



DRYDEN
AQUA

PRICE LIST 2016 EURO

Swimming Pools



OUR PRODUCTION



DAISY = DRYDEN AQUA INTEGRATED SYSTEM:

Biological instead of chemical approach

Traditional water treatment tries to avoid disease transmission by using more and more chlorine, UVC irradiation or ozone. But the transmission of pathogens is a biological problem; it therefore needs a biological solution. The approach of the Dryden Aqua integrated water treatment system does exactly that: Instead of using more powerful disinfectants and expensive equipment, we design a pool water treatment process that changes the water to make it difficult for viri, bacteria and parasites to live and to reproduce: **Prevent instead of killing!**

- 1. No substrate:** As a consequence of our bio-resistant AFM®, bacteria have no substrate on which they can grow and multiply.
- 2. No nutrients:** We remove food for bacteria by advanced coagulation, flocculation and filtration. Bacteria cannot grow anymore.
- 3. The lower the chlorine demand, the lower the disinfection by-products (DBP's):** DAISY filters almost everything out of the water and reduces the chlorine demand to the lowest level possible. The lower the chlorine oxidation demand, the lower the concentration of chlorine disinfection by-products in the water and in the air.

DAISY consists of three integrated steps:

- 1 Filtration with the bio-resistant filter media **AFM®**
- 2 Best coagulation and flocculation with **APF** and **ZPM**
- 3 Enhanced oxidation with **ACO** and **ZPM**

Step 1: Filtration with AFM®

AFM® stands for **A**ctivated **F**ilter **M**edia, a revolutionary filter media made from green container glass, developed by marine biologist Dr. Howard Dryden. AFM® exceeds the performance of quartz and glass sand by filtering 30 % - 50 % more organics and sub 5 micron particles out of the water. The catalytic properties on the surface of AFM® make it self-sterilizing and bio-resistant, which means no biofilm is formed in the filter bed. This reduces the chlorine demand and therefore the formation of harmful volatile disinfection by products such as THM's, cyanogen chloride and trichloramine. Not only the chlorine smell but also the risk of getting infected by pathogens like legionella or cryptosporidium, is greatly reduced. The pool is healthier, especially for children, safer for the environment and economical.

AFM® has been successfully used in over 100'000 public and private swimming pools worldwide.

DAISY filter circulation for public pools



Step 2: Best coagulation and flocculation with APF and ZPM

AFM® Grade 1 will remove particles down to 4 microns at a filtration speed of 20 m/h. When AFM® is combined with a ZPM static mixer using APF (All Poly Floc), the nominal filtration will go down to 0,1 microns and much of the dissolved organic matter will also be removed. Dissolved organics such as urea, creatine and amino acids are responsible for 80 % of the chlorine demand.

Lower concentrations of organic matter mean lower chlorine demand and lower concentration of disinfection by-products (DBP's)

Step 3: Enhanced oxidation with ACO and ZPM

Bacteria colonies protected by biofilm are very resistant against chlorine. The ZPM is a safety barrier against these bacteria flocs. By cavitation in the ZPM, nano-bubbles are formed which will smash the flocs into individual bacteria, which can now be easily oxidised by chlorine.

ACO acts as an oxidation catalyst and chlorine stabilizer in outdoor pools. With ACO, the natural disinfection power of the sun is significantly increased and chlorine is protected from photo oxidation.

