FILTRASORB® 300 AND 400

Agglomerated Coal Based Granular Activated Carbon

DESCRIPTION

FILTRASORB® 300 and **400** are both from the renowned Filtrasorb range of Granular Activated Carbons, which are installed in over 1,000 water treatment plants in Europe, the United States and Asia. **FILTRASORB®** carbons are produced by steam activation of selected grades of bituminous coal that have first been pulverised then **agglomerated**.

FILTRASORB® 300 and **400** have both high adsorption capacity and a high number of transport pores. This gives the carbon a greater selectivity for the removal of micropollutants such as pesticides in the presence of high concentrations of natural organic matter. In addition, these products are best suited to the removal of total organics such as disinfection by-product precursors, the humic substances, which react with chlorine to form compounds such as trihalomethanes. **FILTRASORB® 300** is also particularly suited to the treatment of bank infiltrated water.

FEATURES

Agglomerated coal based granular activated carbons have several properties, which explain their superior performance in a wide range of applications:

- Produced from a pulverised blend, results in a **consistent high quality product**.
- The activated carbon granules are uniformly activated throughout the whole granule, not just the outside. This results in **excellent adsorption properties** and **constant adsorption kinetics** in a wide range of applications.
- High mechanical strength of the coal based carbon gives **excellent reactivation performances**.
- Agglomerated coal based carbon are suitable for **multiple reactivations** compared to other base materials such as peat and wood.
- The agglomerated structure ensures **rapid wetting**. There is no remaining floating material.
- Carbon bed segregation is retained after repeated backwashing, ensuring the **adsorption profile remains unchanged** with time and therefore maximising the bed life before breakthrough.
- **FILTRASORB® 300** and **400** comply with EN12915 and are approved by the United Kingdom Drinking Water Inspectorate

SELECTION

FILTRASORB® 300 and **400** have a typical effective size range of 0.9mm and 0.7mm respectively. In general, the smaller the granule size, the better the adsorption performance, therefore **FILTRASORB® 400** should be selected. If the pressure drop is too high with **FILTRASORB® 400**, **FILTRASORB® 300** should be selected.

PROPERTIES

SPECIFICATIONS	F300 8x30	F400 12x40
Iodine Number, min., mg/g	950	1050
Methylene Blue Number, min.	230	260
Abrasion Number, min.	75	75
Moisture Content, as packed, max., % w/w	2	2
Effective Size, mm	0.8-1.0	0.6-0.7
Mesh Size, US Sieve Series	8x30	12x40
> 8 mesh (2.36 mm), max. %	15	-
> 12 mesh (1.70 mm), max. %	-	5
< 30 mesh (0.60 mm), max. %	4	-
< 40 mesh (0.425 mm), max. %	-	4

(Please refer to the Sales Specification Sheets, which state the Chemviron Carbon test method used to define the above specifications. Copies are available upon request.)

TYPICAL PROPERTIES	F300 8x30	F400 12x40
Backwashed and drained Bed Density[1], kg/m³	460	425
Floating Content, max., % w/w	0.1	0.1
Surface Area, (N_2 BET method[2]), m²/g	950	1050
Mean Particle Diameter, mm	1.6	1.0
Uniformity Coefficient	1.9	1.7
Phenol loading[3] at 1 mg/l, DIN 19603, %	4.7	5.2
Detergent (TPBS) loading[3]at 1 mg/l, mg/g	150	200
Atrazine loading[3] at 1 µg/l, mg/g	40	40
Toluene loading[3] at 1 mg/l, mg/g	90	100
Trichloroethylene loading [3] at 50 µg/l, mg/g	20	20

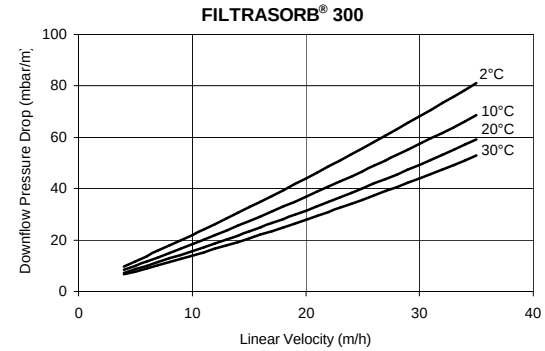
[1] *Backwashed and Drained Density for adsorber sizing;*
[2] *Brunauer, Emmett and Teller, J.Am. Chem. Soc. 60. 309 (1938).*
[3] *Isotherm loading in distilled water. These are reported for comparison and are unlikely to reflect loadings in practice.*

