

HGR 4X10

Impregnated Agglomerated Coal Based Activated Carbon

DESCRIPTION

HGR® 4X10 is a sulphur-impregnated activated carbon designed for mercury removal from different gases. The base carbon is made from select grades of bituminous coal and suitable binders to create the unique pore structure and superior hardness necessary for the intended service. Activation is controlled to impart a pore structure that will both accept substantial quantities of the sulphur impregnant and maintain access for the gas being treated to the complex pore structure.

After activation, the sulphur is distributed in a thin layer over the extensive internal surface area of the carbon to provide it with the unique properties required for the removal of elemental and organic mercury from natural gas, geothermal gas, air and by-product hydrogen streams. In operation, the sulphur impregnate reacts with mercury to form a mercury sulphide that is fixed in the high energy adsorption pores of the activated carbon.

FEATURES

HGR 4x10 has several properties which explain the superior performance for Mercury removal in a wide range of applications:

- Ability to reduce mercury concentrations to below 0.001 µg/Nm³ in the treated gas
- Effectively removes elemental and organic mercury present in dry hydrocarbon gas streams
- High mercury loading and thus long bed life.

APPLICATIONS

- Natural gas to prevent corrosion in LNG installations.
- Air to reduce emissions in mercury recycling and chloralkali plant.
- Hydrogen to obtain a high purity product.
- Geothermal gas to reduce emissions to the atmosphere.

The presence of mercury in wellhead natural gas has been well documented. Mercury induced corrosion of LNG aluminium alloy cryogenic exchangers has led to numerous instances of equipment failure. Wellhead mercury concentrations have been found to vary in the range of 0-2000 µg/Nm³.

PROPERTIES

SPECIFICATIONS	HGR 4x10
Sulphur, min., wt%	10
Pellet Diameter, mm	-
Mesh Size, US Sieve Series	4x10
> 4 mesh (4.75 mm), max. %	5
< 6 mesh (3.35 mm), max. %	-
< 10 mesh (2 mm), 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	HGR 4x10
Bed density*, kg/m ³	560
Uniformity Coefficient	1.9
Mercury Loading, %w/w	20

() Bed Density is used for adsorber sizing;*

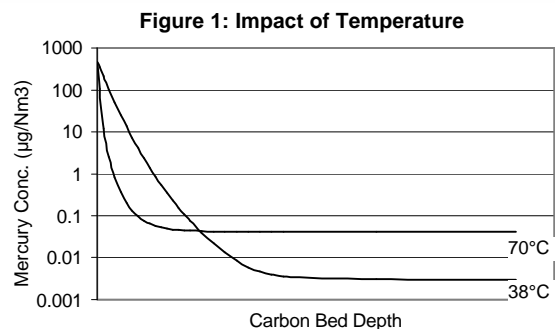
DESIGN INFORMATION

The design of an activated carbon adsorption system is dependent on the influent mercury concentration, temperature, flow rate, performance objective and other factors. A properly designed mercury removal system, can tolerate variations in the inlet mercury concentration without affecting the performance of the system. However temperature, pressure and moisture changes can have an effect on performance:

Temperature

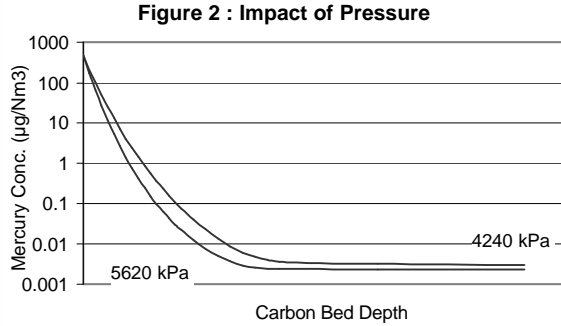
For inlet concentrations above 1µg/Nm³ the removal rate increases with increasing temperature. Removal to below 0.01 µg/Nm³ cannot be consistently achieved at a temperature of 70°C.

In natural gas applications, it is recommended to run a few degrees C above the dew point of the gas. Typically most Plant Managers will run their plant 10 °C above the dew point for safety reasons.



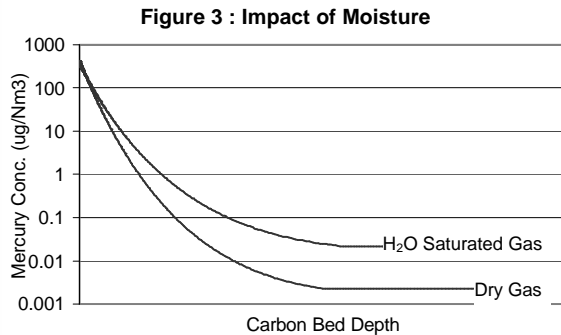
Pressure

The mercury removal efficiency of **HGR**[®] has been found to be relatively insensitive to pressure variations within the range where most LNG plants operate. This is illustrated graphically in Figure 2.



Moisture level

As is evident in Figure 3, both the mercury removal rate and removal limit are adversely affected by the presence of water adsorbed on the carbon.



PACKAGING

102 kg steel drum

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.

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



**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