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Activated Filter Media AFM®

AFM® – ACTIVATED FILTER MEDIA

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AFM® is a unique bio resistant filter media

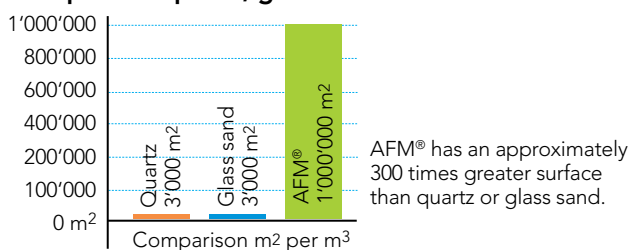
The raw material used for AFM® is green container glass. The glass is washed, disinfected, thermally treated then reduced to a very specific grain size and shape. For security reasons, the production process (cyclonic size reduction) assures that no dangerous glass splinters are present in the filter media. After size reduction, the grains are activated in a patented three step process. This creates a mesoporous structure with a huge catalytic surface area of 1 million m² per m³. The surface area is 300 times larger than the surface area of sand or other glass filter media. The surface area is important for all adsorptive and catalytic reactions. In contact with water, free radicals (OH-radicals) are formed, which protect the surface from bio-fouling.

The larger the surface area, the higher performance and bio-resistance you will get from the media.

To produce one ton of AFM®, 1,5 tons of green glass is needed. AFM® is produced according to ISO 9001-2008 standards. We now also have the worlds most important certification for drinking water: **NSF 61**.



Comparison quartz, glass sand and AFM®



Advantages:

- **Crystal clear water**
AFM® filters at least 30 - 50% more than quartz or glass sand.
- **Lower consumption of chlorine**
The better the filtration, the lower the chlorine demand.
- **No trichloramine - no chlorine smell**
AFM® prevents growth of biofilm.
- **No biofilm – no Legionella**
Biofilm is a home for pathogens such as Legionella.
- **Perfection for chlorine-free systems**
AFM® greatly reduces the oxidation demand.



NSF/ANSI 50 & 61



Drinking water



Swimming pools



Aquaria

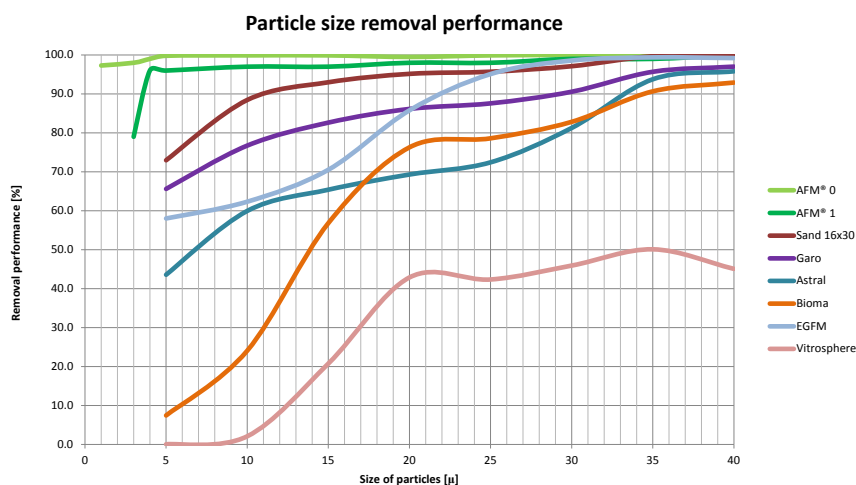
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Activated Filter Media AFM®

AFM® – ACTIVATED FILTER MEDIA

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The graph above shows the latest test results (July 2014) from IFTS (Institut de la Filtration et des Techniques Séparatives, www.ifts-sls.com).

Different glass filter media and sand were tested. The experiment was done without flocculation and at a filtration rate of 20 m/h to get a representative comparison.

AFM® 1 will remove more than **95 %** of all particles in the water down to **4 microns**. The best a new, very high quality sand or other glass filter media can achieve is 20 microns at an efficiency of 95 %. In addition the filtration performance with AFM® will stay at this high level for many years.

AFM® 0 has been developed for best filtration where flocculation cannot be used. **AFM® 0** is able to remove particles of **1 micron** at an efficiency of more than **95 %**. AFM® 0 cannot be combined with flocculation. The backwash speed should be about 30 m/h.

