Quality Carbon Block Filters Revealed

CB Tech Quality Assurance Plan

A high performance carbon block filter is the predictable end result of combining comprehensive product planning, proven production methods, and effective quality control throughout the manufacturing process. Carbon Block Technology, Inc. (CB Tech) consistently produces the highest performing solid carbon block filters available in the market today. Such consistency is a direct result of the company's tightly controlled product manufacturing process and the quality assurance (QA) protocol followed from beginning to end.

The CB Tech manufacturing process consists of three integrated elements:

1. Creating a comprehensive Control Plan defining manufacturing parameters, key control points, and QA sampling plan.

2. Specifying, obtaining and verifying optimal raw materials to achieve product design goals.

3. Reliably producing and packaging carbon block filters with consistent performance.

The final product is a carbon block filter with superior filtration properties as evidenced by the actual effectiveness of the filter in contaminant removal compared to competitive products. This solution guide outlines the QA protocol that CB Tech follows to ensure final product quality.

Control Plan

The first step CB Tech takes in producing a carbon block filter is to prepare a Control Plan that clearly defines the final product. That is, CB Tech begins with the Buyer's product specifications for the final filter and maps out a plan that defines in meticulous detail the control steps and measurements that will be applied, from raw material selection through the manufacturing process to final inspection. Important elements of the Control Plan include:

- **Finished product specifications** – The exact final product requirements provided by the Buyer are documented, and they include, at a minimum, filter dimensions, capacity, and specific contaminant removal capabilities.

- **Test/evaluation method** – At each step in the production process, the product attributes that will be evaluated are defined as well as the types of tests that will be employed to measure results.

- **Specification limits** – The allowable tolerances are documented to ensure that the final product remains within design specifications at each step of the process.

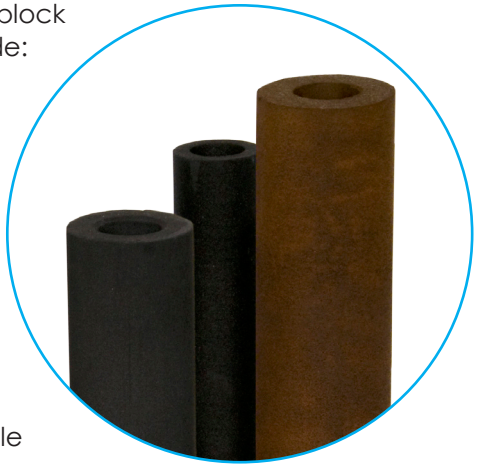
- **Control location** – The precise location within the production facility at which each test will occur is documented.

- **Sampling plan** – A statistical sample size is determined based upon production variables to ensure that a representative sample is obtained at each step in production.

- **Reaction plan** – In the event that a sample does not pass the evaluation, the next step is clearly defined to guide reaction to the results (e.g., 100% of the blocks evaluated instead of just a sample). Testing and evaluation require attention to detailed carbon block specifications. Some of the filter characteristics evaluated are:

- **Raw materials** – Activated charcoal is a natural material. As such, there is substantial variability between raw material sources, even within a given purchase lot or within an individual shipping container. Diverse sampling and accurate measurement is required to obtain a clear picture of the exact characteristics of the granular carbon and additives to predict how they will interact and perform in the production process. Raw material blending ratios are defined and captured in the Control Plan.

- **Carbon block element** – For the filter to perform as expected, the carbon block element must consistently meet specifications. Measured specifications include:



  - Trimmed carbon block weight
  - Trimmed carbon block length
  - Trimmed carbon block outside diameter (O.D.)
  - Trimmed carbon block inside diameter (I.D.)
  - Block porosity
  - Block permeability
  - Structural integrity

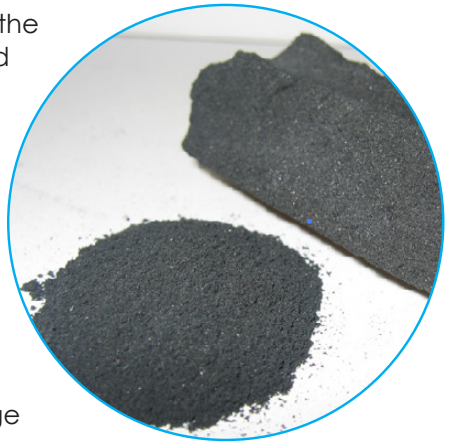
- **Finished filter** – Many Buyers want more than just an unfinished carbon block. After the carbon block has been produced, it must be assembled into a finished filter suitable for immediate use. Additional specifications applicable to a finished filter include:

  - Wrap material dimensions
  - End cap dimensions and aesthetics
  - Filter flow rates
  - Filter performance

- **Packaging** – Once the product is complete, the finished product is packed for shipment per the Buyer's instructions, and those instructions are included in the Control Plan. The final product is etched with the traceable lot code identified in the Control Plan, and final shipping instructions are notated.

The Control Plan ensures that the carbon block filter ordered by the Buyer is clearly documented and monitored, and it provides a "road map" for each filter as it progresses through the manufacturing process.

Raw Materials Verification



One of the most critical elements in producing high quality carbon block filters is the raw materials that are utilized in producing the product, most notably the activated charcoal, but also binders and additives. CB Tech has been manufacturing carbon block filters since 1975, and the company has learned a great deal about the performance characteristics of available materials. The company employs a staff research scientist to constantly evaluate sources of raw materials and to tune product formulas to capitalize on new findings.

