

INTRODUCTION TO FILMQUEST ENGINEERED CLEAR BARRIER FILMS



FILMQUEST INDUSTRY LEADERSHIP

- *Filmquest is a Well-Known and Recognized Authority in the Global Polyester Film Market*
 - *Unparalleled Industry Knowledge*
 - *Exceptional Product and Technical Knowledge*
 - *Extraordinary Process Capability and Control*
 - *The Experience and Discipline to Plan and Execute Product Development Effectively*



Polyester Film Sourcing: Tips to Improve the Bottom Line

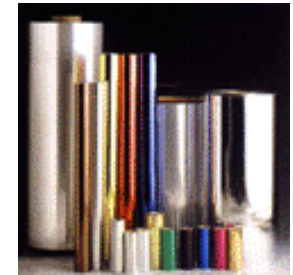
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John Felinski is president of Filmquest, St. Charles, IL. He is a recognized authority in the polyester film industry and has been in the forefront of the converting market for more than 27 years, supplying polyester film for flexible packaging; electrical, graphic, and industrial applications; and other high-performance film technologies. You can reach him at 630/584-0101; filmquest@aol.com.



THE PATH WE FOLLOWED

- *Define Development Criteria*
 - *Identify Specific Market Applications*
 - *Define Specific Performance Requirements*
 - *Evaluate Competitive Products*
 - *Develop Business Model*
- *Product Development*
 - *Review Existing Technology*
 - *Define and Secure Required Resources*
 - *Develop Chemistry*
- *Testing and Process Development*
 - *Define Process Parameters and Objectives*
 - *Employ Tools Such As Design Of Experiment*
 - *Test and Optimize Process and Chemistry*
 - *Extensive Independent Lab and Field Testing*



*High achievement
always takes
place in the
framework of
high expectation.*

**Charles
Kettering**



ABOUT VERMICULITE NANO PLATELETS

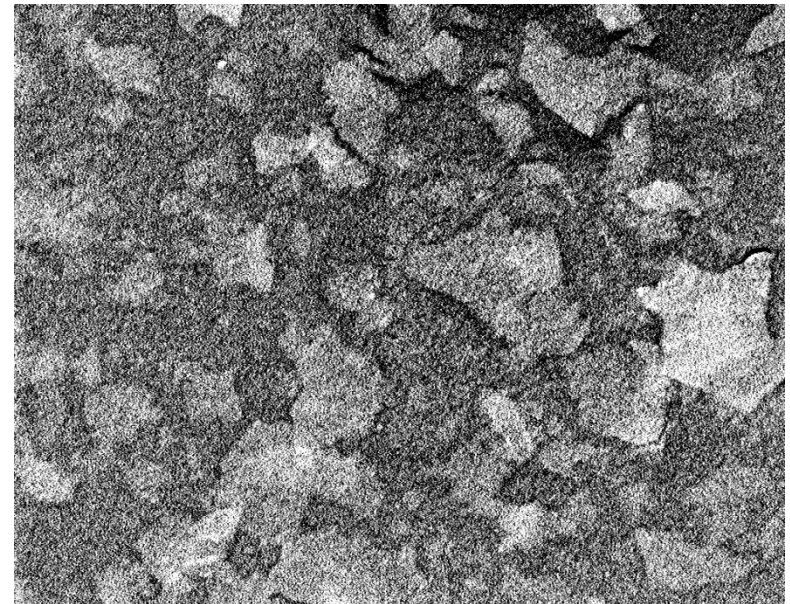
- *Member of the Phyllosilicate Group of Minerals*
- *Resembles Mica in Appearance*
- *Found in Many Parts of the World*
 - *United States*
 - *South Africa*
 - *China*
 - *Brazil*
 - *Zimbabwe*
- *Mined From Deposits Formed 1-1/2-3 Billion Years Ago*





- *Nano Means Small or Microscopic In Size*
 - *We Use a Proprietary Purification Process To Make Our Vermiculite Nano Platelets*
 - *Very Thin – 1 to 3 NanoMeters Thick*
 - *Broad and Wide (Compared to Thickness) at 10 to 30 Microns*
 - *We Achieve Higher Clarity In The Film Because The Platelets Appear Invisible To The Eye*

DEFINITION OF THE TERM “NANO”