Filter filling:

Dryden Aqua recommends the following layers:

without AFM® 0

70 % AFM® 1
15 % AFM® 2 as supporting layer
15 % AFM® 3 as supporting layer

with AFM® 0

20 % AFM® 0
50 % AFM® 1
30 % AFM® 2 and AFM® 3 as supporting layer

Remark:

For smaller filters (<1000 mm diameter) and for all filters with nozzle plate irrespective of filter diameter, use 70 % of AFM® 1 and 30 % of AFM® 2. AFM® 3 is for larger diameter filters to ensure adequate filtration.



Item No.	Description		Package quantity	Pallet quantity	List price € excl. VAT
10000	AFM® grade 0	0,25 – 0,5 mm	Bags of 25 kg	40 on CP-1	44.00
10021	AFM® grade 1	0,4 – 1,0 mm	Bags of 21 kg	40 on EUR-1	38.00
10022	AFM® grade 2	1,0 – 2,0 mm	Bags of 21 kg	40 on EUR-1	38.00
10023	AFM® grade 3	2,0 – 4,0 mm	Bags of 21 kg	40 on EUR-1	38.00

28 pallets per truck; 20 pallets per container (20 ft)

10010	AFM® grade 0	0,25 – 0,5 mm	Bulk bags of 1000 kg	CP-1	1'760.00
10011	AFM® grade 1	0,4 – 1,0 mm	Bulk bags of 1000 kg	CP-1	1'760.00
10012	AFM® grade 2	1,0 – 2,0 mm	Bulk bags of 1000 kg	CP-1	1'760.00
10013	AFM® grade 3	2,0 – 4,0 mm	Bulk bags of 1000 kg	CP-1	1'760.00

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Swimming Pool Water Treatment Products

APF - ALL POLY FLOC

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Highly efficient coagulant and flocculant

APF is a unique multi-spectrum coagulant and flocculant. Coagulation is the process of dragging dissolved chemicals out of solution. These are responsible for about 80 % of the chlorine demand. APF is composed of 0,5 l NoPhos which prevents effectively algae and bacteria growth. APF combined with AFM® and a ZPM will achieve the best possible filtration performance. The nominal filtration will go down to 0,1 microns.

- **Crystal clear water: Nominal filtration to 0.1 microns**
- **Up to 80 % less consumption of disinfection agent**
- **Basis for chlorine free system**

Dosage: Application rate is 0.5 - 1.0 ml per m³ of water filtered per hour.
For example, if water flow through filters is 10 m³/hr, APF dosing rate will be 5 - 10 ml/h. Inject APF into the pipework between the pumps and the filter.



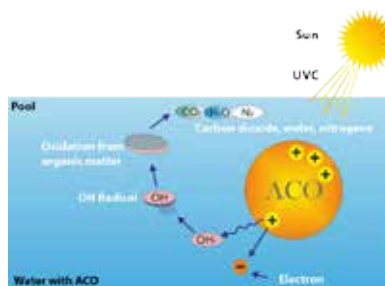
Item No.	Description	Package quantity	List price € excl. VAT
20011	APF private pools 20 kg	36 pcs / pallet (EUR-1)	69.00
20012	APF public pools 20 kg	36 pcs / pallet (EUR-1)	79.00

ACO - ACTIVE CATALYTIC OXIDATION

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ACO is a highly innovative, ecofriendly product that disinfects water by amplifying the natural disinfection power of the sun. ACO also protects chlorine from sunlight and UV. ACO is especially effective in outdoor pools. ACO has 3 main features:

- **Oxidation catalyst:** ACO is a catalyst that amplifies the natural disinfection power of the sun. ACO can be combined with any conventional oxidizing agent (chlorine, bromine, peroxide). Sun in combination with ACO will make your water sparkling clear.
- **Chlorine stabilizer:** ACO protects chlorine and bromine from photo oxidation. The half-time of chlorine increases by a factor of 4 – 5 and the chlorine demand will be reduced by about 30 %. By using ACO as a chlorine stabilizer the effectiveness of chlorine will not be decreased like with cyanuric acid. With ACO the opposite happens: oxidation improves because free radicals are formed in this process.
- **Peroxide booster:** ACO supports the disinfection power of hydrogen peroxide and thereby ensures crystal clear water.



