



VIBRANTZ
TECHNOLOGIES™

High-Performance **Manganese Water** Filtration Media

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Vibrantz is the leading global supplier of manganese dioxide filtration media for the effective treatment of potable water and wastewater.

Vibrantz serves customers worldwide in the municipal, residential, and industrial water treatment segments. Over the years, Vibrantz has developed several new manganese-based products all marketed under the Pyrolox brand.



Vibrantz is the go-to for all **manganese dioxide** filter media needs

- **World leader in manganese chemicals**

- ✓ Broadest manganese filter media product range
- ✓ we have combined our proprietary aggregates coating process with our world class synthetic manganese dioxide production
- ✓ ISO 9001 certification at all Vibrantz manufacturing locations

- **Technical expertise**

- ✓ Manganese water treatment lab in the UK
- ✓ Collaboration with Cranfield University for testing
- ✓ Product testing & analytical services for manganese media


- **Responsiveness & flexibility of supply**

- ✓ Not traded – products are manufactured by Vibrantz
- ✓ Quality, consistency, and availability direct from the manufacturer
- ✓ Strong production base & backup production locations
- ✓ NSF Certified
- ✓ For the European market, we control the specification to BS EN 13752:2012

- **Security of raw material supply**

- ✓ Only select high quality raw materials from mines with long term reserves
- ✓ Long term relationships with first and second source suppliers

- **Global distribution**

- ✓ Regional sales force
 - ✓ Ships internationally
- 



Pyrolox[®] Range

Our Pyrolox range of products is the "one-stop solution" for all your manganese dioxide filtration media requirements. The Pyrolox name is well established as a trusted, high-performance filtration solution as it has been used in water treatment for over 75 years and is continually supported by specialized innovation personnel. Vibrantz has collaborated with Cranfield University (UK) for evidence-based performance data on its range of Pyrolox products. For more detailed information on the effectiveness of our products, please contact your local Vibrantz representative who will be happy to share the results of our work with Cranfield.





Pyrolox Ore

MATERIAL



Manganese Ore

APPLICATION



Fe, Mn & As Removal



Pyrolox Pro

MATERIAL



**Washed Manganese
Dioxide**

APPLICATION



Fe, Mn & As Removal



Pyrolox Advantage

MATERIAL



**Manganese Coated
Silica Sand**

APPLICATION



Fe, Mn & As Removal



Pyrolox Ultra

MATERIAL



**High Purity Synthetic
Manganese Dioxide**

APPLICATION



Fe, Mn & As Removal

Product Overview

Vibrantz provides a portfolio of manganese filter media products

	Pyrolox Ore	Pyrolox Pro	Pyrolox Advantage	Pyrolox Ultra
Description	Quality MnO ₂ Ore	Washed MnO ₂	True MnO ₂ Coated Silica Sand	Highest Purity Synthetic MnO ₂
Grade (ASTM)	8x20, 20x40	20x40	20x40	20x60
Grade (ISO)	18x44	18x44	18x36	18x16
MnO₂%	80%	78%	12.5%	>96%
Most important feature	Highest Fe and Mn removal capacity on the market for MnO ₂ media at a rate of 833mg /kg and 225mg/kg respectively	Clean version of Pyrolox Ore For the European market, we control the specification to BS EN 13752:2012	Lightweight media – 25% weight reduction Highest MnO ₂ % of any coated media Improved performance in Mn and Fe removal due to large surface area and high-purity MnO ₂	Highest oxidation capacity Highest MnO ₂ % of any manganese filter media
Most important customer benefit	Quality and consistency from manufacturer (not traded) 75 years in use Can be used as a direct replacement for existing MnO ₂ media installations	Faster and lower cost commissioning stage All the same benefits as Pyrolox Ore	Lower backwash rates to achieve the same bed expansion as Pyrolox ore Engineered to be naturally catalytic Cleanest start-up (virtually no start up fines) of any lightweight media	Very high performance Used in environments where you cannot add any oxidation chemicals May also be suitable for situations with lower bed contact time

Pyrolox Ore



Natural performance

Pyrolox is a granular water filtration media used for the removal of iron, manganese, arsenic and hydrogen sulphide. A naturally mined ore, Pyrolox has been used in water treatment for over 75 years.

