

ZYBF-1, ZYBF-2, ZYBF-5

High Temperature Yttria Stabilized Zirconia Fibers

Zircar Bulk Fibers ZYBF are available in three different forms, all having useful properties up to 2200°C. These polycrystalline fibers can be vacuum formed into rigid shapes, placed into cavities as loose fill insulation, or added to ceramic bodies and coatings for reinforcement. They are differentiated by fiber length, surface area, crystalline size and porosity. However, they all share the same fiber diameter and calcined chemical composition.

All three ZYBF types are made using the original ZIRCAR Process at our plant in Florida, NY, USA. **Zircar** ZYBF is 6 to 10 microns in diameter, is nearly 100% zirconia phase stabilized with yttria and does not undergo the disruptive phase transition of pure zirconia. ZYBF is general use insulation for severe environments and extremely high temperatures. It is non-reactive to alkali vapors, salts or strong hot solutions and is not wet by most molten metals. ZYBF has low absorption surface area and vapor pressure making it useful in high vacuum.



The picture above shows 5 grams of each type of ZYBF. Due to its lower processing temperature, ZYBF-1 is grey, where the other fibers are processed at higher temperatures resulting in a white color.

Properties & Characteristics

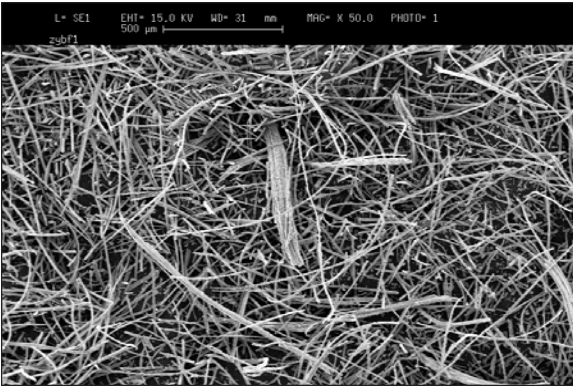
Properties (Nominal)	ZYBF-1	ZYBF-2	ZYBF-5
Bulk Density, lb/ft ³ (g/cm ³)	7.5 (0.12)	21 (0.34)	16 (0.25)
H ₂ O Wt%	2-3	0.05-0.2	0.05-0.2
Cl Wt%	1.5-2	<0.1	<0.1
Loss on Ignition, % 1/2 hour at 950 °C	4-6	0.1-0.4	0.1-0.4
BET Specific Area, m ² /g	75	4	0.4
Pierce Adsorption Mesopore			
Median Pore Diam ¹ Å	75	1300	2600
Standard Deviation ¹ Å	29	94	110
Median Pore Diam ² Å	50	27	23
Standard Deviation ² Å	19	15	12
Pierce Desorption Mesopore			
Median Pore Diam ¹ Å	60	1100	2700
Standard Deviation ¹ Å	23	85	160
Median Pore Diam ² Å	49	28	34
Standard Deviation ² Å	17	15	18
Chemical Composition, Wt% (Nominal)			
ZrO ₂ ⁽³⁾	89+		
Y ₂ O ₃	10		

⁽¹⁾ Based on Pore Volume

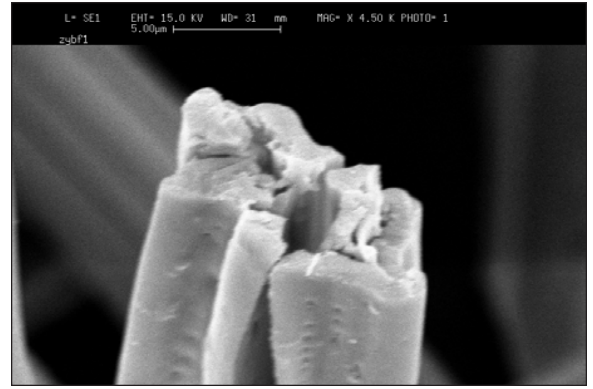
⁽²⁾ Based on Surface Area

⁽³⁾ 1-2% weight hafnia (HfO₂) occurs naturally with zirconia (ZrO₂) and does not affect performance.

Product Micrographs of ZYBF-1



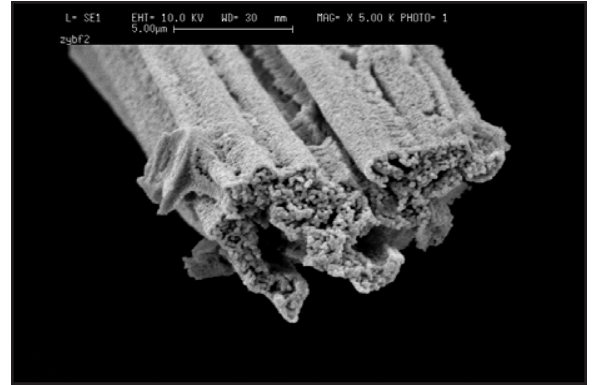
ZYBF-1 is the most reactive and has the highest shrinkage of our fibers. The fibers are generally long and loose as seen in the micrograph on the left. The micrograph on the right shows a fractured fiber with nano-sized crystallized grains that are not visible at that magnification.



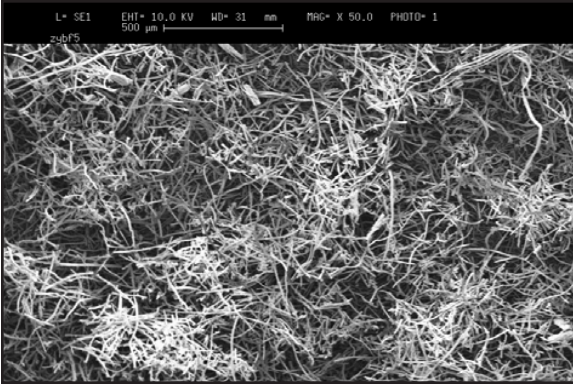
Product Micrographs of ZYBF-2



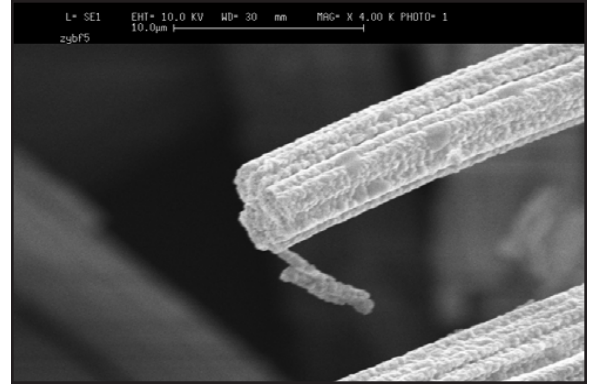
ZYBF-2 fibers are shorter than ZYBF-1 as shown in the micrograph on the left. It also shows significant fiber to fiber binding. The internal porosity and the sub-micron grains can clearly be seen at 5000x magnification in the micrograph on the right.



Product Micrographs of ZYBF-5



ZYBF-5 fibers are generally loose in nature with minimal fiber to fiber binding shown in the micrograph on the left. The micrograph on the right shows characteristically solid fibers with the grain size approaching a micron.



Standard Product Sizes & Ordering

To Place an Order

Call: 845-651-3040

email: sales@zircarzirconia.com

store: www.zircarzirconia.com/store

Type ZYBF

Fiber Type	1 Lb	1Kg
ZYBF-1	CF003	CF004
ZYBF-2	CF001	CF002
ZYBF-5	CF009	CF010



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