CB Tech maintains a rich computer database of raw material information. As new information is obtained through suppliers, materials testing results, and independent research, it is captured in the database for future reference. Carbon block formulations for individual Buyers draw from this raw material database and allow CB Tech to optimize raw material selection for the specific filtration challenge identified by the Buyer.

CB Tech employs a carbon block manufacturing process utilizing a compression molding technique, as opposed to extrusion. CB Tech's compression molding method provides a more consistent distribution of ingredients throughout the carbon block product that maximizes the materials' efficiency as filtration media. In addition, special binders and additives give CB Tech products a performance edge over competitive products, as these materials are carefully selected to minimize masking of the activated carbon's inherent porosity. CB Tech's research team constantly is evaluating new raw materials that allow the company to continually perfect its proprietary production processes to produce a better product.

It is the optimal selection and verification of raw materials, and specifically measuring and quantifying the raw material performance characteristics for each manufacturing project, which ensures the quality of the CB Tech end product. Unless the raw material meets the stringent specifications documented in the Control Plan, CB Tech will delay start of production until the preferred materials are obtained in sufficient quantity to complete the production run.

Production Process

With a detailed Control Plan in place and the optimal raw materials in hand, CB Tech begins the carbon block production process. CB Tech has refined its unique manufacturing processes over many years, with a constant focus on final product quality rather than production speed. The compression molding process employed is more labor intensive than extrusion-based processes, but this difference actually lends itself to tighter quality control through more frequent opportunities for inspection.

At each step in production the Control Plan is consulted and updated. At each control point the required inspection and/or measurement is taken and documented. Carbon blocks are not permitted to move to the next step in the production process until the products meet the stringent objectives outlined in the Control Plan. At the end of production, the completed product is approved for shipment by a production executive and a certificate of compliance is prepared and provided to the Buyer before the products are shipped. The company's long list of repeat customers, with some relationships extending more than 20 years, is testament to the quality and consistency of CB Tech's manufacturing capabilities.

Performance Validation

The true measure of product quality is performance. CB Tech's research team conducts extensive product testing in the company's in-house laboratory to ensure that finished products meet or exceed all performance claims. The company is very careful not to overstate the product's performance in any way, as the integrity of CB Tech's performance claims and the company's outstanding reputation within the water treatment industry are taken very seriously and zealously protected.

But beyond the company's internal testing, the most reliable source of product performance validation is external testing by independent third-party laboratories. CB Tech relies upon NSF International (NSF) to test the company's CB Tech brand products and to validate actual product performance. NSF is the leading global, independent third-party certification and testing organization for products that affect water quality and food safety. NSF, working with the U.S. Environmental Protection Agency (EPA) and the American National Standards Institute (ANSI), literally sets the performance standard for water filtration products.

NSF has tested CB Tech's CB Tech products against NSF/ANSI Standards 42 (Aesthetics Effects) and 53 (Health Effects), and test results confirm that CB Tech products reduce the widest range of contaminants of health concern compared to any carbon block filter on the market. CB Tech currently has the only carbon block filter in the market that is NSF-certified for the removal of Arsenic V, a particularly challenging contaminant to address. In addition to performance testing, NSF product certification under Standards 42 and 53 also means:

- The filter materials will not add anything harmful to the product water
- The pressure vessel (housing) is structurally sound under high operating pressures
- The literature and labeling of the product is accurate and truthful, and
- The manufacturing process remains consistent.

CB Tech has a well established track record of leading the drinking water filtration industry, consistently validated by independent laboratory testing. The company has led the industry with a history of excellence:

- First to be certified to reduce Lead
- First to be certified to reduce Asbestos
- First to be certified to reduce Cysts
- First to be certified to reduce Chloramine
- First to be certified to reduce Toxaphene
- First to be certified to reduce Chlordane
- First to be certified to reduce PCBs
- First to be certified to reduce Arsenic V

Performance validation through independent testing demonstrates CB Tech's commitment to quality. The company takes pride in helping Buyers tackle the tough water filtration challenges that are best addressed with solid carbon block filter technology.

Quality Assurance Makes the Difference

Beyond a great product design, nothing makes superior product performance become a reality more so than an effective QA plan. CB Tech delivers carbon block filters offering unmatched performance by:

1. Developing and maintaining a detailed Control Plan to guide product manufacturing
2. Applying stringent raw material specifications from product design through final assembly
3. Leveraging CB Tech's proprietary compression molding manufacturing processes
4. Carefully measuring and controlling product quality every step of the way, and
5. Consistently focusing on the end result, a satisfied repeat Buyer that understands and values performance.

Flexible custom contract manufacturing capabilities, combined with a staunch commitment to product quality, make CB Tech a solid business partner that is committed to excellence.

About CB Tech

Founded in 1970, Carbon Block Technology, Inc. (CB Tech) is committed to being the premier supplier of high quality drinking water treatment devices and providing people around the world with the best quality of drinking water available at an affordable price. Utilizing CB Tech's unique Solid Carbon Block filter technology, the company produces NSF-certified water filtration products that are proven to reduce the widest range of contaminants of health concern when compared to any other carbon block filter available in the market. CB Tech is a custom contract manufacturer of drinking water systems and filters distributed under the labels of the many companies it supplies, as well as those marketed under its own brand, CB Tech Drinking Water Systems. Today, CB Tech is an industry leader and one of the world's largest manufacturers of compressed solid carbon block filters.

For more information, please visit www.CarbonBlockTech.com
Phone: 702.304.7960 • Email: Sales@CarbonBlockTech.com

CONTACT US

CBTECH®

CBTECH®
SHANGHAI