



# Turbidex™

## Natural Zeolite Mineral



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- Rock formation – volcanic origin
- Mineral sponge – similar to a microporous ceramic, 3 to 30 micron tapered pore spaces and 3.5 angstrom molecular sieve
- Large internal and external surface

**Magnification 1200X**

**Zeolite has a large surface area and rough texture to trap or adsorb small particles.**

**Zeolite**

**Silica sand has a relatively smooth surface and no internal porosity. Particles are trapped by straining.**

**Sand**

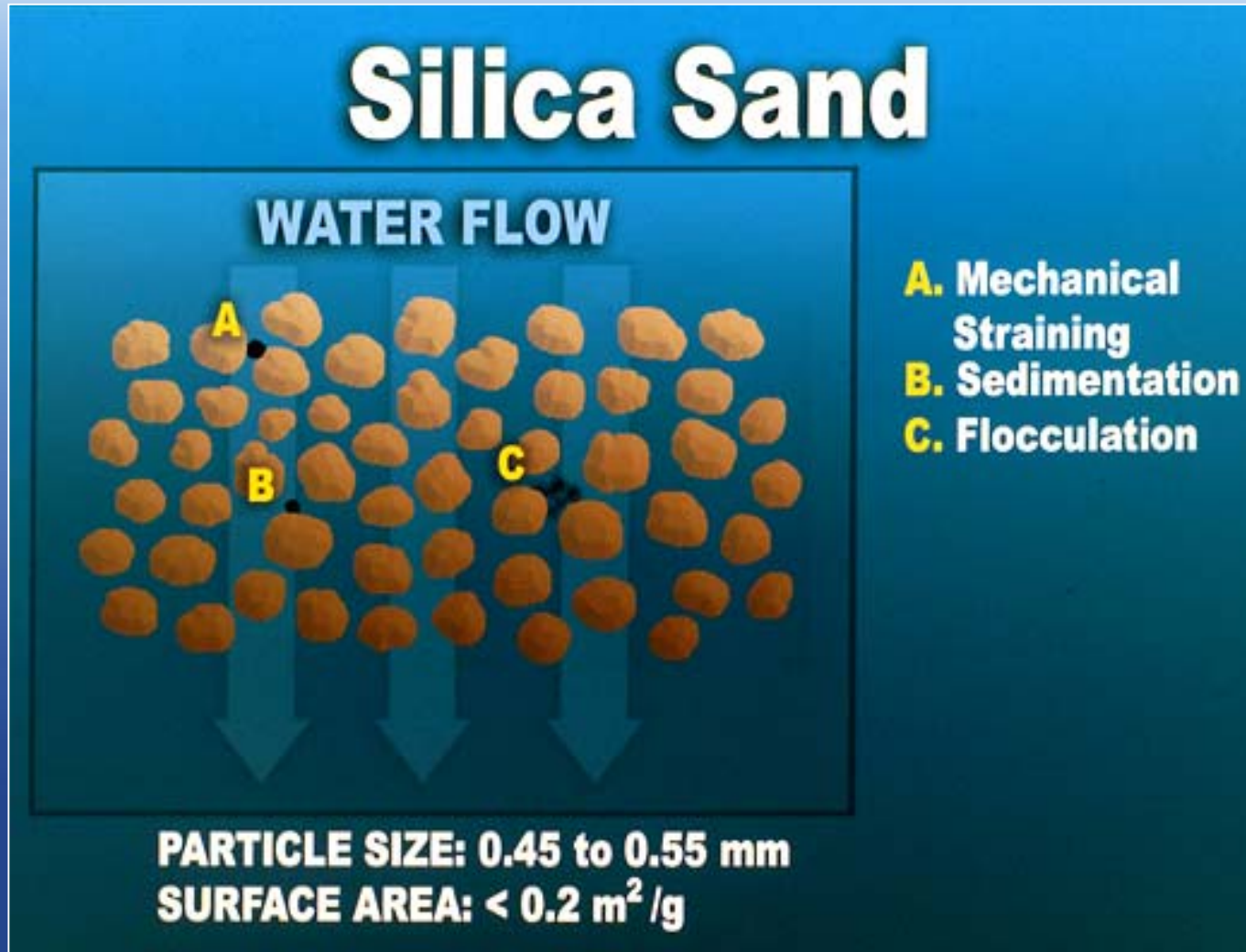


# NATURAL ZEOLITE USES

- **Water Filtration**
- **Floc Enhancement**
- **Heavy Metal Removal**
- **Oily Waste Absorbent**
- **Solidification / Stabilization**