Manual dosage: 1 l per 100 m³ of pool water per week (first time: 2 l) apply directly to pool (shake well before use).

Automatic dosage: 0,5 – 1,0 ml per m³/h water circulated.

Item No..	Description	Package quantity	List price € excl. VAT
20022	ACO 5 kg	4 pcs / carton - 160 pcs / pallet (EUR-1)	29.00
20021	ACO 20 kg	36 pcs / pallet (EUR-1)	79.00

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Swimming Pool Water Treatment Products

NOPHOS - NO PHOSPHATE

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NoPhos => No Phosphate => No algae and bacteria

NoPhos extracts phosphate from the water. Phosphate is a vital nutrient for algae and bacteria. If all phosphates are removed from the water, algae and bacteria cannot survive and they will disappear after about 6 weeks.

NoPhos is a biological solution and the best preventive treatment against algae, replacing the need for all algicides. NoPhos is the best solution for public and private swimming pools, ponds, natural swimming pools, water features and fountains. Acting also as a coagulant, it will make the water much clearer as well.



- **Biological solution against algae and bacteria**
- **Water becomes crystal clear**

Dosage: Weekly add 1 - 2 ml per m³ of water (ex.: 50 m³ pool = 50-100 ml).

Item No.	Description	Package quantity	List price € excl. VAT
20000	NoPhos 1 l / 1.2 kg	12 pcs / carton - 480 pcs / pallet (EUR-1)	25.00
20001	NoPhos 5 l / 6 kg	4 pcs / carton - 160 pcs / pallet (EUR-1)	89.00
20002	NoPhos 20 l / 24.5 kg	36 pcs / pallet (EUR-1)	325.00



Swimming pools



ponds



water features/fountains

PHOSPHATE TEST KIT

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By using the Phosphate Test KIT you can measure the phosphate concentration in less than 1 minute and then dose NoPhos accordingly.

To bind 0,1 ppm phosphate, you need 1 ml NoPhos per m³ of pool water.

Example: At a pool volume of 100 m³ and a phosphate concentration of 0,5 ppm (= mg/l = g/ m³), you need 500 ml of NoPhos.

Target values for phosphate concentration:

Swimming pools/water features: 0,0 ppm

Natural swimming pools/ponds: 0,05 – 0,1 ppm



Item No.	Description	Package quantity	List price € excl. VAT
20005	Phosphate Test Kit (20 tests)	20 pcs / carton - 480 pcs / pallet (EUR-1)	36.00

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Swimming Pool Water Treatment Products

DRYOX

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DryOx removes biofilm easily and economically

Each tablet of DryOx dissolved in water generates 2 g of chlorine dioxide. Chlorine dioxide is a soluble gas that penetrates biofilm and removes it. Chlorine can't do that because chlorine must oxidize through the biofilm first. DryOx is about 100 times more effective in removing biofilm than chlorine.

- **Highly reduces risk of legionella and other pathogens living in biofilms**
- **Less chlorine consumption; less chlorine smell**
- **Less combined chlorine**

The higher the concentration and the longer the exposure time, the more effective DryOx will be.

Where to use DryOx?

