

# MWV NUCHAR® POWDERED ACTIVATED CARBON REMOVES MIB AND GEOSMIN FOR BETTER TASTING, CLEANER WATER

## MWV Nuchar® Powdered Carbons

In the drinking water treatment process, MWV Nuchar powdered activated carbons adsorb unpleasant taste, odor, color, TOC and other impurities. Nuchar powdered carbons have been used for over 90 years in the U.S. drinking water industry.

### Benefits of MWV Nuchar

Nuchar wood-based carbons adsorb a variety of dissolved organics, in addition to common taste and odor compounds.

Nuchar carbon benefits include:

- Extensive pore structure;
- Large surface area;
- Increased suspendability;
- Low ash content; and,
- No pipe or process scaling in water treatment plants.

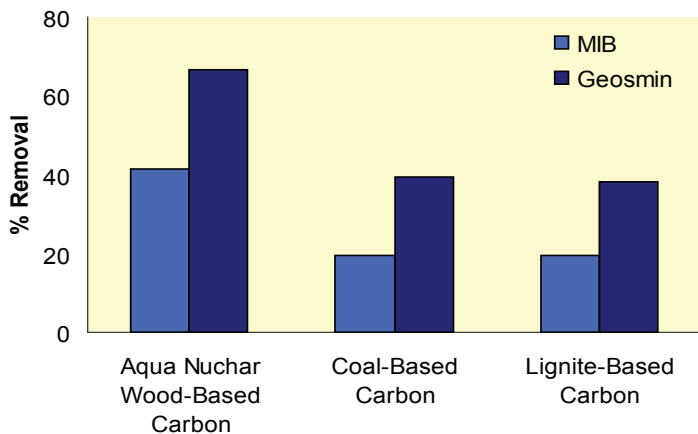
*“For many years, we have relied on Nuchar wood-based carbons for the effective removal of taste and odor compounds in our drinking water treatment process. Nuchar carbon has enabled us to provide noticeably better quality drinking water to our customers.”*

Thomas Knowlton, Superintendent  
Salem & Beverly Water Supply, Massachusetts

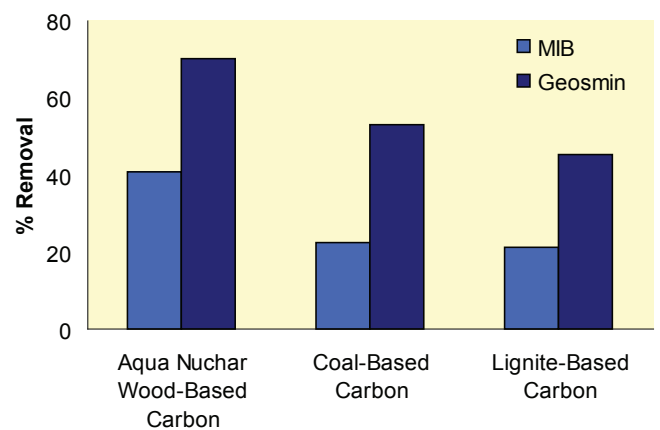
### Adding Nuchar to the Water Treatment Process

Powdered carbon, like Nuchar, is typically added near the raw water intake to provide contact time for adsorption, prior to coagulation and disinfection. Adsorption of organics by powdered carbon can minimize the addition of other chemicals to achieve water treatment objectives. Powdered carbon is removed from the process during sedimentation or filtration. The seasonal application of powdered carbon may offset the need for intensive capital installation of granular carbon beds.

Taste and Odor Removal  
with 10 ppm Powdered Activated Carbon  
MWV Lab-Scale Test Results, Southeast U.S. Raw Water



Taste and Odor Removal  
with 15 ppm Powdered Activated Carbon,  
MWV Lab-Scale Test Results, Northeast U.S. Raw Water



COMPARISON OF TYPICAL CARBON PROPERTIES

Carbon Type	Surface Area m <sup>2</sup> /g	Pore Volume mL/g	Ash Content wt%	Iodine Number mg/g
Nuchar Wood-Based Carbon	1200 - 1800	1.2	4 - 6	900 - 1200
Coal-Based Carbon	800 - 1000	0.5	4 - 10	800 - 1100
Lignite-Based Carbon	400 - 600	0.5	30 - 35	400 - 600

- MWV Nuchar powdered activated carbon has the largest pore volume and surface area which enables greater adsorption of organics.
- MWV Nuchar has the lowest ash content, so pipe and process scaling will not occur.

Nuchar Powdered Carbons for Membranes

Nuchar wood-based powdered activated carbons are the carbons of choice for ultrafiltration membrane water treatment plants. Membranes separate small size particulates from water, but membranes do not have a strong capability to remove dissolved organics, such as MIB and Geosmin, from water.

Nuchar powdered carbons have excellent adsorption capability due to its high pore volume and high surface area. The low abrasion of Nuchar carbons causes less attrition of ultrafiltration membranes and enables longer membrane life. Nuchar's high adsorption capability reduces the loading on the membranes and Nuchar does not abrasively contact and damage the membranes.

CARBON ABRASION DATA

POWDERED CARBON	GOLD OR MILLER NUMBER* ASTM G75
MWV NUCHAR WOOD-BASED CARBON	0.09 – 0.10
OTHER ACTIVATED CARBONS	4.2 AVERAGE UP TO 23

LESS ABRASION IS INDICATED BY A LOWER GOLD'S NUMBER. NUCHAR POWDERED CARBON HAS PROVEN LOW ABRASION IN PLANT-SCALE MEMBRANE OPERATION.

*\* Results are from a third party laboratory. The relative abrasive wear of slurries is measured by subjecting a wear specimen to a reciprocating motion in the slurry and measuring the specimen mass loss over time.*



WICKLIFFE, KENTUCKY CARBON MANUFACTURING

MWV Specialty Chemicals has over 90 years of activated carbon experience and technical expertise. MWV domestically manufactures wood-based activated carbon from renewable tree resources in Covington, VA, and Wickliffe, KY. The carbon products supplied to the water treatment industry meet the following requirements:

- ANSI/AWWA B600-05
- NSF/ANSI Standard 61
- Food Chemicals Codex