Through a natural chemical reaction, Pyrolox filter media works by oxidising iron, manganese, and hydrogen sulphide in problem water. The trapped particulate is then removed from the media bed during the backwash cycle. An oxidant feed is recommended to maintain and further augment the performance and removal capacity of the media. Chlorine injection, such as sodium hypochlorite, or calcium hypochlorite, immediately upstream of the filter feed is a simple way to meet this recommendation. Other acceptable oxidants include air injection, potassium permanganate and sodium permanganate.

Pyrolox is ideally suited for private, industrial and municipal water treatment systems. It is important that Pyrolox media is backwashed properly to ensure adequate bed expansion and continued service life. Pyrolox can be used as a direct replacement for existing MnO2 media installations.



<div></div> <div>Advantages</div>	<div></div> <div>Physical Properties</div> <div></div> <div>US</div> <div>Rest of World</div>	<div></div> <div>Conditions for Operations</div>
<div>Durable media with long service life (10+ years)</div> <div>833mg Fe removal / kg</div> <div>225mg Mn removal / kg</div> <div>Directly certified by NSF (standard 61)</div> <div>No pre-treatment required</div> <div>Short lead times</div>	<div>Bulk Density</div> <div>120 lbs/ft³</div> <div>1900 kg/m³</div> <div>Available grades</div> <div>8 x 20 & 20 x 40</div> <div>18 x 44</div> <div>Mesh size</div> <div>Particle size</div> <div>2.36 x 0.85mm & 0.85 x 0.425mm</div> <div>0.85 x 0.355mm</div> <div>mm</div> <div>Accreditation</div> <div>NSF 61</div> <div>BS EN 13752:2012</div> <div>Packaging</div> <div>60lb bags, 2000lb bags & 2625lb bags</div> <div>25kg bags & 1000kg bags</div>	<div>pH Range</div> <div>6.5 - 9.0</div> <div>Typical Oxidant</div> <div>Chlorine Feed</div> <div>Service Flow Rate</div> <div>15-30 m/hr</div> <div>Backwash Rate</div> <div>49-62 m/hr</div>

Pyrolox Pro

Ready-to-use version of Pyrolox

Introducing Pyrolox Pro, a clean, ready-to-use manganese dioxide filter media. Pyrolox Pro is specially washed to reduce the volume of fines and turbidity found in unprocessed manganese dioxide whilst maintaining the same superior quality and removal capabilities as standard Pyrolox.

Pyrolox Pro is used as a catalyst to oxidise, precipitate and remove iron, manganese, arsenic and hydrogen sulphide pollutants from contaminated water. The trapped particulate is then removed from the media bed during the backwash cycle. An oxidant feed is recommended to maintain and further augment the performance and removal capacity of the media.

The key benefits of Pyrolox Pro are reduced operational time and lower costs at the filter commissioning stage. Pyrolox Pro is ready to use and ready-to-install in potable and wastewater filtration systems for private, industrial, or municipal applications.



 Advantages	 Physical Properties	 Conditions for Operations																								
Durable media with long service life Reduced fines and turbidity Reduced operational costs Certified for water application	<table><tr><th></th><th>US</th><th>Rest of World</th></tr><tr><td>Bulk Density</td><td>120 lbs/ft³</td><td>1900 kg/m³</td></tr><tr><td>Available grades</td><td></td><td></td></tr><tr><td>Mesh size</td><td>8 x 20 & 20 x 40</td><td>18 x 44</td></tr><tr><td>Particle size</td><td></td><td></td></tr><tr><td>mm</td><td>2.36 x 0.85mm & 0.85 x 0.425mm</td><td>0.85 x 0.355mm</td></tr><tr><td>Accreditation</td><td>NSF 61</td><td>BS EN 13752:2012</td></tr><tr><td>Packaging</td><td>60lb bags, 2000lb bags & 2625lb bags</td><td>25kg bags & 1000kg bags</td></tr></table>		US	Rest of World	Bulk Density	120 lbs/ft ³	1900 kg/m ³	Available grades			Mesh size	8 x 20 & 20 x 40	18 x 44	Particle size			mm	2.36 x 0.85mm & 0.85 x 0.425mm	0.85 x 0.355mm	Accreditation	NSF 61	BS EN 13752:2012	Packaging	60lb bags, 2000lb bags & 2625lb bags	25kg bags & 1000kg bags	pH Range 6.5 - 9.0 Typical Oxidant Chlorine Feed Service Flow Rate 15-30 m/hr Backwash Rate 49-62 m/hr
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Pyrolox Advantage