In swimming pools

- Periodic application every 4 week:
Add – especially in warm water pools - 1 DryOx tablet per 10 m³ of water to the skimmer or to the balance tank every 4 weeks. Backwash after 30 minutes. The concentration of chlorine dioxide cannot exceed 0,2 mg/l.l
- Deep Clean every 3 month:
Add 2 DryOx tablets per 10 m³ of water and backwash after 30 minutes. The concentration of chlorine dioxide cannot exceed 0,4 mg/l.
- Disinfection of filter media:
Fill the balance tank. Add 2 DryOx tablet per 10 m³ of pool water in the balance tank. Dissolve the tablet and stop the pumps for 10 minutes. Turn the pump on for 5 minutes and then turn them off again for 1 hour. Let the high concentration of chlorine dioxide be effective. Backwash the filter after 1 hour. It's ideal to combine this cleaning process with a 3 - 5 ppm chlorine shock to kill any remaining bacteria.
- Cleaning solution:
Add 1 tablet to 20 liters water and wash down the dirty surface (channel, cover) with this solution. Let it work for 1 hour and rinse with water.

In portable whirlpools and hot tubs:

- Add 2 tablets per 1000 l water volume turn on the filter and massage system and let DryOx work for an hour. Do not use the pool during this time. After one hour, completely drain the pool water, rinse and refill with fresh water. Your whirlpool is now free of biofilm. Repeat this treatment at least every 3 months.



Item No.	Description	Package quantity		List price € excl. VAT
20031	DryOx for whirlpools	8 tablets	20 pcs. / carton - 480 pcs / pal. (EUR-1)	24.00
20032	DryOx for swimming pools	8 tablets	20 pcs. / carton - 480 pcs / pal (EUR-1)	24.00
20033	DryOx for swimming pools	60 tablets	144 pcs / pallet (EUR-1)	144.00

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Swimming Pools

Zeta Potential Mixer

ZPM - ZETA POTENTIAL MIXER

30

The static mixer for the cavitation of water

ZPM stands for Zeta Potential Mixer and is a static mixer manufactured in stainless steel 1.4571. The cavitation reactions help to disinfect the water for a lifetime.

Upstream of the filter – optimize coagulation and flocculation: The ZPM amplifies the coagulation and flocculation reactions for the conversion and precipitation of dissolved components into small particles. The cavitation reactions provide the perfect mixing and turbulent environment necessary for coagulation using APF and NoPhos. The ZPM neutralises the electrical charge (Zeta Potential) on dissolved chemicals and small particles to make some positively and some negatively charged. The opposite charges attract and this causes coagulation and flocculation. As the electrical potential drops to neutral, the redox oxidation potential of the water increases by up to 100 mV, effectively the water is beginning to disinfect itself without the use of any chemicals.

Choose the size of the ZPM according to the pressure loss. Pressure loss should be between 1 and 2 mH₂O (0,1 – 0,2 bar).

Downstream of the filter - mechanical disinfection: The cavitation produces nano-bubbles that disinfect the water. The higher the pressure loss, the better the disinfection performance. Some pathogens (e.g. Cryptosporidium) as well as biofilm protected colonies of bacteria flocs are extremely resistant to chlorine. The ZPM breaks these colonies or flocs apart and allows chlorine to disinfect the water before it reaches the pool.

Choose the size of the ZPM according to the pressure loss. Pressure loss should be between 1 and 5 mH₂O (0,1 – 0,5 bar)



Imploding nano-bubbles disinfecting water.

