



GRANULAR BONE CHAR - 8X24 (Coarse Mesh)

BONE CHAR 824-BC is a unique Natural Carbon Media produced from the treatment and carbonization of selected grades of animal bone and is used for liquid phase filtration to remove organic and inorganic species such as color bodies and many heavy metals. Bone char is different from activated carbon in that it contains both carbon surface area and hydroxyapatite lattice surface area. **Kosher/ANSI 61 Certified.**

FEATURES AND BENEFITS

- Good adsorption of various heavy metals
- Produced from aged bones for better efficiency
 - Maintains alkalinity in adsorbate

SPECIFICATIONS

US Standard Mesh Size	12 X 28
Greater than 8	5% maximum
Less than 24	5% maximum
Surface Area (BET N ²)	200 m ² /gm
Hardness Number	80 minimum
Moisture	5% maximum as packed
Bulk Density (lbs/ft ³)	40 typical
Acid Soluble Ash	3% typical

pH

8 - 10 typical

Packaged in 50-pound bags or 1100-pound super sacks.

All of the above test methods are performed using ASTM protocol for granular activated carbon.

This information has been gathered from the manufacturer and/or test data, and is assumed to be accurate and reliable.

Water Doctor only warrants that this product will meet the above-described published specifications and makes no other warranties of any kind either expressed or implied including but not limited to fitness for a particular purpose or application. Buyer assumes all liability and risk that may arise from the use of this product.

NOTICE

Due to the varied nature of treatment and operational procedures, we regret that we cannot make any reduction claims or warranty.

Bonechar - Removal Efficiency Index of Heavy Metals*

Metal	Capacity (mg/g)	Linear Velocity (m ³ /hr)	Removal Efficiency (%)
Aluminum	24	1	> 80
Arenic III	30	0.5	> 80
Arsenic V	26	0.5	> 80
Cadmium	15	0.5	> 80
Chromium III	15	0.5	> 80
Chromium IV	8	0.5	≈ 50

Copper	50	3	> 90
Iron	30	3	> 80
Lead	151	3	> 90
Manganese	50	3	> 80
Mercury	*	0.5	≈ 50#
Nickle	45	3	> 90
Silver	*	0.5	≈ 50#
Zinc	37	3	> 90

* Undetermined capacity due to the nature of adsorption, does convert to pure metal from which recovery may be possible.

Highly dependent on other species in the stream.

All figures are subject to ongoing research and updating.

*Figures courtesy of Glasgow University, UK.

Bone Char

ADSORPTION of METALS

ALUMINUM	Very effective in removing soluble aluminum. Adsorption influenced by pH and retention time. Best results at pH 7 or above.
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ARSENIC	Largely dependent upon form of arsenic (ie. AsIII or AsV). pH has considerable influence. At low pH almost no adsorption occurs. Affected by Protonation.
CADMIUM	Bone char is better than conventional precipitation and/or coagulation processes. Superior results in soft water. Retention time on par with aluminum.
CHROMIUM	Much dependent upon form present, ie. cation or anion, and valency (chrome III or chrome VI). Chrome III adsorbs well.
COPPER	Adsorption dependent upon pH and retention time.
IRON	Dependent upon form of iron. Better results with organic iron than with inorganic. Inorganic results dependent upon valency. Short retention times suffice.
LEAD	Very effective with short retention time (ie. 1 minute or less)
MANGANESE	Very effective. Pilot results good. Competition from other methods of oxidation.
MERCURY	Best with organic mercury. Inorganic mercury is dependent upon valency (mercury I and II). Although similar, the higher charged monatomic mercury II has a greater affinity for Bone Char than mercury I.
NICKEL	Adsorption best at higher pH. Requires high retention time. At 5 pH almost no adsorption.
SILVER	Quite rapidly adsorbed. Better at low concentrations in solute. High deposits of silver on bone char inhibit adsorption. Adsorption better at pH 5.
ZINC	Efficiency dictated by contact time and pH. Both pilot plant and full scale plant performance good.

ADSORPTION of NON-METALS

BROMINE	Bone Char is effective in removing free bromine. Bromine form is important too. In presence of potassium and sodium adsorption decreases.
CHLORINE CHLORAMINES	Bone Char is minimally effectively in reducing chlorine or chloramine.
COLOR	Retention time required is usually about 6 – 15 minutes, dependent upon chemical make up of color. Can be used in slow sand, rapid gravity or pressure filters.
FLUORIDE	Adsorption onto Bone Char is good, but influenced by pH – better at 6.5 or lower. Concentrations of fluoride present also influences performance. <u>Activated carbons do not effectively adsorb fluoride.</u>
PESTICIDES	Good at removing organo-chlorine pesticides (ie. Dieldrin, septachlor, etc.). not very good at atrazine, etc.