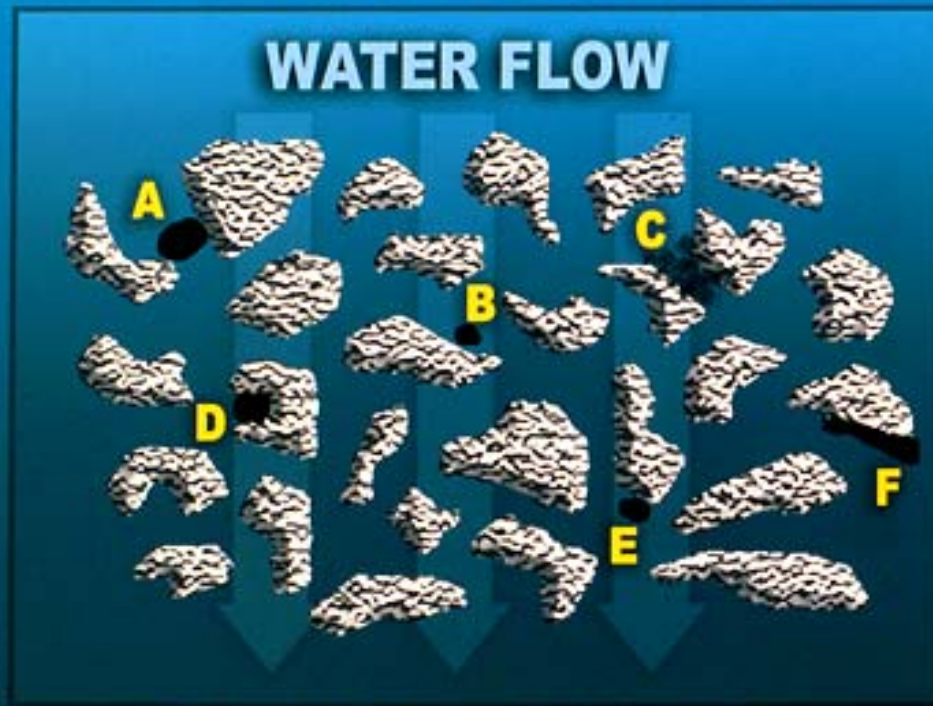
# Why Zeolite Filtration?