Item No.	Size	no of fins	conn.	length	weight	Pressure loss			List price € excl. VAT
						2 mH ₂ O 0.2 bar	3 mH ₂ O 0.3 bar	5mH ₂ O 0.5 bar	
30032	DN 32	2	1" ET	140 mm	0.35 kg	6 m ³ /h	7 m ³ /h	9.5 m ³ /h	156.00
30000	DN 40	3	1½" ET	235 mm	0.75 kg	5 m ³ /h	6.5m ³ /h	8.5 m ³ /h	204.00
30001	DN 40	2	1½" ET	195 mm	0.75 kg	10 m ³ /h	12 m ³ /h	15 m ³ /h	184.00
30002	DN 50	3	2" ET	300 mm	1.2 kg	8.5 m ³ /h	13 m ³ /h	21.5 m ³ /h	235.00
30003	DN 50	2	2" ET	240 mm	1.2 kg	15 m ³ /h	23 m ³ /h	30 m ³ /h	208.00
30004	DN 65	3	2½" ET	332 mm	2.8 kg	20 m ³ /h	27 m ³ /h	40 m ³ /h	338.00
30005	DN 80	3	3" FL	419.6 mm	11.2 kg	20 m ³ /h	30 m ³ /h	45 m ³ /h	949.00
30006	DN 100	3	4" FL	519.6 mm	14.4 kg	50 m ³ /h	60 m ³ /h	80 m ³ /h	1'154.00
30013	DN 125	3	5" FL	640 mm	21.0 kg	70 m ³ /h	85 m ³ /h	115 m ³ /h	1'340.00
30007	DN 150	3	6" FL	759.6 mm	26.8 kg	100 m ³ /h	125 m ³ /h	170 m ³ /h	1'616.00
30008	DN 200	3	8" FL	979.6 mm	41.2 kg	175 m ³ /h	220 m ³ /h	290 m ³ /h	2'078.00
30009	DN 250	3	10" FL	1219.6 mm	58.6 kg	260 m ³ /h	325 m ³ /h	420 m ³ /h	2'995.00
30010	DN 300	3	12" FL	1496 mm	77.2 kg	385 m ³ /h	475 m ³ /h	500 m ³ /h	3'518.00

ET = external thread / FL = flange

1 bar ≈ 10 mWS ≈ 10 m H₂O

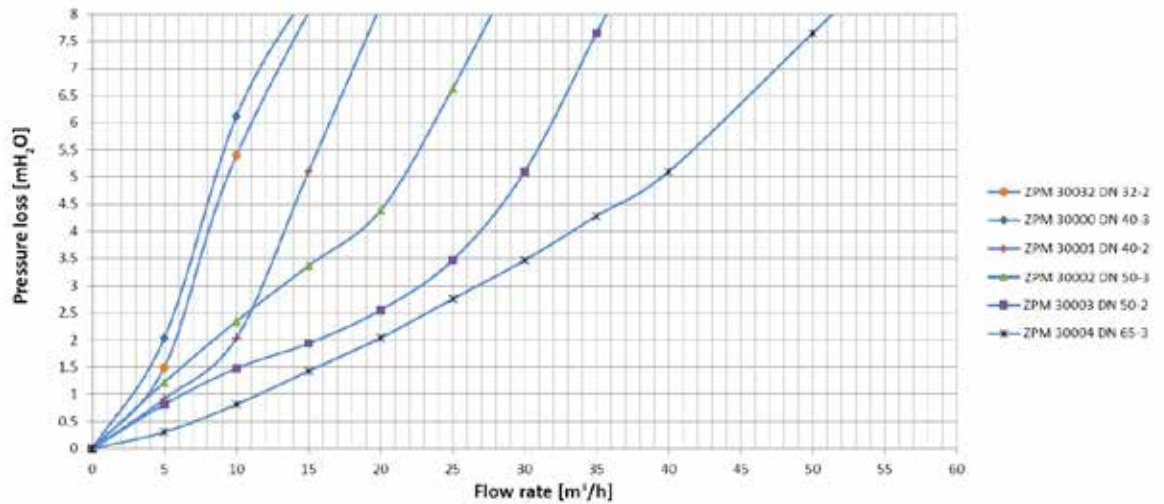
DN40 – DN50: 1 injection point ½" / **DN65 – DN400:** 2 injection point ½"

