

ENVIROCARB® AP3-60 AND AP4-60

Coal Based Extruded Activated Carbons

DESCRIPTION

ENVIROCARB® AP3-60 and **AP4-60** are 3 and 4 mm pellet activated carbons designed for air and gas purification applications. They are produced by high temperature steam activation of coal, which produces a porous material with a high surface area, allowing it to adsorb a wide range of organic compounds. The coal based raw material also ensures a high density product with good mechanical strength and low dust content. This high density results in a high volumetric activity which is important, as adsorption systems are designed and filled on a volumetric basis, meaning that the overall size of a system may be reduced.

FEATURES

Coal-based extruded activated carbons have several properties which explain their performance in a wide range of applications:

- High loading capacity for a wide range organic compounds
- Low outlet concentrations obtainable ensuring the strictest emission requirements can be met.
- High hardness to ensure excellent resistance to mechanical and thermal stress.
- Low pressure drop reducing fan size and energy consumption.
- Low steam to solvent ratio to minimise energy costs for steam consumption, easier product recovery and reduced waste water in solvent recovery applications.
- **ENVIROCARB® AP4-3-60** and **ENVIROCARB® AP4-60** can be provided as part of a total service package combining reactivation and **CYCLEVENT®** mobile adsorbers on a rental basis, avoiding capital expenditure.

SELECTION

ENVIROCARB® AP3-60 and **ENVIROCARB® AP4-60** are used in a range of different applications including the treatment of air or inert gas for:

- Volatile Organic Compounds (VOC)
- Industrial odour removal
- Ground(water) remediation
- Paint spray booths
- Tank venting emissions
- Fume hoods

As well as treatment of biogas for the removal of organics and siloxane compounds.

PROPERTIES

ENVIROCARB® SPECIFICATIONS	AP3-60	AP4-60
Carbon tetrachloride activity, min., wt%	60	60
Butane activity, min., wt%	23.5	23.5
Hardness number, min.	90	90
Moisture content, as packed, max., wt%	5	5
Mesh size, US sieve series, wt%		
> 6 Mesh (3.35 mm), min.	-	95
> 8 Mesh (2.36 mm), min.	95	-

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

ENVIROCARB® TYPICAL PROPERTIES	AP3-60	AP4-60
Bed Density ¹ , kg/m ³	450	450
Benzene isotherm loading, dry air at 20°C, wt%		
288 g/m ³ (90 % of saturation)	39	39
32 g/m ³ (10 % of saturation)	34	34
3.2 g/m ³ (1 % of saturation)	22	22
0.32 g/m ³ (0.1 % of saturation)	13	13
Iodine number, mg/g	1000	1000
Total Surface Area (N ₂ BET method ²), m ² /g	1000	1000
Specific heat capacity at 100°C, kJ/kg.K	1.0	1.0
Ignition temperature, °C (ASTM D3466 ³)	410	410

¹ Bed Density is used for adsorber sizing

² Brunauer, Emmet and Teller, J. Am. Chem Soc. 60, 309 (1938)

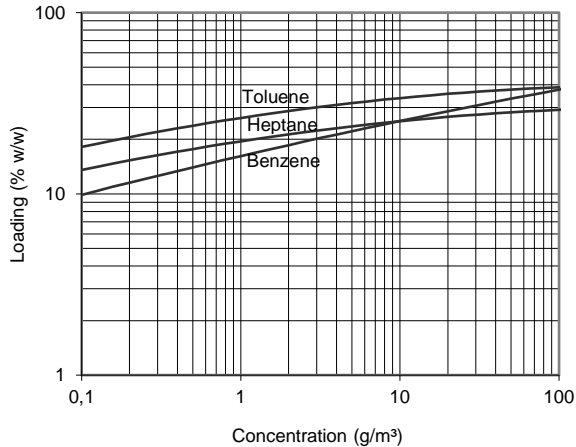
³ Under conditions of ASTM D3466. Ignition temperature will vary in practice according to specific conditions for which the carbon is utilised.

RECYCLING BY THERMAL REACTIVATION

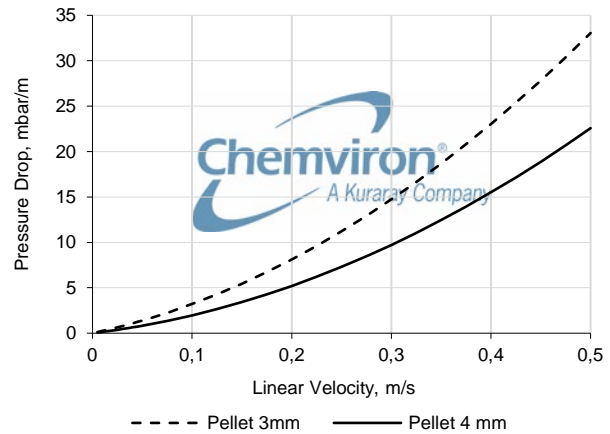
Once pellet activated carbon is saturated or the treatment objective is reached, it can be recycled, by thermal reactivation, for reuse. Reactivation involves treating the spent carbon in a high temperature reactivation furnace to over 800°C. During this treatment process, the undesirable organics on 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** operates Europe's largest reactivation facilities and daily recycles large quantities of spent carbon for a diverse range of customers. Recycling activated carbon by thermal reactivation meets the environmental need to minimise waste, reducing CO₂ emissions and limiting the use of the world's resources.

Chemviron can offer a recycling service for **ENVIROCARB® AP3 - 60** and **AP4-60** to avoid disposal of the spent activated carbon.

**Isotherms for
ENVIROCARB® AP3-60 & AP4-60
dry air at 20°C**



Typical Pressure Drop of ENVIROCARB® AP3-60 and ENVIROCARB® AP4-60 in dry air at 20°C and 1 bar



DESIGN INFORMATION

The design of an activated carbon treatment system will depend on the nature of the stream to be treated. The following are typical design parameters for organics removal with **ENVIROCARB® AP3-60** and **AP4-60** from air:

- Superficial contact time 0.5 - 5 s.
- Bed depth 0.2 - 2 m
- Linear velocity 0.05 - 0.5 m/s

ENVIROCARB® AP4-60 should be selected as standard. A 4mm pellet normally has the best balance of performance with low pressure drop. **ENVIROCARB® AP3-60** should be selected where extra low emission concentrations are required or in small devices such as cartridge filters with a short bed depth.

PACKAGING

- 20 kg bags
- Big bags

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 **ISO 9001:2015** certification for their quality management system related to activated carbon. **Chemviron** guarantees the specifications against representative sampling.

CHEMVIRON

Chemviron, the European operation of Calgon Carbon Corporation, is a global manufacturer, supplier, and developer of activated carbons, 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 1,300 employees, Calgon Carbon Corporation can provide the solutions to your most difficult purification challenges.

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