# Why Zeolite Filtration?

## Zeolite Media

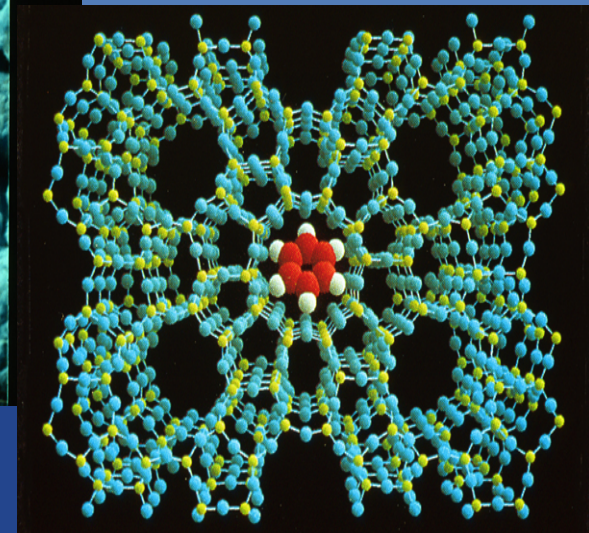
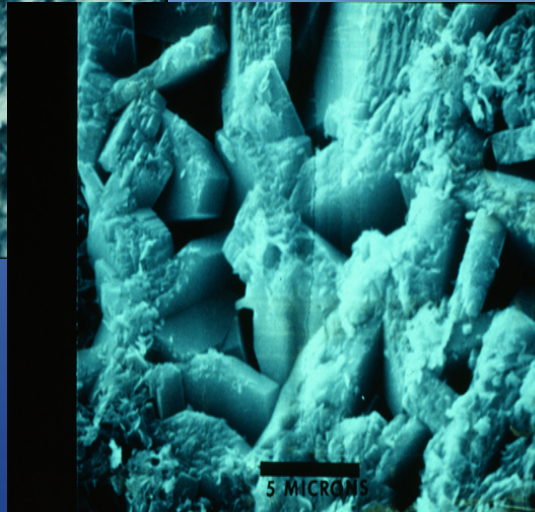
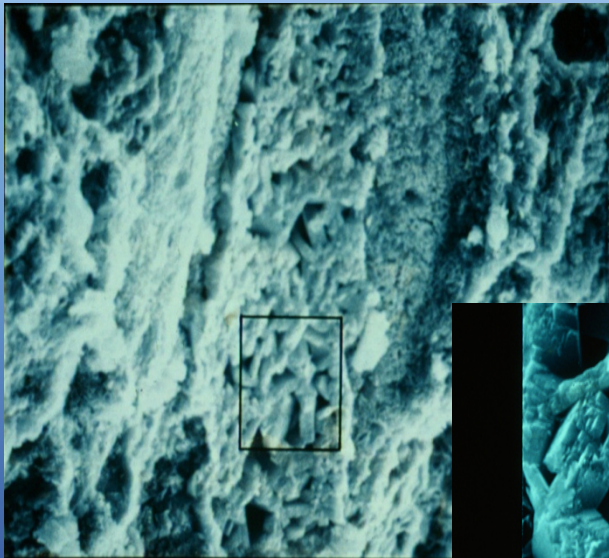


- A. Mechanical Straining**
- B. Sedimentation**
- C. Flocculation**
- D. Physical Adsorption**
- E. Electrostatic Adsorption**
- F. Van der Waals Bonds & Ion-Exchange**

**PARTICLE SIZE: 0.5 to 1.5 mm**  
**SURFACE AREA:  $> 20 \text{ m}^2/\text{g}$**

# Magnified Zeolite Particles

- 3 by 5 micron crystals
- +30% pore space
- Half the weight of sand
- Cation Exchange Capacity





# Turbidex Properties

- **Surface Area = 20 to +40 m<sup>2</sup>/g**
- **Cation Exchange Capacity = 1 to 1.6 meq./g**
- **Crushing Strength = 2,500 lbs./in**
- **Bulk Density = 50 lbs./ cu ft.**
- **Aspect Ratio = 0.65**