Cleanest, lightweight solution

Pyrolox Advantage is the greatest value of all the manganese dioxide filter media. Pyrolox Advantage is an engineered media with a lower density core and a textured high-MnO₂ surface. It is a clean, lightweight solution for the removal of iron, manganese, arsenic, and/or hydrogen sulphide in water. The lightweight media is easier to transport, easier to backwash, allows for a smaller filter footprint, and has higher oxidation than competition media allowing for higher service flow rates.

Pyrolox Advantage is the only lightweight, coated media with no pre-treatment required. As it is engineered to be naturally catalytic, it does not depend on activation to perform nor does it require potassium permanganate. The robust manganese dioxide coating acts as a catalyst to oxidise, precipitate, and remove contaminants. The trapped particulate is then removed from the media bed during the backwash cycle. An oxidant feed is recommended to maintain and further augment the performance and removal capacity of the media.

The key benefits of Pyrolox Advantage are its high MnO₂ lightweight density, reduced backwash rates, the eradication of fines, and no requirement for potassium permanganate. Pyrolox Advantage can be used in private, industrial and municipal water treatment systems. Pyrolox Advantage is manufactured by Vibrantz and is directly certified by NSF.



 Advantages	 Physical Properties	 Conditions for Operations	
Lower backwash rates			
Cleanest start-up			
Highest MnO2% of any lightweight media			
Engineered to be naturally catalytic			
Directly certified by NSF			
(standard 61)			

Pyrolox Ultra

Maximum oxidation capacity

Pyrolox Ultra is our high-performance synthetic manganese dioxide, specially developed to deliver maximum oxidation capacity. High-purity synthetic manganese delivers higher levels of removal performance in comparison to other manganese dioxide filter media.

Pyrolox Ultra efficiently oxidises iron and manganese in problem water through precipitation. The trapped particulate is then removed from the media bed during the backwash cycle. An oxidant feed is recommended to maintain and further augment the performance and removal capacity of the media.

Pre-washed and ultra clean, Pyrolox Ultra needs minimal pre-washing at filter commissioning. High oxidising characteristics make Pyrolox Ultra more effective than natural manganese ore for the treatment of water with higher levels of iron and manganese contamination.



Advantages

- Highest oxidation capacity
- Highest MnO₂% of any manganese filter media
- Durable media with long service life
- Suitable for situations with lower bed contact time
- Used in environments where you cannot add any oxidation chemicals
- Certified for water application



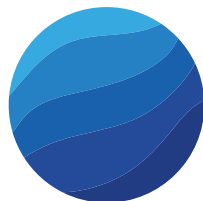
Physical Properties

	US	Rest of World
Bulk Density	127 lbs/ft ³	2000 kg/m ³
Available grades		
Mesh size	20 x 60	18 x 60
Particle size		
mm	0.85 x 0.25mm	0.85 x 0.25mm
Accreditation	N/A	BS EN 13752:2012
Packaging	60lb bags	27kg bags



Conditions for Operations

- pH Range**
6.5 - 9.0
- Typical Oxidant**
Chlorine Feed
- Flow Rate**
Contact your local representative
- Backwash Rate**
Contact your local representative



