

JONELL activated carbon products are specifically designed to attend the toughest applications the oil and gas industry has to offer. By using only the highest quality materials and the most robust designs, JONELL guarantees a finished product second to none. At JONELL, our every day goal truly is *QUALITY FILTRATION MADE SIMPLE.*

### JVF SERIES ACTIVATED CARBON CANISTERS

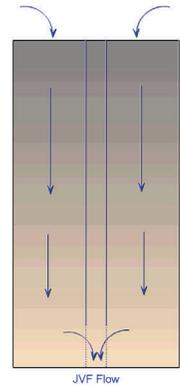
Jonell Vertical Flow Activated Carbon Canisters increase fluid contact by eliminating the potential bypass in using the relatively thin bed available in a radial flow configuration. Jonell JVF 1120 and 1122 canisters outlast the radial flow design by 30%.



#### Dimensions

Model	OD	HT	ID
JVF 1120-C	10.75	20.25	2.06
JVF 1122-C	10.75	22.25	2.06
JVF 636	6	36	
JVF 636-610	6	36	

*Solid sidewalls indicate vertical flow construction*



### JRF SERIES ACTIVATED CARBON CANISTERS

Jonell Radial Flow Activated Carbon Canisters present a greater superficial area to the process fluid, lowering velocity to better deal with high solids contamination.



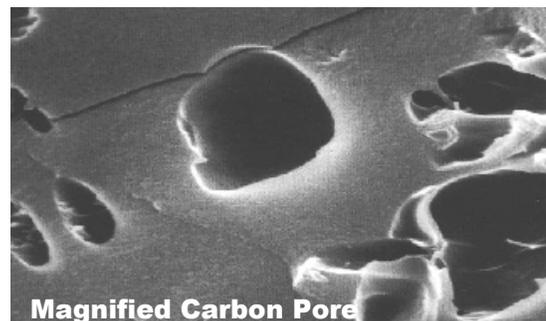
#### Dimensions

Model	OD	HT	ID
JRF 1120-C	10.75	20.25	2.06
JRF 1122-C	10.75	22.25	2.06
JRF 720	6.63	20	1.5
JRF 722	6.63	22.5	1.5

*Perforated sidewalls indicate radial flow construction*

### BULK ACTIVATED CARBON

Jonell Activated Carbon is specially selected to maximize performance in gas processing applications where the target contaminant is long chain hydrocarbon molecules. Used in all Jonell Carbon Canisters, it is also available in bulk form, in 44 lb bags, and 880 lb super sacks.



STANDARD CARBON PRODUCTS

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## COMPARISON TO LEADING LIGNITE BASED ACTIVATED CARBON

PARAMETER	JONELL COAL BASED ACTIVATED CARBON	LEADING COMPETITOR 8X30 LIGNITE BASED ACTIVATED CARBON
Greater than 8 mesh, %	5 max.	5 max.
Less than 30 mesh, %	5 max.	5 max.
Apparent Density, g/cc	0.35-0.37 typ.	0.38 typ.
Apparent Density, lb/ft <sup>3</sup>	21-23 typ.	24 typ.
Backwashed and Drained Density, lb/ft <sup>3</sup>	20 typ.	21.5 typ.
Hardness Number	90 typ.	60 typ.
pH Water Extract	8-8.5 typ.	4.5 typ.
Moisture as Packed, %	5 max.	12 max.
Iodine Number, mg/g	1000 min.	500 min.
Molasses Number	400 typ.	400 typ.
Total Ash Content, %	12	20

*\* Note: Above properties in consideration of particles of same size*

### HARDNESS

The hardness number is a standard test recognized by ASTM to determine the hardness of a given carbon. The leading lignite based carbon manufacturer does not use a specification per the ASTM standard test method and instead use a non-standard abrasion resistance test. Should an ASTM hardness number be tested on the leading lignite based activated carbon, a value of 60 should be expected. Therefore, the JONELL activated carbon hardness number of 90 is significantly harder translating to less particle attrition and carbon fine generation during transportation, replacement, and use. Always remember to use an accepted rinsing procedure reducing procedure for the best service possible from your JONELL activated carbon product. In the right quantity, coal fines can contribute to foaming issues. Don't forget air can also be a potent contributor!

### PORE STRUCTURE

While most carbon is used in water treatment, the primary function of JONELL carbon in oil and gas applications is to remove long chain hydrocarbons.

The molasses number is a good indicator for predicting how well an activated carbon will adsorb higher molecular weight organics. The leading lignite based carbon manufacturer uses a non-standard molasses test used by no other company, while the Jonell molasses number is based on a more standard test. A molasses decoloring efficiency (DE) of 85 converts to a molasses number of approximately 400. As both the Jonell and leading lignite carbon manufacturer have a molasses number of approximately 400, one would expect similar performance in adsorbing higher molecular weight organics.

The iodine number is an excellent parameter to determine the overall surface area of activated carbons, but it also is a great indicator of how well a carbon will adsorb organics. JONELL activated carbon has a minimum iodine number of 1000, while the leading lignite based 8X30 mesh carbon is approximately 500. Our activated carbon has an iodine number double to that of the leading lignite based 8X30 allowing for superior adsorption capability.

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## WHAT ELSE WILL I FIND IN MY ACTIVATED CARBON?

The leading lignite based activated carbon manufacturer acid wash their carbon with hydrochloric acid and rinses it. As a result, an acidic residual remains on the carbon leaving a typical pH value of 4.5. Because JONELL activated carbon is not acid washed, it will not decrease the pH of an Amine stream.

Total ash content measures the non-carbon portion of an activated carbon. As the ash content of the leading lignite based carbon is almost twice that of the JONELL carbon, there is a much higher potential that compounds within this ash may dissolve within the fluid being treated.

In addition to the above non-carbon contaminants, JONELL activated carbon contains 7% less water than the leading lignite based activated carbon. Less water translates to more carbon in every shipment.

## OPERATING CONDITIONS

Factors affecting carbon performance include temperature and contact time in addition to the type of carbon and the targeted contaminant. The maximum recommended operating temperature for carbon is generally 120°F as exceeding 150°F can greatly reduce capacity in hydrocarbon capture levels.

Similarly, high rates of flow or reduced contact time diminish the ability of the carbon to capture and retain contaminants. Unnecessary abrasion can also be an additional side effect.

A carbon unit should always be protected upstream and down by adequate particulate filtration to prevent fouling of the bed and to prevent any carbon fines from entering the system. In a properly designed system, the carbon unit should not develop any significant differential pressure over time.

*To answer more questions about your activated carbon application, always contact an approved JONELL representative, or JONELL direct.*

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