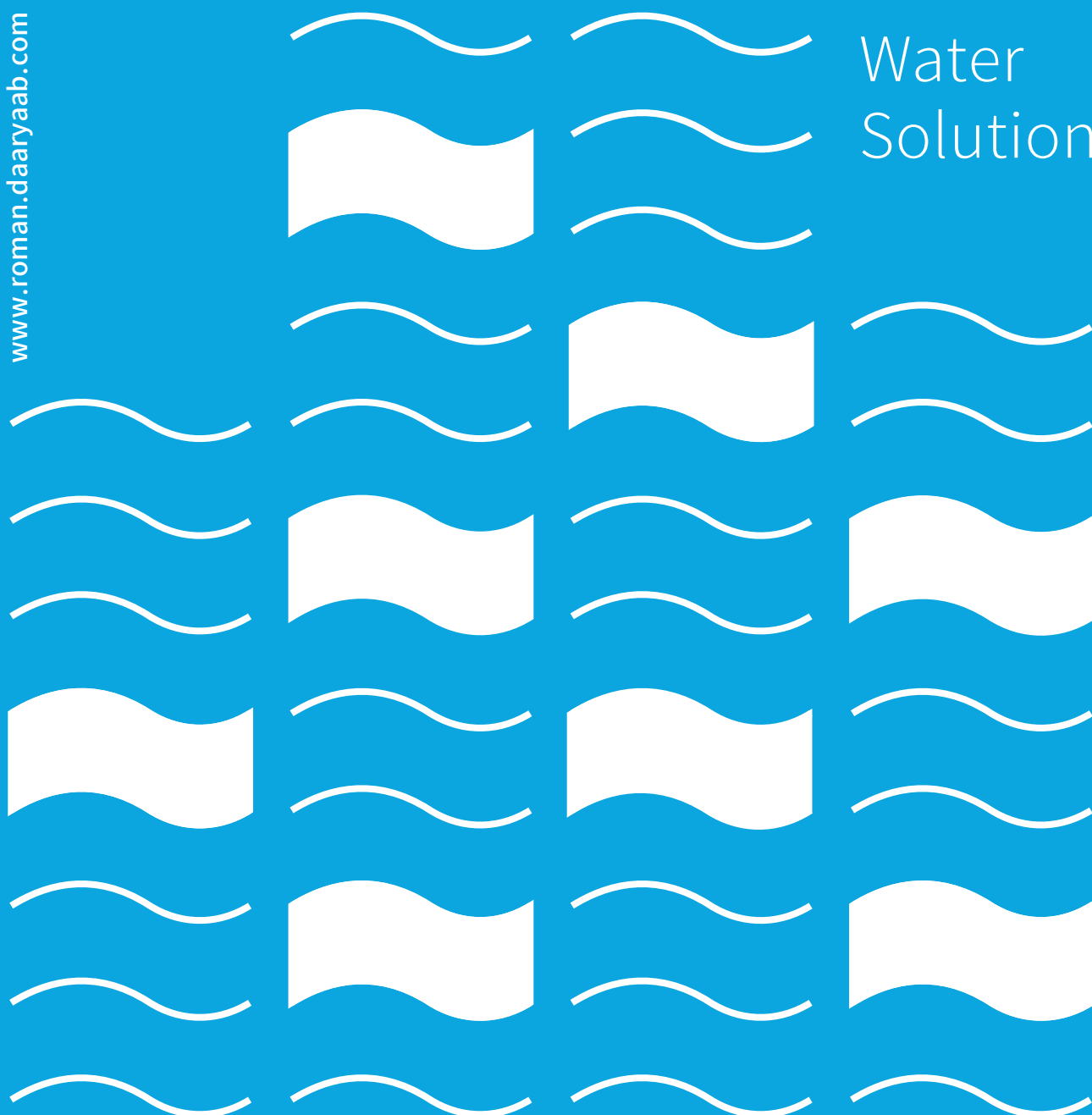


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Water  
Solution



**ROMAN**

Water solution



Sand Filter

powered by PACKMAN industrial group



# Sand Filter



## Product Description

Sand Filtration is a frequently used very robust method to remove suspended solids from water. The filtration medium consists of multiple layers of sand with different sizes and specific weight. Packman's pressure sand filters are mostly used to purify water. A process called backwash is necessary in specified intervals to clean the filter.