# Turbidex

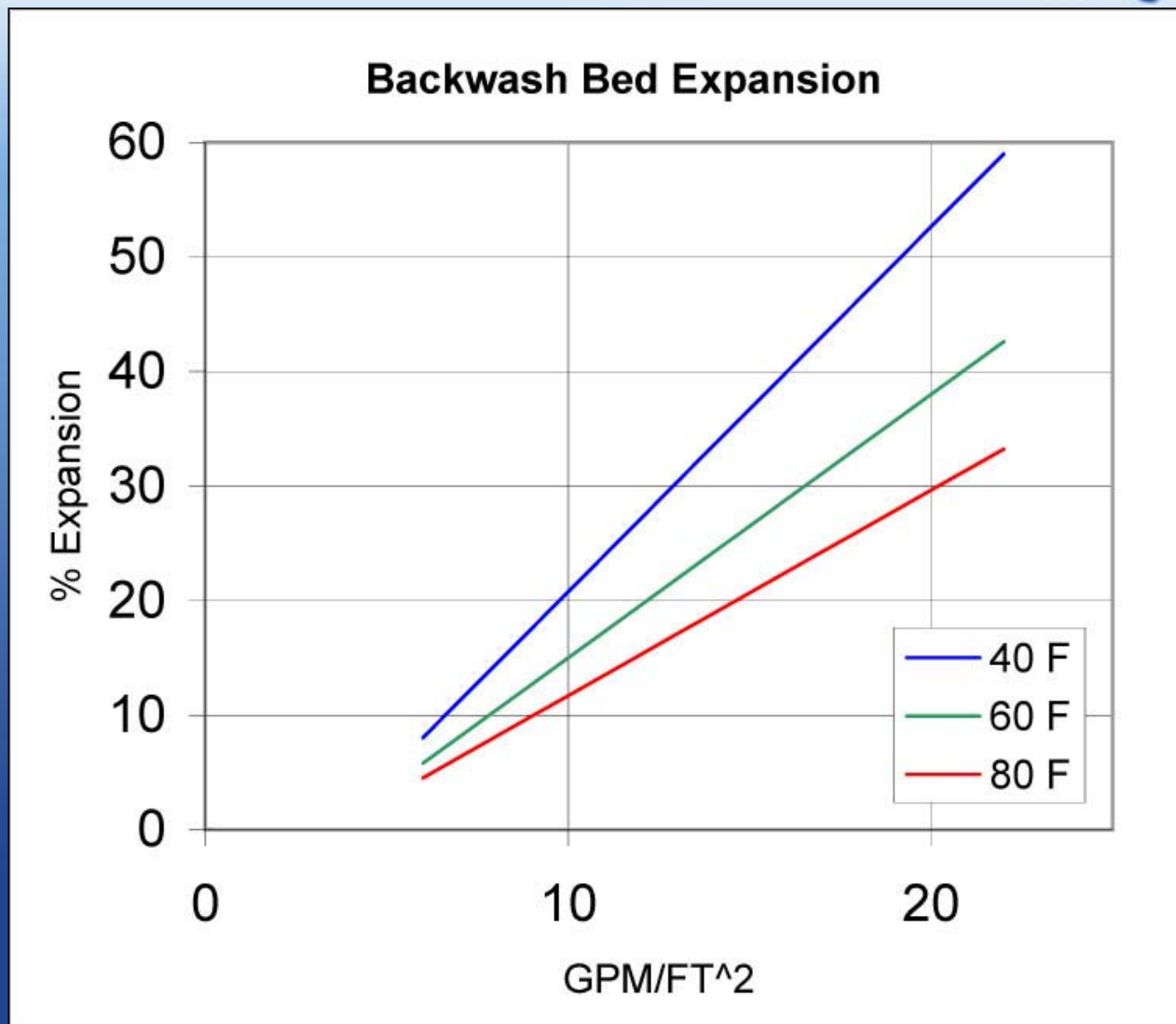
## The Engineered Filter Media

- Equal Volume Replacement for Silica Sand
- One-half the Weight of Sand
- Durable Media with Low Attrition
- Reduces Head Pressure
- Bed Cleans Rapidly in Backwash

