

# COMBATING MERCURY POLLUTION IN NATURAL GAS STREAMS

- ◆ Exceptional mercury removal efficiency from natural gas streams
- ◆ High loading capacity enables estimated lifetime of over six years
- ◆ Exceptional hardness and lowest pressure drop compared to other granular activated carbon products

## Performance

Mercury is a toxic metal that occurs in natural gas that is harmful to the environment and to chemical processes and transport equipment. Studies have shown that natural gas typically contains a mercury concentration between 1-2000 µg/m<sup>3</sup> (see table 1). Mercury removal is a necessity when natural gas is either processed or liquefied in a gas processing or LNG plant. During the processing (or liquefaction) of natural gas, even a small amount of elemental mercury can form an amalgam with metals that it touches (such as aluminium based heat exchangers), corroding the metals and leading to catastrophic losses to the plant.

**Table 1: Reported elemental mercury levels detected in natural gas<sup>\*)</sup>**

Location	Mercury concentration mg/Nm <sup>3</sup>
North America	1-20
South America	1-105
Europe	1-50
Middle East	1-10
North Africa	1-100
Southeast Asia	10-2000

<sup>\*)</sup> Source: UOP advanced mercury removal technical paper - Hydrocarbon processing, pg 29-35, Jan. 2010

Mercury is difficult to remove from natural gas. A standard activated carbon has low affinity for elemental mercury, which leads to low saturation loading. To increase the adsorption capacity, the activated carbon is impregnated with chemicals that react with mercury.

Specifically manufactured for the removal of elemental mercury from natural gas, NORIT® RBHG activated carbon combines an optimal sulphur impregnation with the ideal pore volume distribution to ensure low pressure drop and high removal efficiency (Figure A). In addition, our unique extrusion process and the pelletized shape of these extruded activated carbons result in high hardness (low attrition losses) and lowest pressure drop among other similar carbon products, increasing the overall lifetime of the activated carbon (Figure B). This high loading capacity together with exceptional hardness makes NORIT RBHG activated carbon the ideal product to remove mercury from natural gas streams.



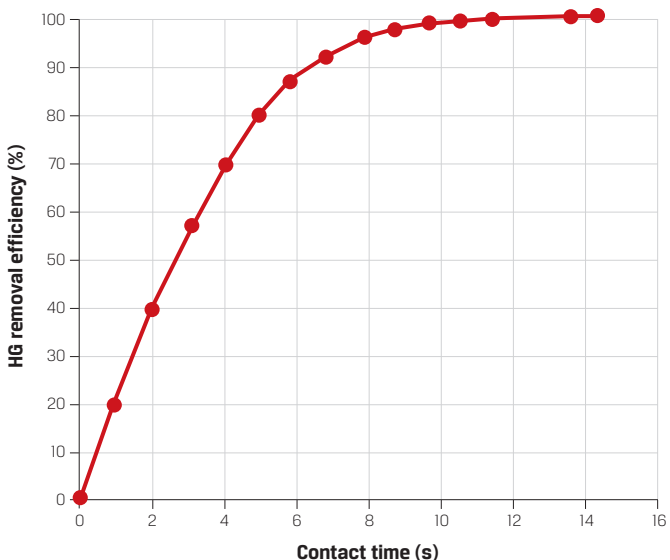


Figure A. Mercury removal efficiency of NORIT® RBHG activated carbon

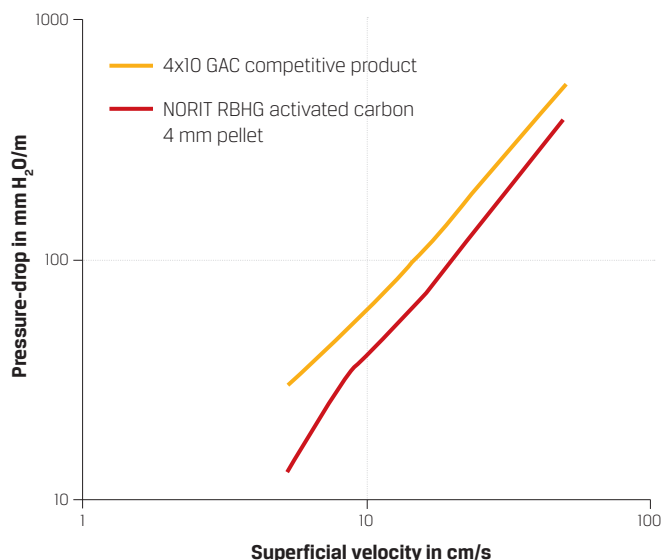


Figure B. Pressure-drop curve

**Process information**

We offer bed design assistance for activated carbon use in mercury removal from natural gas.

- ◆ Available in 4 mm pelletized form for minimal pressure drop in the vessel
- ◆ Minimum 10 seconds contact time at an operating temperature of maximum 100 °C, with superficial velocity of maximum 25 cm/sec is recommended
- ◆ Relative humidity below 70% helps to maximize available pores for mercury adsorption
- ◆ Sample activated carbon bed design detail available upon request
- ◆ Onsite trainings, application information and samples for testing and analysis are available upon request



Our sales, technical service and customer service teams are prepared to serve customers around the world. Contact us at [cabotcorp.com/activatedcarboncontact](http://cabotcorp.com/activatedcarboncontact).



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