## Applications For Sand Filtration

- Preparation of cooling water
- Treatment of waste water
- Production of drinking water
- Filtration in swimming pools
- Pre filtration for membrane systems
- Filtration of grey or surface water
- Iron removal from water

When the filters are loaded with particles, the flow direction is reversed and the flow rate is increased to clean the filter again. This step is called backwash. Cleaning time is determined by one of the following criteria's: The type of water, suspended solids concentration, oil and grease, COD/ BOD and iron contents. The arrangement of sand layers allow the largest dirt particles to be removed at top of the filter bed and smaller dirt particles being retained deeper in the media. This down-flow filtration permits delivery of high quality filtered water at much faster flow rates.

## PACKMAN Sand Filter Properties

PACKMAN'S Sand Filters are used to filter water-insoluble particles with a diameter is larger than 1 NTU. These Filters which are used in swimming pools and industrial applications, are made of steel plates of ST37 grade (recommended for the manufacturing of pressure vessels with no direct fire contact). In case of customer's request, the filters can be made of 17MN4 (suitable for boiler construction) without any changes in product's price.

The Sand filters are vertical cylinders in different diameters with two heads. The diameter of the fitting, quantity of nozzles and filtration velocity are the most important features of sand filters.



The installed geyser on top of the sand filter, uniforms the water flow and causes water to pass through the silica substrate in a balanced manner.

### Manufacturing Standards

ASME Sec VIII, Div. 1 is observed in construction of sand filter tanks.

### Torispherical / Elliptical Head

PACKMAN's sand filter's head is Torispherical. This type of head has a longer life and a higher pressure strength compared to other shapes with the same thickness. The production price per kilo of these heads can reach to twice the price ratio of the usual heads on the market.

### Welding Procedure

Welding is done with the Swedish ISBU submerged arc welding equipment. After constructing the tank and welding the lugs, the body of the tank is connected to the heads using a submerged welding method. The heads are welded internally and externally, which increases their life & strength. In the root pass, the TIG, argon or other welding methods with the 6010 cellulose electrode is used. The EW7018 electrode is used in the fill pass. The submerged method with EW7018 electrodes is than used in the cover pass.

### Back Wash Piping

PACKMAN'S Sand Filters are equipped with necessary valve. If it is required, PACKMAN can also do the Back-Wash piping.

### Silica And Filter

High grade silica with a purity of 98% with the following specifications will be delivered along with tanks:

Silica Specification	
0.5-1.5 mm	Silica diameter-Grade 1
1.5-3 mm	Silica diameter-Grade 2
3-5 mm	Silica diameter-Grade 3
5-8 mm	Silica diameter-Grade 4
1 m	Total height of Silica
1.35	The silica uniformity coefficient inside the filters