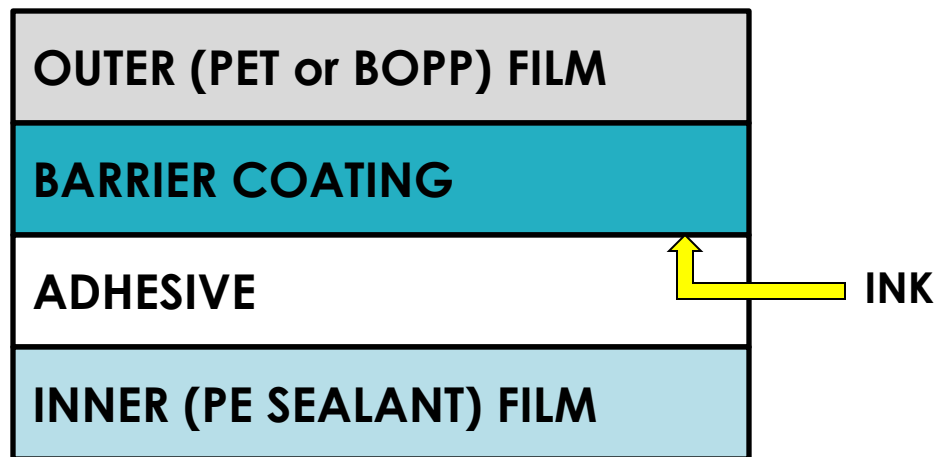


Actual Photo of NanoShield Platelets



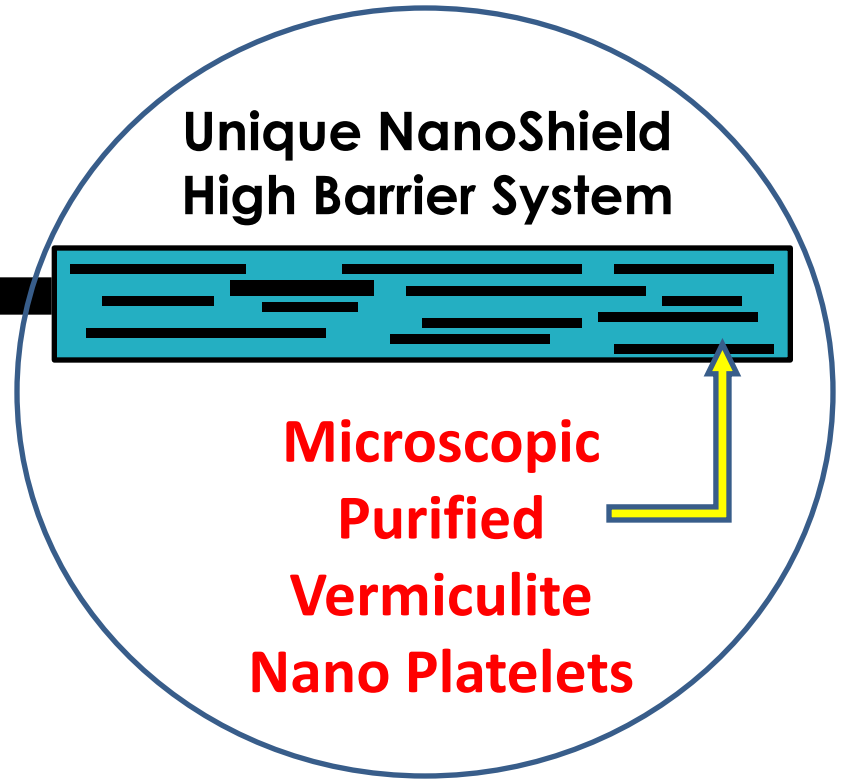
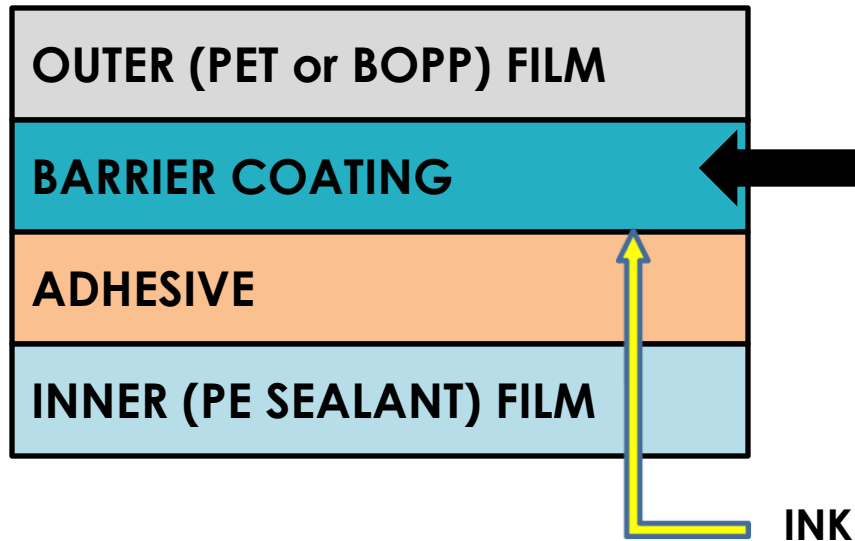
TRADITIONAL BARRIER FILM STRUCTURE

