

Product Information HYDRO-ANTHRAZIT H

1. General

HYDRO-ANTHRAZIT[®] H is a filtering material for water purification made of broken and sifted pyrolysed coal. Abrasive-resistant grains are characterized by their porous structure and rough surface.

HYDRO-ANTHRAZIT[®] H complies with requirements of EN 12907, DIN 2000, DIN 19 643, as well as with DVGW-work sheets W 210 and W 212.

After integration is completed the material exhibits mostly inert behaviour and no matter is released to the water that may lead it to exceed the values limited by the regulations on drinking water.

HYDRO-ANTHRAZIT[®] H guarantees safe operation requiring only little maintenance due to its stable structure.

HYDRO-ANTHRAZIT[®] H is used mainly as an upper layer of materials in dual media filters for the engineering basis of multi layer filtration. In order to solve special purification problems it can also be used in single layer filters.

HYDRO-ANTHRAZIT[®] H has adsorptive characteristics.

2. Areas of application

HYDRO-ANTHRAZIT[®] H is used as a filtering material in both open and closed fixed bed filters according to DIN 19 605

- Filtration of turbid well, spring and surface water
- Filtration of chemical and/or biological and/or catalytic deferrisation and demanganisation of contaminated raw water
- Floccing or flocculation filtration of raw water treated with floccing and/or flocculator agents
- Filtration of de-carbonised water after the de-carbonising reactor
- Filtration of cooling and service water in industry
- Filtration of recycling of water for swimming pools and baths as of DIN 19 643
- Coating of chemically reacting filter materials for pollution protection of active surfaces
- Filtration of mechanically/biologically treated waste water and sewage

3. Setting of tasks

Use of HYDRO-ANTHRAZIT[®] H in multi layer filters leads to:

3.1 Improvements of filtration yield by

- Increase in capture capacity of pollutants by the filter bed using in-depth filtration;
- Combine with fine grain materials as a lower material layer to cause improved and stable filtrate quality;
- Increase in protection against breakthrough since the filter run up to breakthrough will last longer than the filter run until the maximum design head loss has been reached.

3.2 Increase in efficiency by

- Extension of filter runs
- Reduction of backwashing water consumption
- Reduction of filter resistance without the need to extend the filtering installation

4. Chemical and physical data

4.1 Chemical composition:

Carbon	approx.	87 %
Ash, water-free	approx.	9 %
Volatile components	approx.	3.5 %
Water	approx.	1%

Values represent the average of regular examinations carried out over several years.

4.2 Grain sizes

Grain size I	0.6 – 1.6 mm
Grain size II	1.4 – 2.5 mm

4.3 Bulk density, density, porosity

Bulk density grain size I:	approx. 500 kg/m ³
Bulk density grain size II:	approx. 480 kg/m ³
Apparent density	approx. 0.95 g/cm ³
Grain porosity	approx. 50 %

4.4 Consumption

Dependent on the frequency of washing and time of operation of filters, about 2 % p.a.

5. Technical data

5.1 Material layer for multi-layer filter

	Grain [mm]	Height layer [mm]
Grain combination I		
HYDRO-ANTHRAZIT® H	0,6 – 1,6	600 - 800
Filter sand	0,4 – 0,8	> 600
Grain combination II		
HYDRO-ANTHRAZIT® H	1,4 – 2,5	600 – 1.200
Filter sand	0,71 – 1,25	> 600

5.2 Filtration rate

According to task set and observing hydraulic conditions
 with open filters: up to 15 m/h
 with closed filters: up to 30 m/h
 Higher filtration rates are possible in special cases.

5.3 Head loss and filter bed expansion

see data sheet 2

5.4 Single layer filter

Possible use of HYDRO-ANTHRAZIT® H in single layer filters to solve particular problems in purification with respect to grain filtration rate and mode of backwashing should be coordinated with our engineering department.

5.5 Starting-up and insertion

see data sheet 3

5.6 Backwashing of multi-layer filters (recommendation)

5.6.1 Backwashing with air and water (separately)

1. Water backwash
at grain combination I approx. 30 m/h
at grain combination II approx. 50 m/h
time: approx. 3 – 5 min
2. Lowering of water level to short above filter layer
3. Air scour approx. 60 m/h
time: approx. 3 – 5 min
4. Holding time gas evolution of rinsing air
Duration: 2 – 5 min
5. Clear washing with water
at grain combination I approx. 30 m/h
at grain combination II approx. 50m/h
time: about 2 – 5 min
in dependence on degree of contamination
6. Pre-run

Depending on design of installation agreed upon, steps 1 and 6 may not be necessary.

5.6.2 Backwashing with water

- with grain combination I approx. 30 m/h
- with grain combination II approx. 50 m/h

5.6.3 Backwashing with air and water (combined)

We do not recommend combined air/water washing for backwashing in multi-layer filters.

With filter systems allowing for combined backwashing with air and water due to their special design and hydraulic conditions, the respective instructions given by the manufacturer of the plant have to be strictly observed.

5.7 Calculation of freeboard height

In order to avoid backwash losses, a freeboard of 25% of height of filter layer (without supporting layer) plus a 200 – 300 mm safety margin have to be planned.

6. Delivery

Ex works

- a) in poly-bags containing 50 l each
- b) loose in tank vehicles
(minimum freight invoicing per tank 30 m³)
- c) in Big Bags (quantity by agreement)

7. Individual advice

Due to the specific nature of each individual case, advice and recommendations can only be given on a case by case basis. Information, notes and advice, contained in this work sheet are therefore, not legally binding. We shall be liable only when written details have been given by us on receipt of written details on any particular case in question. Individual proposals can be given on request.