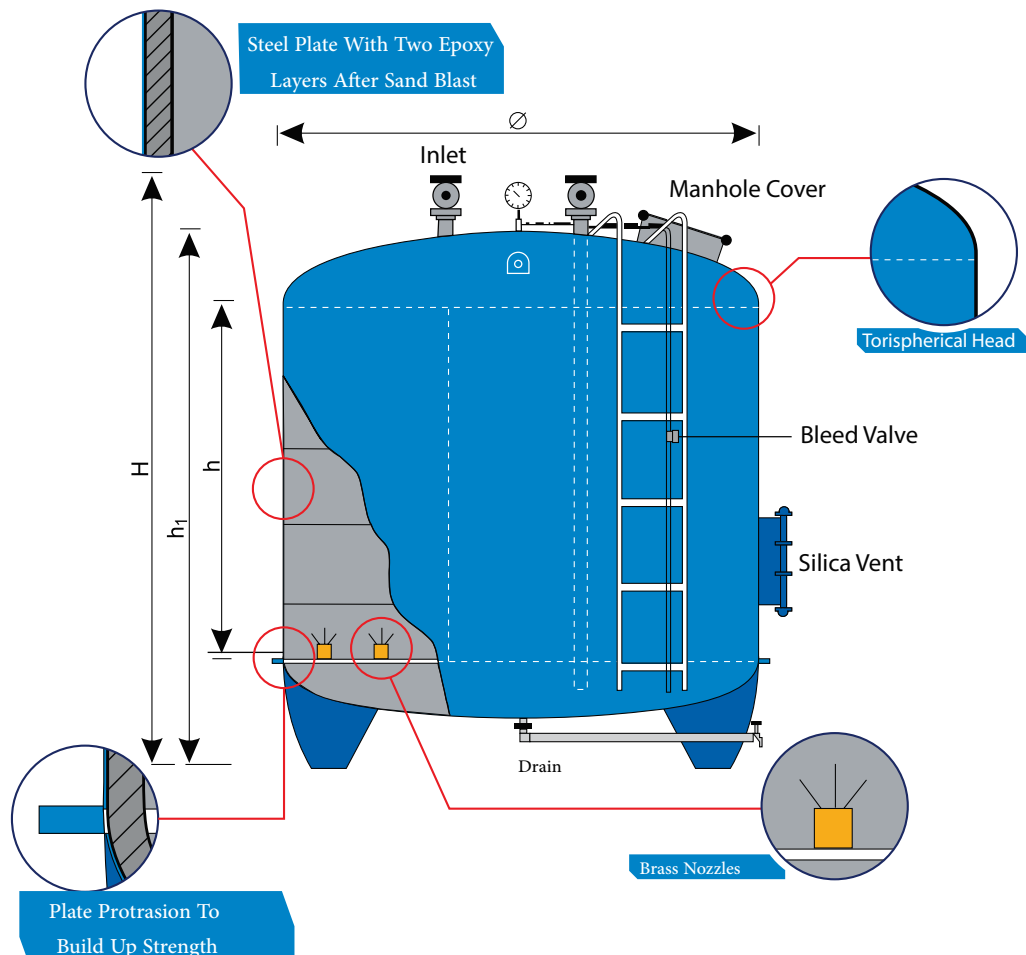


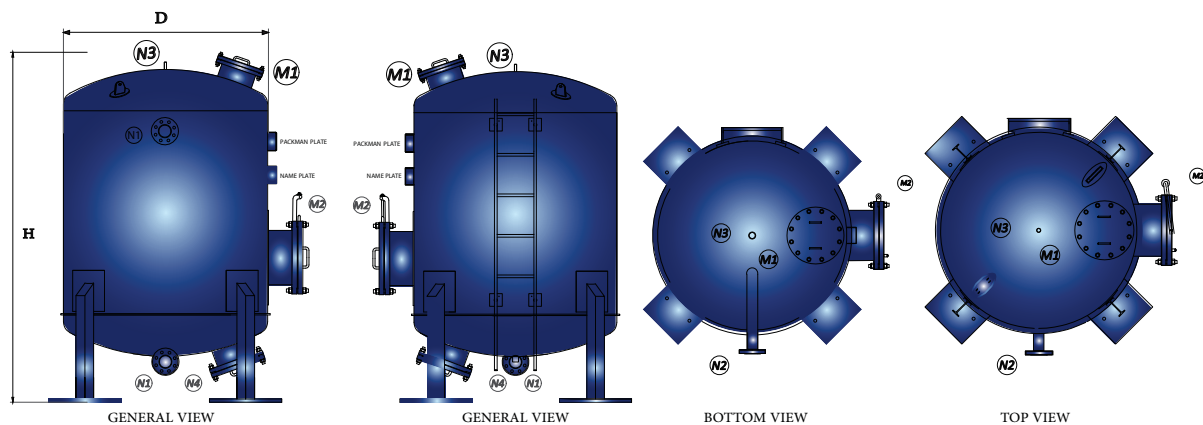
## Sand Filter Coating

The outer coating of the sand filters consists of special industrial color and epoxy in three layers (275 microns thickness). The internal coating is made up of 100 micron thickness epoxy on a sandblasted layer.

## Nozzles

The nozzles used in PACKMAN'S sand filters are all made of brass, and for each square meter of sand surface, about 50 nozzles are placed, which makes the optimum washing procedure possible.