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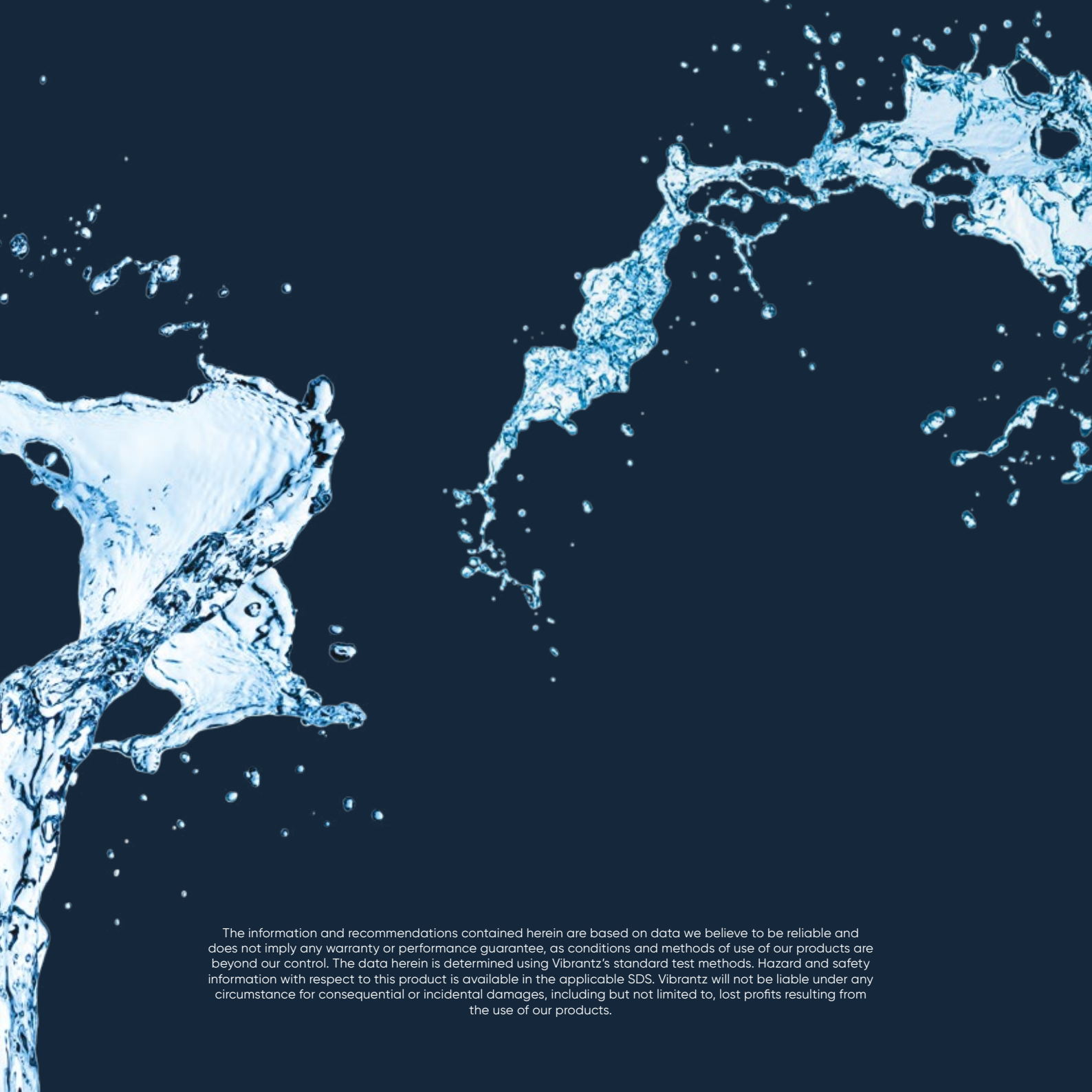
Headquartered in Houston, Texas with manufacturing facilities and sales offices on six continents, Vibrantz is the world leader in manganese chemicals, specialty glass, and other engineered additives for niche applications.

We specialise in developing, manufacturing and marketing performance-critical additives for over 20 different sectors including construction, electronics, consumer products, agriculture, water treatment, automotive, oil and gas, heavy equipment, industrial and similar end markets.

Our philosophy is to provide the best quality products for our customers by working across internal departments to source, evaluate, and test the quality raw materials for use in our engineered solutions. We take pride in our

long-standing relationships with key suppliers, and continually evaluate and improve our engineered products for optimized performance.

The Innovation group is the creative design center of our company. Staffed with specialised technical personnel worldwide, the group supports all of Vibrantz's new product and market developments and works closely with customers on everything from product selection to process efficiency. Utilizing state-of-the-art industry technology, we collaborate with both customers and our production facilities to develop value-added products.



The information and recommendations contained herein are based on data we believe to be reliable and does not imply any warranty or performance guarantee, as conditions and methods of use of our products are beyond our control. The data herein is determined using Vibrantz's standard test methods. Hazard and safety information with respect to this product is available in the applicable SDS. Vibrantz will not be liable under any circumstance for consequential or incidental damages, including but not limited to, lost profits resulting from the use of our products.



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