

September 2017

Product: Activated Carbon

GAC Specifications – What do they measure?

Iodine Number

How closely in size is the contaminant to a molecule of iodine? The higher the iodine number the better the removal of molecules which closely resemble iodine. Iodine is a small molecule therefore it measures ability to adsorb lower molecular weight smaller substances.

Molasses Number

Molasses number is a measurement of the degree of decolorization of a standard molasses solution. It is a relative guideline for measuring the capacity of the carbon to remove color molecules.

Abrasion Number

Demonstrates the carbon's ability to withstand degradation during handling – before and after it is placed into service. Lower abrasion numbers result in more dust and fines.

Density, backwashed & drained (BWD)

This is the number of pounds required to fill a cubic foot of volume capacity. **Caution- The density of activated carbon types varies.**

TCN – Trace Capacity Number

The Trace Capacity Number measures the number of high energy pores in an activated carbon product. These high energy pores are required to remove difficult to adsorb contaminants, such as MTBE. The theory behind the test is similar to the Iodine number, where the iodine number reports the mg Iodine per gram of carbon in a standard iodine solution. Since iodine is so strongly adsorbed, it essentially fills all of the adsorption pores (high energy and low energy). The TCN number uses a more difficult to adsorb species and reports the mg loaded per gram of carbon. A higher TCN number on a carbon would indicate a higher number of high energy pores, which would suggest better loading in an application with difficult to remove contaminants.

Ash

The ash content of a carbon can be defined as the noncombustible mineral matter that is contained in activated carbon. It is the residue that remains after the combustion of a carbonaceous material and is normally defined on a weight basis. The ash content is dictated by the raw material used to manufacture an activated carbon product and is why a high purity raw material is necessary to produce a high purity activated carbon product. There are also additional post-processing steps, such as acid washing, to reduce the amount of ash content in an activated carbon product.

Water Soluble Ash

Ash measures the level of purity. It is the inorganic residue left after the heating process. It consists of silica, calcium, alumina, iron, magnesium with a potential for arsenic. Carbon may be acid washed or water rinsed to reduce ash content. Water extractable ash has the highest impact on the product quality as it affects the effluent.