Model		Unit	PSF -24	PSF -32	PSF -44	PSF -50	PSF -60	PSF -70	PSF -80	PSF -90	PSF -100	PSF -120
Technical Data												
Vessel Type		Type	Vertical									
Flowrate Capacity	6 gpm/ft²	Gpm	18	33	60	80	120	160	210	265	325	470
	7 gpm/ft²	Gpm	21	38	70	90	135	185	245	300	380	550
	8 gpm/ft²	Gpm	24	43	70	110	155	210	280	350	435	625
Working Pressure		bar	4	4	4	4	4	4	4	4	4	4
Vessel Water Pressure Drop		bar	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Working Water Temperature		°C	55	55	55	55	55	55	55	55	55	55
Connectoins Size												
Inlet (N1)		in	11/4	11/2	2	2 1/2	3	4	5	5	5	6
Outlet (N2)		in	11/4	11/2	2	2 1/2	3	4	5	5	5	6
Hand Hole / Man Hole (N3)		in	10	14	14	16	16	16	16	16	16	16
Hand Hole / Man Hole (N4)		in	8	8	8	10	10	16	16	16	16	16
Man Hole (N5)		in	...	...	...	10	10	10	10	10	10	10
Vent (N6)		in	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Drain (N7)		in	1	1	1	1	1 1/4	2	2	2	2	2
Material												
Shell		Type	Carbon Steel									
Head												
Thickness												
Shell		mm	6	6	6	6	6	8	8	8	8	10
Head		mm	8	8	8	8	8	10	10	10	10	12
Vessel Dimensions												
Vessel Diameter (D)		mm	600	800	1,100	1,250	1,500	1,750	2,000	2,250	2,500	3,000
Height (H)		mm	1,600	1,800	2,300	2,300	2,500	3,000	3,000	3,000	3,000	3,700
Silica Sand												
Weight		kg	325	560	1,730	2,300	3,235	4,395	5,755	7,295	9,020	13,000



# PACKMAN GROUP

## History

The Packman Company was founded in February 1975, and was soon afterwards registered in companies Registration Office. In early years the Packman construction and service branch focused on building installations. Different mega power plants were built by cooperating with Brown Boveri and Asseck companies in 1976.

The company started its official activities in construction of High-Pressure Vessels such as Hot-Water Boilers, Steam Boilers, Storage Tanks, Softeners and Heat Exchangers from 1984.

Packman Company is one of the first companies which supplied the high quality and standard hot water boilers to the customers.

Packman has exported its products to countries such as Uzbekistan, United Arab Emirates and other countries in the Middle East. It is one of the largest producers of hot-water and steam boilers in the Middle East.

Now we are proud to announce that the Packman industrial group has five major sub-brands that have product titles in all field of HVAC equipment and engineering services, and we do not know this success except with the help and support of our customers.

1. Construction Services Industry Association
2. Industry Association
3. Construction Companies' Syndicate
4. Technical Department Association
5. Mechanical Engineering Association
6. Engineering Standard Association

### Departements:

#### Sales Deps:

- ⌒ Power Plant & Petrochemical
- ⌒ Industrial
- ⌒ Hospitality Service
- ⌒ Commercial & Residential
- ⌒ Sport Complex & Pool

#### Technical Deps:

- ≡ Manufacturing R&D
- ≡ Innovation Center
- ≡ EPC Execute Unit
- ≡ Product Develop Unit
- ≡ Sales Engineering Dep.

#### Others:

- ≈ After Sales Service
- ≈ Project Control
- ≈ Financial Office
- ≈ Commercial Office
- ≈ Marketing Department



# PACKMAN GROUP Brands



**PACKMAN**  
Industrial Group

Designer&manufacturer  
of Condensing, Hot  
Water, Steam, Hot Oil &  
Waste Heat Boilers, Heat  
Exchangers, Autoclave  
Pressure & Storage  
Vessels & etc



**GREENMAN**  
Green mindset, green future

Engineering &  
Designing Commercial  
Greenhouse Plant, CO2  
Dosing System, Flue  
gas Condenser &  
Special HVAC Systems,  
Sustainable Agriculture  
& etc



**ROMAN**  
Water solution

Designer&manufacturer  
Reverse Osmosis Plant &  
Package, Water  
Treatment, Softener &  
Filters and Chemical  
Dosing Systems & etc



**RAADMAN**  
a look to the future

Designer&manufacturer  
of Industrial Mono & Dual  
Block Gas, LPG, Light &  
Heavy Oil Burners,  
Premixed & Postmixed  
Burners, Watertube  
burners, Process burners,  
Special application  
burners & Combustion  
Solutions & etc



**CHILLMAN**  
Coolest hvac around

Designer&manufacturer  
of Air & Water Cooled  
Chillers, Air Handling  
Units, Fancoil, HVAC  
Equipment, Cold  
Storage Room & etc



1. Isfahan Factory



2. Vilashahr Factory



3. Parand Factory



4. Parand (2) Factory



5. Bonyad Factory



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