- *The Barrier Is Made Using:*
 - PVDC
 - EVOH
 - *Glassy Coatings*
 - SiO_x
 - AiO_x





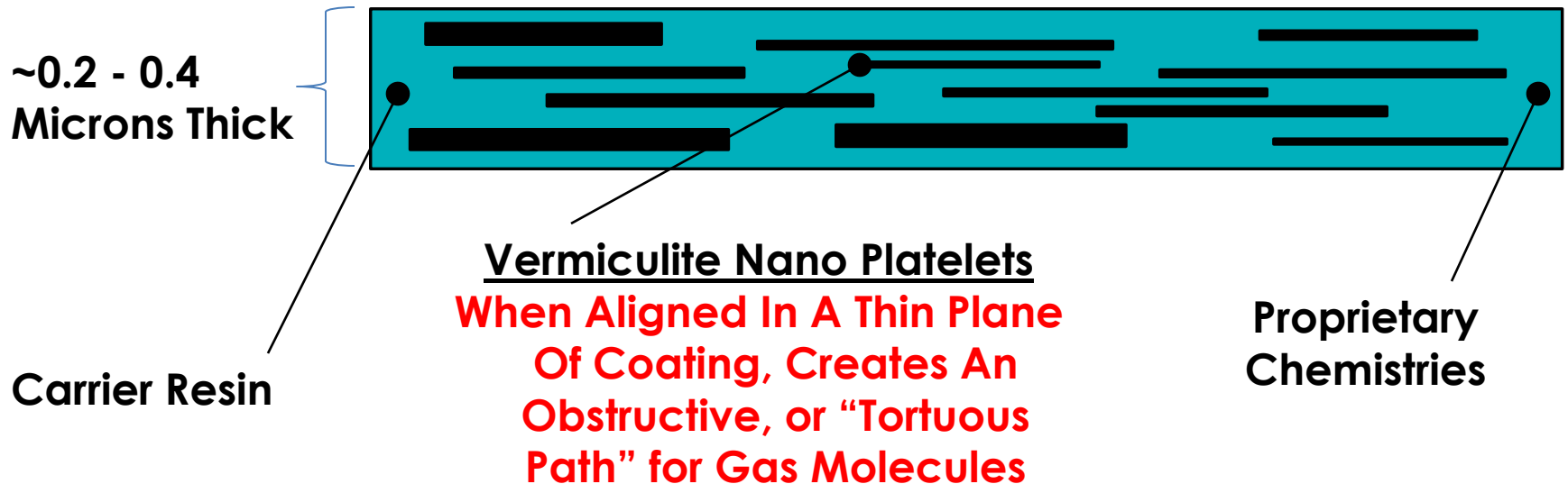
WHAT IS DIFFERENT ABOUT OUR PRODUCT





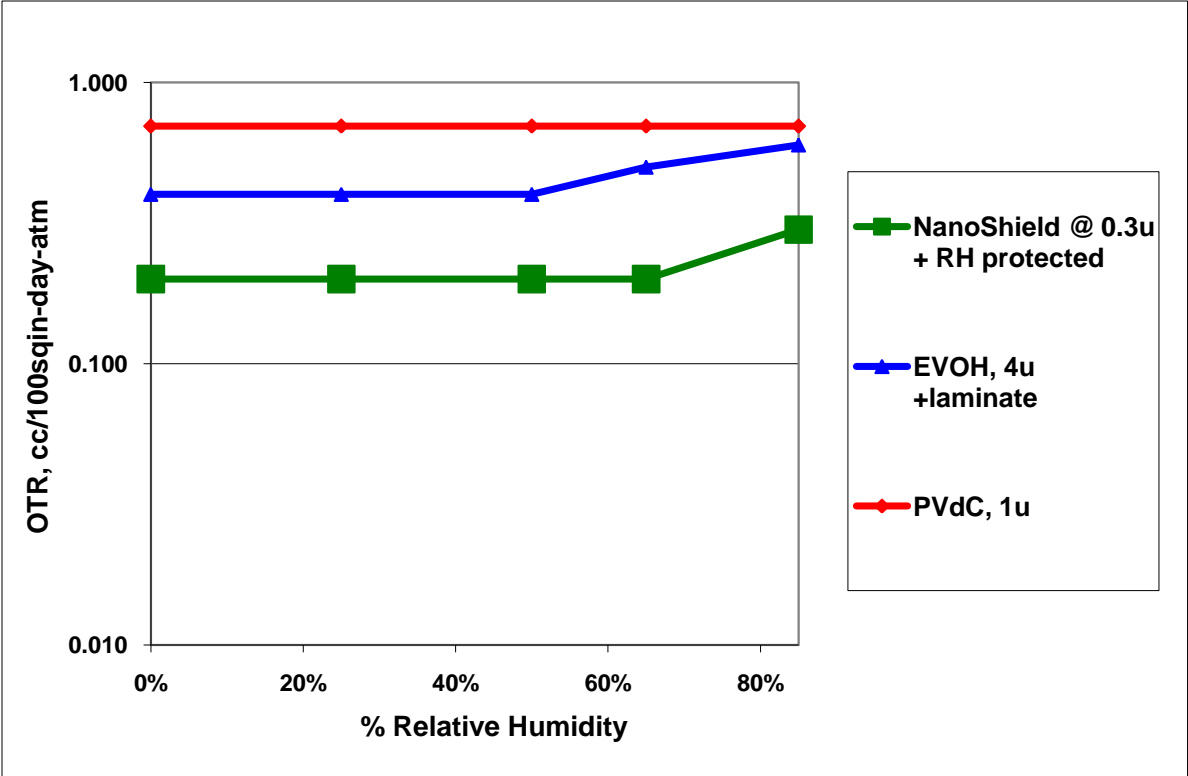
HOW NANO PLATELETS FORM A BARRIER

Concept: Create A Tortuous Path That Blocks The Flow of Gases





EFFECTIVE BARRIER COMPARED TO OTHER FILMS





BENEFITS OVER OTHER BARRIER FILMS

PVdC:

- Better Barrier
- Less Material Needed
- Better For The Environment:
 - Compostable
 - No Free Chlorine

EVOH

- Better Barrier
- Less Material Usage:
- Better For The Environment
 - Compostable



NanoShield

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TARGET MARKET

- *Well-Suited Packaging Applications*
 - Nuts
 - Dried Fruits
 - Dry Snacks
 - Coffee
 - Air Fresheners
 - Pet Food
 - Etc.



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48 GAUGE POLYESTER

Available In Other Gauges

QUESTAR™ CP-250 is FDA approved film with a clear Nano high barrier shield on one side; corona treated on the other side.

Thickness: 12 Micron total (48 gauge)

Yield: 40,100

PROPERTIES	UNIT	VALUE	TEST METHOD
Mechanical			
Tensile Strength	MD	psi	ASTM D 882
	TD		
		23,700	
		34,100	
Elongation			
	MD	%	ASTM D 882
	TD		
		110	
		90	
Physical			
Friction coefficient		µk	ASTM D 1894