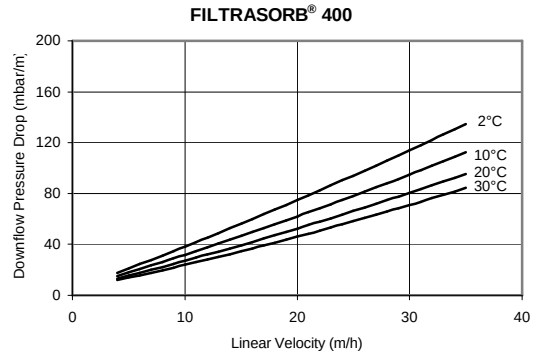
RECYCLING BY THERMAL REACTIVATION

Once granular carbon is saturated or the treatment objective is reached, it can be recycled, by thermal reactivation, for reuse. Reactivation involves treating the spent carbon in a high temperature reactivation furnace to over 800°C. During this treatment process, the undesirable organics on the carbon are thermally destroyed. Recycling by thermal reactivation is a highly skilled process to ensure that spent carbon is returned to a reusable quality. **Chemviron Carbon** operates Europe's largest reactivation facilities and daily recycles large quantities of spent carbon for a divers range of customers. Recycling activated carbon by thermal reactivation meets the environmental need to minimise waste, reducing CO_2 emissions and limiting the use of the world's resources.

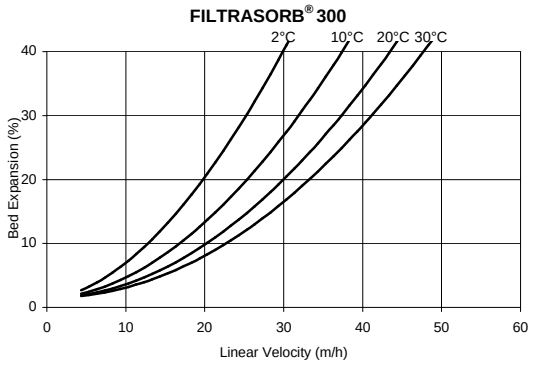
The combined high mechanical strength of **FILTRASORB® 300** and **400** with the transport pores gives the carbon **excellent reactivation performance** and **low losses**.

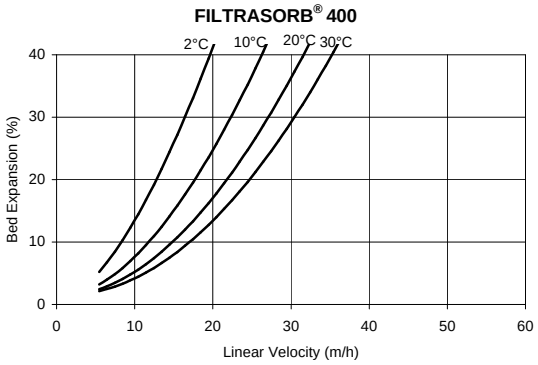
TYPICAL PRESSURE DROP CURVES FOR A BACKWASHED AND SEGREGATED BED





TYPICAL BED EXPANSION CURVES FOR A BACKWASHED AND SEGREGATED BED





DESIGN INFORMATION

The following are typical design parameters for **FILTRASORB® 300 and 400** installed for the treatment of surface water.

- Superficial contact time 10-30 min.
- Bed depth 1-3 m
- Linear velocity 5-20 m/h
- Backwash bed expansion 20 %

PACKAGING

- 25 kg bags
- Big bags
- Bulk tanker

SAFETY MESSAGE

Wet activated carbon preferentially removes oxygen from air. In closed or partially closed containers and vessels, oxygen depletion may reach hazardous levels. If workers are to enter a vessel containing carbon, appropriate sampling and work procedures for potentially low-oxygen spaces should be followed.

QUALITY

Each of our worldwide operations has achieved **ISO9001** certification for their quality management system related to activated carbon. **Chemviron Carbon** guarantees the specifications against representative sampling. For food grade applications, it is recommended to check the quality of the initial effluent before putting the adsorber into service.

CHEMVIRON CARBON

Chemviron Carbon, the European operation of Calgon Carbon Corporation, is a global manufacturer, supplier, and developer of granular activated carbon, innovative treatment systems, value added technologies, and services for optimising production processes and safely purifying the environment.

With our experience developed since the early years of the twentieth century, facilities around the world and a world-class team of over 1,200 employees, Calgon Carbon Corporation can provide the solutions to your most difficult purification challenges.

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Visit our website at **www.chemvironcarbon.com**

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