

## **Information Sheet 3**

### **BAC Aging Profiles**

#### **Basis of the Study**

Activated carbon samples from depth and surface from in use BAC filters are analysed to assist in determining the bed life of the biological activated carbon (BAC).

#### **Principle of the Method**

BAC filters typically operate in adsorptive and biological modes simultaneously. Over time the adsorptive capacity of the carbon decreases as mineral fouling occurs on the adsorptive sites of the carbon. Depending on the character of the water being treated, this fouling typically takes place over 10 to 15 years. By analysing the following over a specified time frame (typically annually) trends can be extrapolated to assist in predicting bed life and budget for carbon replacement.

#### **What is the Carbon Tested For?**

The following analyses are carried out according to ASTM methods:

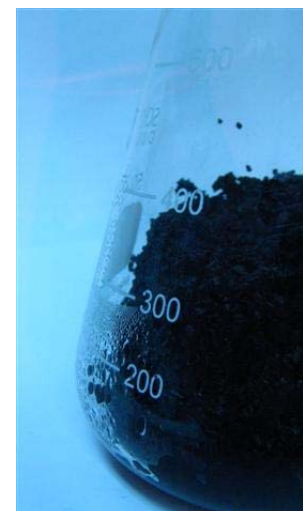
- *Iodine Number* – Iodine number provides an indication of the surface area and adsorptive capacity of the activated carbon.
- *Ash Content* – Ash content is the percentage of impurities i.e. non carbon portion of the activated carbon. Usually in BAC profiles the ash content increases as the iodine number decreases.
- *Acid Soluble Ash Composition* – This analysis determines the concentration and type of minerals that form the ash content of the carbon. If examined over time and in conjunction with the mineral concentrations of the water streams a greater understanding of how the carbon is operating can be achieved and if necessary operational conditions can be changed to optimise carbon life.
- *Particle Size Distribution* – In addition to mineral fouling, carbon is gradually lost due to attrition. Particle size distribution shows the effectiveness of back-washing and levels of carbon attrition.
- *Apparent Density* – Apparent density of the carbon typically correlates with the ash content and the effectiveness of back-washing.

#### **Additional BAC Optimisation**

In addition to basic BAC testing, Research Laboratory Services offers customers a BAC optimisation service. This involves an on-site visit, water stream analysis, bed depth calculations, BAC Aging Profile and a comprehensive report that provides recommendations and comparisons to previous year's data. Depending on the quantity of data gathered, asset life of the BAC can be predicted and budgeted for.

#### **Skills and Experience of RLS**

Research Laboratory Services has been providing BAC analysis studies to water customers in Australia for over 5 years. Almost all full scale BAC plants in Australia have at some stage been analysed by RLS. This analysis provides RLS with a unique data base of carbon from drinking water, reclamation/ sewerage, industrial water, mine water and various pilot plants



allowing RLS to compare your specific plants data with similar plants around the country. With over 15 years experience in water testing and water treatment plant optimisation you can be assured that you receive comprehensive interpretation of results and how they relate to your specific project.

**Contact Details**

For further information please contact Peta on 03 9431 2595 or email [peta@researchlab.com.au](mailto:peta@researchlab.com.au)