

CANECAL®

Agglomerated Coal Based Granular Activated Carbon

DESCRIPTION

CANECAL® carbons are granular activated carbons specially designed for the treatment of cane sugar liquors. These carbons combine a superior decolourising capacity, resulting from their unique pore structure, with a pH controlling ability, as a result of the incorporation of magnesite bonded into the carbon granules.

CANECAL® carbons are produced from selected grades of bituminous coal by a highly developed and strictly controlled manufacturing process. This ensures a high purity product with an ideal porosity, which gives optimum kinetics for adsorption. The high density of these carbons also provides a high volumetric activity, which combined with a superior abrasion number, gives low losses in reactivation and carbon transfer.

FEATURES

CANECAL® carbons have several properties, which explain their superior performance and wide acceptance in the cane sugar industry:

- A high adsorption capacity for colour bodies ensuring a **low carbon consumption**
- Magnesite bonded into the carbon structure which provides a **consistent buffering capacity**
- The capacity to **limit considerably sucrose inversion** and so the potential sugar losses
- The ability to improve crystallisation yields which means an higher production efficiency. An up to 10% sucrose reduction in the molasses has been reported in refineries operating with **CANECAL®**.
- Produced from a pulverised blend, results in a **consistent high quality product**.
- **CANECAL®** carbons can reduce the colour of sugar liquors to produce E.C. category 2 standard sugar quality.
- Mechanical strength and uniform transport pore distribution also gives the agglomerated carbon **excellent reactivation performance** and low attrition losses during carbon handling.
- 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.
- **CANECAL®** carbon is conform to the US codex specifications, «Food Chemicals Codex» 3rd edition, and to the German Codex Specifications; Bundesgesetzblatt Juli 18 1984 Nr.30 Aktivkohle Liste10.

APPLICATIONS

CANECAL® carbons are utilised throughout the world in both fixed beds and pulse beds, for the decolourisation and purification of cane sugar syrup.

PROPERTIES

SPECIFICATIONS	CANECAL®
Molasses Number, min.	210
Iodine Number, min., mg/g	1000
Abrasion Number, min.	65
Moisture Content, as packed, max., %w/w	2
Mean Particle Diameter, mm	0.9-1.1
Mesh Size (US sieve series)	12x40
>12 mesh (1.70mm), max. %	5
< 40 mesh (0.425mm), max. %	5

(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	CANECAL®
Bed density*, kg/m ³	450
Surface Area, (N ₂ BET method**), m ² /g	1000
MgO Content, %w/w	4-6
Particle Density, g/l wetted in syrup - 65 Brix	1.3
Void in Dense Packed Column, %Vol/Vol	36-40
Specific Heat at 100°C - kJ/kg.K	1

() Bed Density is used for adsorber sizing;*

*(**) Brunauer, Emmett and Teller, J.Am. Chem. Soc. 60. 309 (1938).*

CANECAL® is a generic name for several grades, CANECAL® is the grade most commonly used and specified by Chemviron Carbon. Alternative grades of CANECAL® are available on request.

RECYCLING BY THERMAL REACTIVATION

Once granular 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 Carbon** 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.

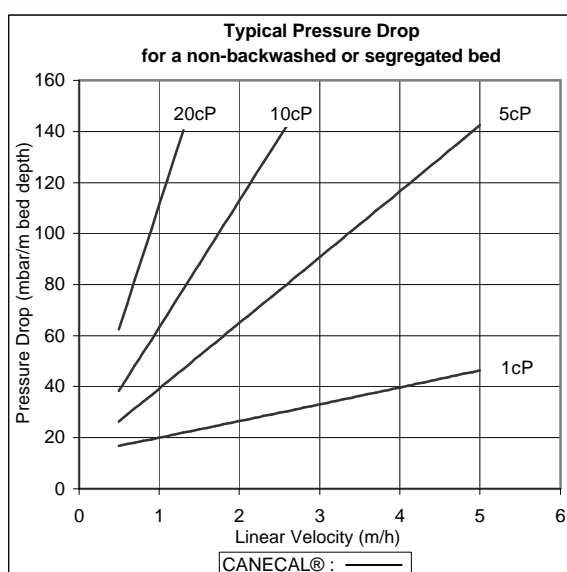
CANECAL®'s high adsorption capacity enables continuous decolourisation cycles to be carried out, after which the carbon can be thermally reactivated for repeated use avoiding waste disposal costs. Sweetening-off of spent granular carbons prior to reactivation leads to valuable product recovery and significant savings in product loss. The combined high mechanical strength of **CANECAL®** with the transport pores gives the carbon **excellent reactivation performance** and **low losses** during reactivation.

DESIGN INFORMATION

Design parameters for **CANECAL**[®] depend on the pre-treatment and the required treatment objective. Following are a range of typical operating conditions.

- Superficial contact time 120-480 min.
- Bed depth 1-10 m
- Linear velocity 1-5 m/h

Pressure drop per metre of bed depth for **CANECAL**[®] carbon is shown for different liquor viscosities. This data was obtained in down flow columns with a normal packing arrangement in which the carbon was pre-soaked in hot liquid and charged to the column as a slurry. The bed density, g/l of the charged carbon was calculated to be 450kg/m³.



PACKAGING

- 25kg 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.

CHEMVRON 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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