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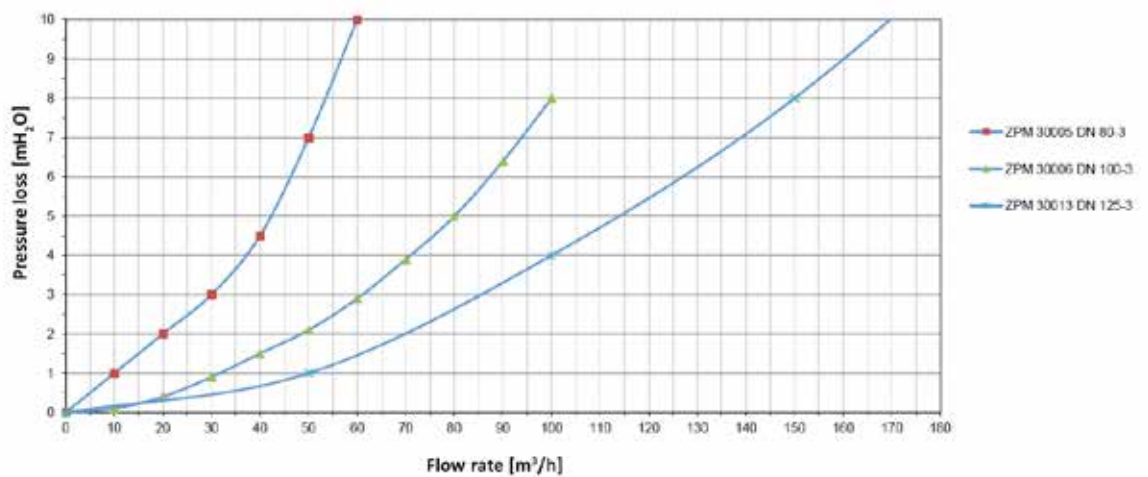
Swimming Pools

Zeta Potential Mixer

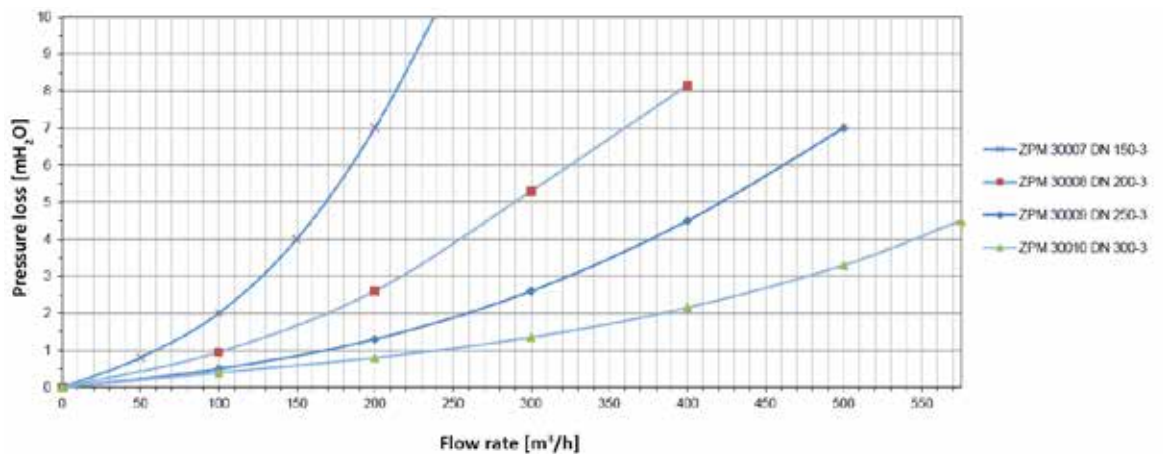
Pressure loss DN 32 - DN 65



Pressure loss DN 80 - DN 125



Pressure loss DN 150 - DN 300



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Swimming Pools

Flocculation Pumps and Flow Meter



Item No.	Description	List price € excl. VAT
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DRYDEN AQUA FLOC-DOS-PUMP 50

50016	Dryden Aqua floc-dos-pump 1,3- 70ml/h ml/h	395.00
50017	DA replacement-tube 3,2-160ml/h for floc-dos-pump	18.00
50018	DA replacement-tube 1,3- 70ml/h for floc-dos-pump	18.00