		µs	
		0.14	
		0.17	
Density		g/cm ³	ASTM D 1505
		1.4	
Barrier			
MVTR		g/100 in ² /24 hr	ASTM F 1249 100° F @ 90% RH
		1.6	
O ₂ TR		cc/100 in ² /24 hr	ASTM D 1434 77° F @ 50% RH, 1 ATM
		0.1 - 0.3	
Optical			
Haze		%	ASTM D 1003
		2.8	
Thermal			
Heat Shrinkage	MD	%	302° F x 30 min.
	TD	%	
		2.2	
		0.8	
Miscellaneous			
Surface Tension		Nano Shield	ASTM D 2578
Dyne/cm		Corona	
		52	



70 GAUGE BOPP

Available In Other Gauges

Product Description

QUESTAR™ OP-250 is a clear oriented polypropylene film with a Nano high barrier gas shield on one side;

Thickness: 17 Micron total (70 gauge) Yield: 43,000

PROPERTIES	UNIT	VALUE	TEST METHOD
Mechanical			
Tensile Strength			
MD	psi	17,000	ASTM D 882
TD	psi	30,000	
Elongation			
MD	%	190	ASTM D 882
TD	%	70	
Barrier			
MVTR	g/100 in ² /24 hr	0.5	ASTM F 1249 100° F @ 90% RH
O ₂ TR	cc/100 in ² /24 hr	0.3-0.5	ASTM D 1434 77°F @ 50% RH, 1 ATM

NanoShield

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**WHY COMPANIES ARE
SWITCHING TO NanoShield**

Better Performance

Better For The Environment

Better For You



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For more information on any of our quality products, including NanoShield and Questar, please contact us.

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