# Turbidex

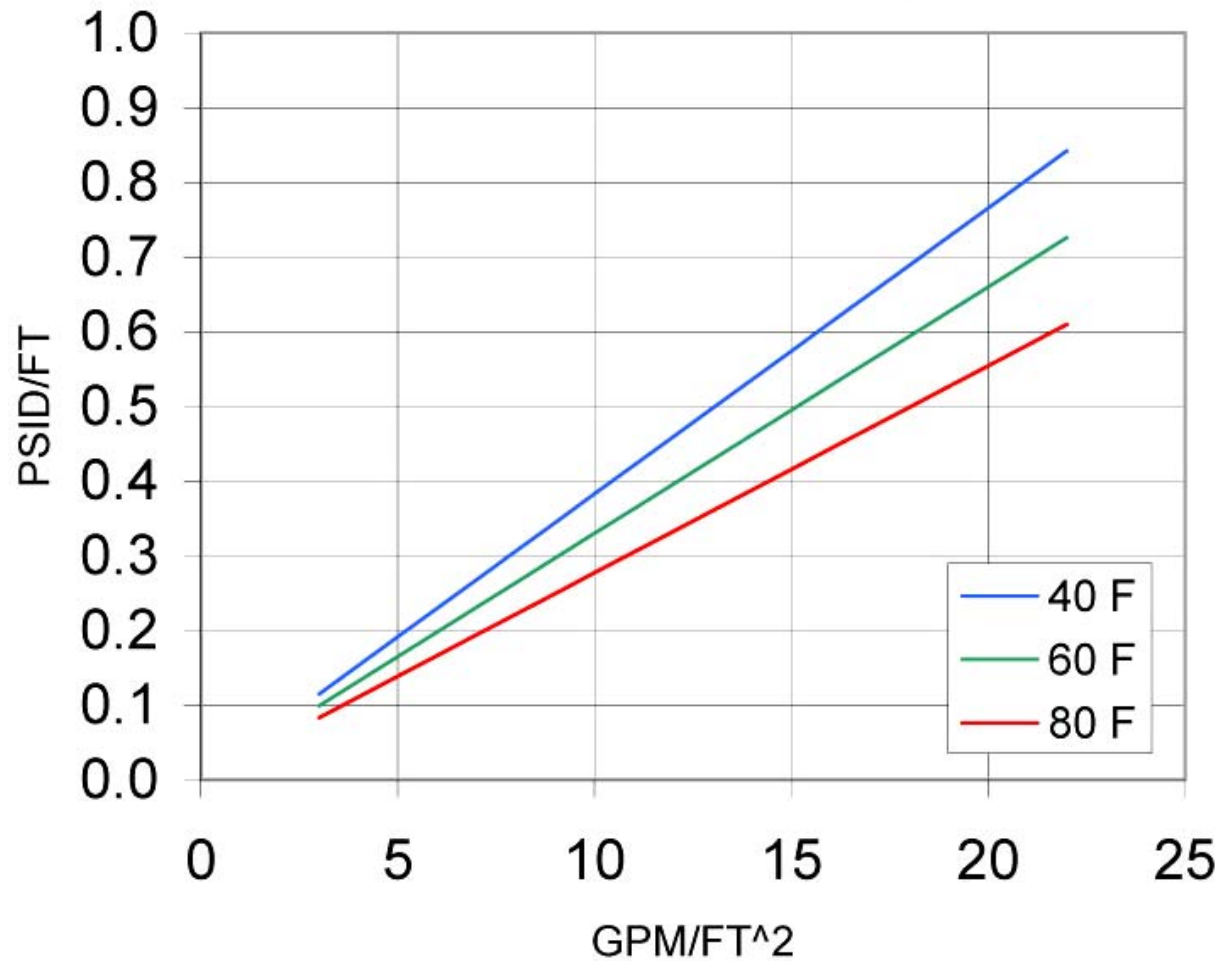
## Backwash Properties

Media	%expansion @20gpm
Silica Sand	25 – 35 %
<b>Turbidex</b>	<b>30 – 50 %</b>
Anthracite	30 – 35%





