CAL® TR

Agglomerated Coal Based Granular Activated Carbon

DESCRIPTION

CAL® TR carbon is an agglomerated coal based granular activated carbon specially designed for the purification and decolourisation of many aqueous and organic liquid liquors.

CAL® TR is produced from selected grades of bituminous coal by a highly developed and strictly controlled manufacturing process to a reliable and consistent product quality. This ensures a high purity product with an ideal porosity, which gives optimum kinetics for adsorption. **CAL® TR** is a unique Agglomerated Coal Based Granular Activated Carbon that combines excellent decolourisation power with an effective trace removal capacity.

FEATURES

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

- Combines excellent decolourisation power with an effective **trace removal capacity**.
- Produced with **virtually no fines or dust** and is therefore particularly suitable for purification of aqueous and organics liquid liquors.
- 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.
- A high pore volume means a more efficient use of the carbon. This results in a low carbon dosage.
- High mechanical strength and uniform transport pore distribution also give the agglomerated carbon **excellent reactivation performance** and low attrition losses during carbon handling.
- Coal based agglomerated granular activated carbons are suitable for **multiple reactivations** compared to other base materials such as peat and wood.
- The agglomerated structure ensures **rapid wetting**.
- **CAL® TR** carbon is conform to the US codex specifications, «Food Chemicals Codex» 3rd edition, and to the German Codex Specifications; Bundes-gesetzblatt Juli 18 1984 Nr.30 Aktivkohle Liste10.

APPLICATION

CAL® TR carbon is developed for applications where a combination of decolourisation and trace removal capacity are needed. **CAL® TR** has proven its superior capability to remove fatty acids, esters and odour simultaneous with colour in a number of industrial applications:

- Glycerine purification
- High viscous organics
- Solvents and organic solutions

PROPERTIES

SPECIFICATIONS	CAL® TR 12x40
Trace Capacity Number, min., (mg/cc)	13.5
Iodine Number, min., mg/g	1100
Abrasion Number, min.	75
Moisture Content, as packed, max., % w/w	2
Mean Particle Diameter, mm	0.8-1.0
Apparent Density, min., g/cc	0.54
Ash, max., wt %	5
Mesh size, US Sieve Series > 12 mesh (1.70 mm), max. % < 40 mesh (0.425 mm), max. %	12x40 5 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	CAL® TR 12X40
Bed density[1], kg/m³	500
Hardness Number	95
Surface Area, (N_2 BET method[2]), m²/g	1100
Voids in dense packed column, % Vol/Vol	36-40
Specific heat at 100°C - kJ/kg.K	1

[1] Bed Density is used for adsorber sizing.
[2] Brunauer, Emmett and Teller, J.Am. Chem. Soc. 60. 309 (1938).

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 CO_2 emissions and limiting the use of the world's resources.

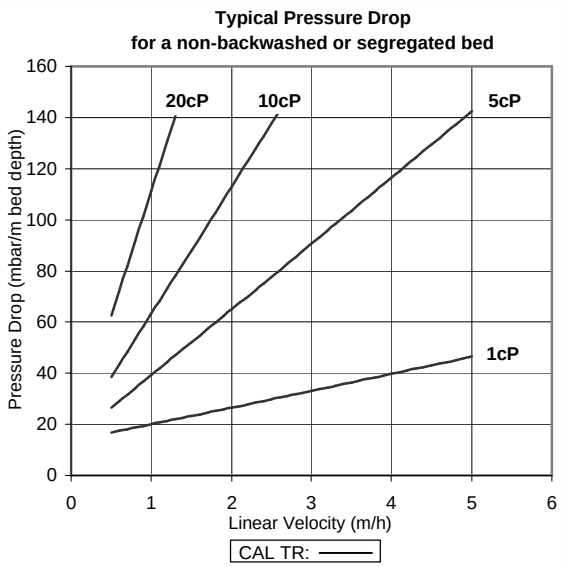
CAL® TR 's high adsorption capacity enables continuous decolourisation cycles to be carried out, after which the carbon can be thermally reactivated for repeated use avoiding waste disposal costs. Sweetening-off of spent granular carbons prior to reactivation leads to valuable product recovery and significant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

DESIGN INFORMATION

Design parameters for **CAL® TR** depend on the applications it is used in. Following are a range of typical operating conditions:

- Superficial contact time 60-240 min.
- Bed depth 1-10 m
- Linear velocity 1-5 m/h

Pressure drop per metre of bed depth for **CAL® TR** 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 slurry. The bed density, g/l of the charged carbon was calculated to be 500 kg/m³.



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 **ISO 9001** 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.

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

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CALGON CARBON CORPORATION

Corporate Headquarters
400 Calgon Carbon Drive
Pittsburgh, PA 15205, USA
Tel.: +1 (0) 412 787-6700
Fax: +1 (0) 412 787-6713

Chemviron Carbon

European Operations of Calgon Carbon Corporation
Zoning Industriel C de Feluy
B - 7181 Feluy, Belgium
Tél.: +32 (0) 64 51 18 11
Fax: +32 (0) 64 54 15 91

Your local office