STENNER DOSING PUMP 50

50003	Stenner dosing pump 45M-1, 1x 20 – 400 ml/h adjustable	490.00
50005	Pump tube Stenner no 1 20 - 400 ml	15.00
50006	Pump tube Stenner no 2 60 - 1250 ml	15.00
50007	Pump tube Stenner no 7 140 - 2800 ml	15.00



REPLACEMENT PART 50

50011	Suction weight 6 mm	15.00
50010	Injection valve Stenner ¼" & ½" with non return valve	20.00
50013	Duckbill for non return valve 50010	4.00
50020	Injection valve DA ½" with non return valve - for all ZPMs	25.00
50015	Ferrule 6 mm blue	1.00
50021	Connection nut for tube	2.00



FLOW METER - HORIZONTAL MOUNT 90

90005	Flow meter	DN 40	d 50 mm	6-24 m³/h	115.00
90004	Flow meter	DN 40	d 50 mm	2.1-7.2 m³/h	115.00
90006	Flow meter	DN 50	d 63 mm	9-36 m³/h	130.00
90007	Flow meter	DN 50	d 63 mm	4-18 m³/h	130.00
90008	Flow meter	DN 65	d 75 mm	12-54 m³/h	150.00
90009	Flow meter	DN 80	d 90 mm	15-66 m³/h	165.00
90010	Flow meter	DN 100	d 110 mm	33-96 m³/h	185.00
90011	Flow meter	DN 150	d 170 mm	48-168 m³/h	285.00
90012	Flow meter	DN 200	d 220 mm	78-270 m³/h	320.00



FLOW METER - VERTICAL MOUNT 90

90015	Flow meter	DN 40	d 50 mm	6-24 m³/h	150.00
90016	Flow meter	DN 50	d 63 mm	9-36 m³/h	160.00

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Swimming Pools

Dryden Aqua Glass Sand

DGS: DRYDEN AQUA GLASS SAND

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DGS stands for Dryden Aqua glass sand. Unlike AFM®, DGS is manufactured from mixed glass and it does not undergo our patented activation process. Just like any other glass or quartz sand, DGS is therefore not fully bio-resistant and it has only weak adsorptive properties. DGS has a surface area of only 3000 m² per m³ (for comparison, AFM® has 1 million m² per m³).

Nevertheless, DGS is a better filter media than sand because it biofouls less. It is also most likely the best glass sand on the market, because DGS is produced by Dryden Aqua in our own factory in strict compliance with our ISO certified process. The glass is first washed and decontaminated and then carefully broken to the appropriate particle shape and size. Above all, we make sure no dangerous glass splinters can get into the filter material. DGS is the answer to compete in the generic glass sand market and a highly price sensitive customer segment less concerned about performance

Advantages:

- Clearer water
- Less consumption of disinfectant
- Less chlorine smell

Filter filling:

Dryden Aqua recommends the following layers:

70 % DGS 1

30 % DGS 2

Item No.	Description	Package quantity	Pallet quantity	List price € excl. VAT
11001	Dryden Glass Sand grade 1 0,5 – 1,0 mm	Bags of 25 kg	40 on CP-1	26.00
11002	Dryden Glass Sand grade 2 1,0 – 2,0 mm	Bags of 25 kg	40 on CP-1	26.00

28 pallets per truck; 20 pallets per container (20 ft)

ACTIVATED CARBON from coconuts shells type CC 8 x 16 (grade 1,18 - 2,36 mm)

90



In indoor pools: For the reduction of organic chloramines add 10 cm activated carbon as a top layer. The combined chlorine levels will be reduced by up to 50 %. Chlorine consumption will rise accordingly.

Specific weight: 500 kg / m³

Packing unit: 20 pcs per pallet = 1 m³

Item No	Description	Package quantity	Pallet quantity	List price € excl. VAT
90105	Activated carbon from coconut shells 1,18 - 2,36 mm	Bags of 50l/25 kg	20 on CP-1	150.00