### Service Flow Pressure Drop

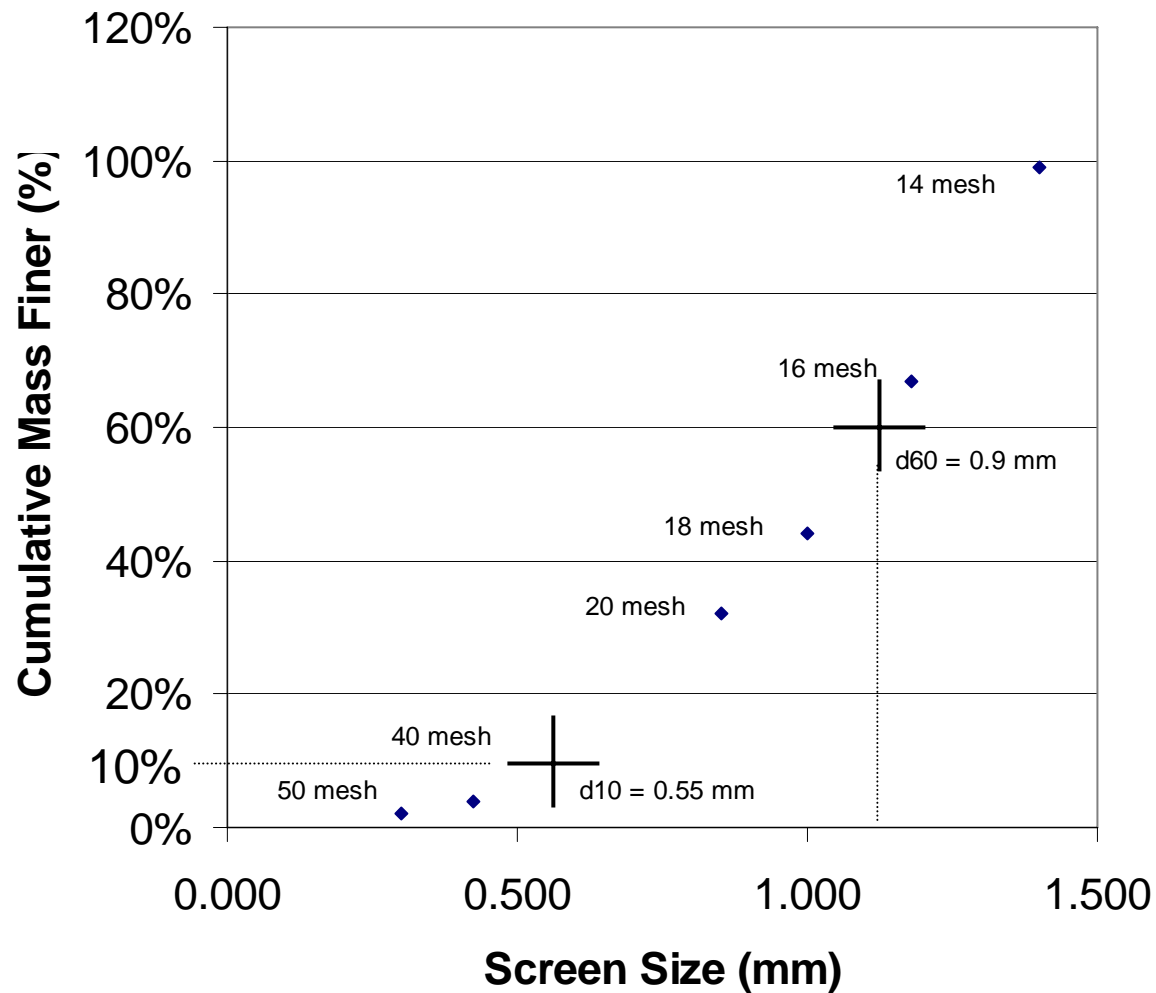


# Turbidex

## Engineered Properties

Media	d10	d60	UC	shape
Silica sand	0.45	0.65	1.5	0.85
Turbidex	0.55	0.90	1.65	0.65

## Turbidex Filter Media 14 x 30 mesh





# Flow Rates/Efficiency/Loading

	Flow Rate gpm/ft <sup>2</sup> Pressure Filters	Flow Rate gpm/ft <sup>2</sup> Gravity Filters	Filtration Efficiency  *nominal	Loading Factor
Sand	8-12	2-3	25-30 Micron	X
Multi-Media	12-15		12-15 Micron	1.5X
Turbidex™	15-20	4-5	5 Micron	2.8X



# Turbidex Advantages

- 1. Superior Water Clarity
  - Removes silt and colloids that pass through sand. Turbidity <0.1 NTU

# Turbidex Advantages

- 1. Superior Water Clarity
- 2. Reduced Backwash Cycles
  - More pore spaces, better dirt holding capacity, slower pressure buildup. Longer filter runs.
  - Can save up to 50% of backwash water due to rapid clean-out of media.



# TURBIDEX

## Natural Zeolite



Clinoptilolite Mine