

# VENATOR

**Proven solar reflectance for paints,  
plastics and more**

John Robb - March 2021

# World-class portfolio

To meet customer needs now and in the future

# VENATOR



## Titanium Dioxide

Leading global supplier of  $\text{TiO}_2$  pigments and ultrafine effect grades



## Functional Additives

Leading supplier of barium sulfate and zinc sulfide



## Color Pigments

Leading global supplier of driers, ultramarine blue and iron oxide pigments



## Timber Treatment

Leading supplier of timber treatment chemicals



## Water Treatment

Major European supplier of water treatment chemicals



## Eco Products

Leading producer of iron based products and synthetic gypsum

It's time to reflect

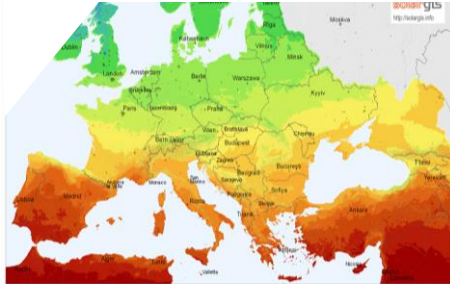
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# The challenge...

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Insolation



Comfort



Energy bills



Peak demand  
(Infrastructure)



Urban Heat Island



Climate change



Compliance  
(Standards)



Durability (Warping,  
Thermal, Photo)

# Why are roofs important in heat management?

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- ▶ A roof presents a large surface area to the sun
- ▶ White sloped roofs are unpopular but traditional darker colors can result in strong solar gain
- ▶ Roofs face towards the sun throughout the day
- ▶ In the thermal IR region a roof exchanges energy with the sky, which is cool
- ▶ Roofs may suffer less from convective heating, being more exposed to cool breezes



# ALTIRIS® infrared reflective pigments

The full spectrum of color

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- ▶ White surfaces reflect efficiently: but aren't always appropriate or popular
- ▶ Venator developed the ALTIRIS® range of infrared reflective titanium dioxide pigments for use in colored surfaces
- ▶ ALTIRIS® grades have been produced since 2010 at Venator and are now in use Worldwide
- ▶ Building on success in colored applications, we realised the reflective potential of white surfaces with **ALTIRIS® W400**





# ALTIRIS® proven technology

Understanding the features and benefits

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## ALTIRIS® technology – key features & component benefits

### Key features

- ▶ Improved solar reflectance, heat management and weatherability in exterior applications
- ▶ Solutions for white and colored surfaces
- ▶ Proprietary patented technology

### Macro sulfate titanium dioxide core

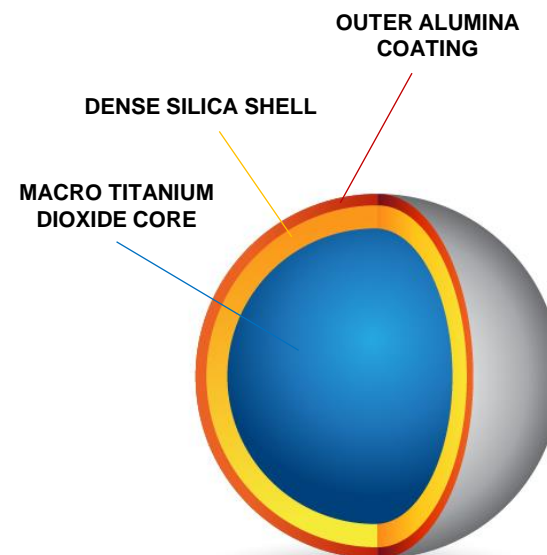
- ▶ Optimized sizes to maximise solar & near infrared reflection across the color spectrum

### Dense silica shell combined with large crystals

- ▶ Reduces free radical escape
- ▶ Low photocatalytic activity improving durability
- ▶ Delivers UV attenuation protecting organic pigments and reducing resin degradation in certain systems

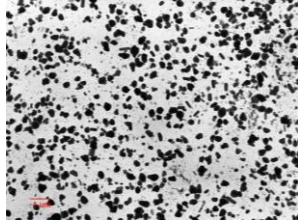
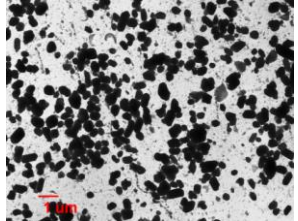
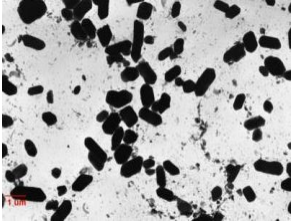
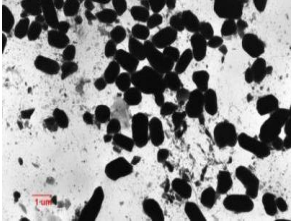
### Outer alumina coating

- ▶ Excellent dispersion and dispersibility



# A broad portfolio to meet customer needs

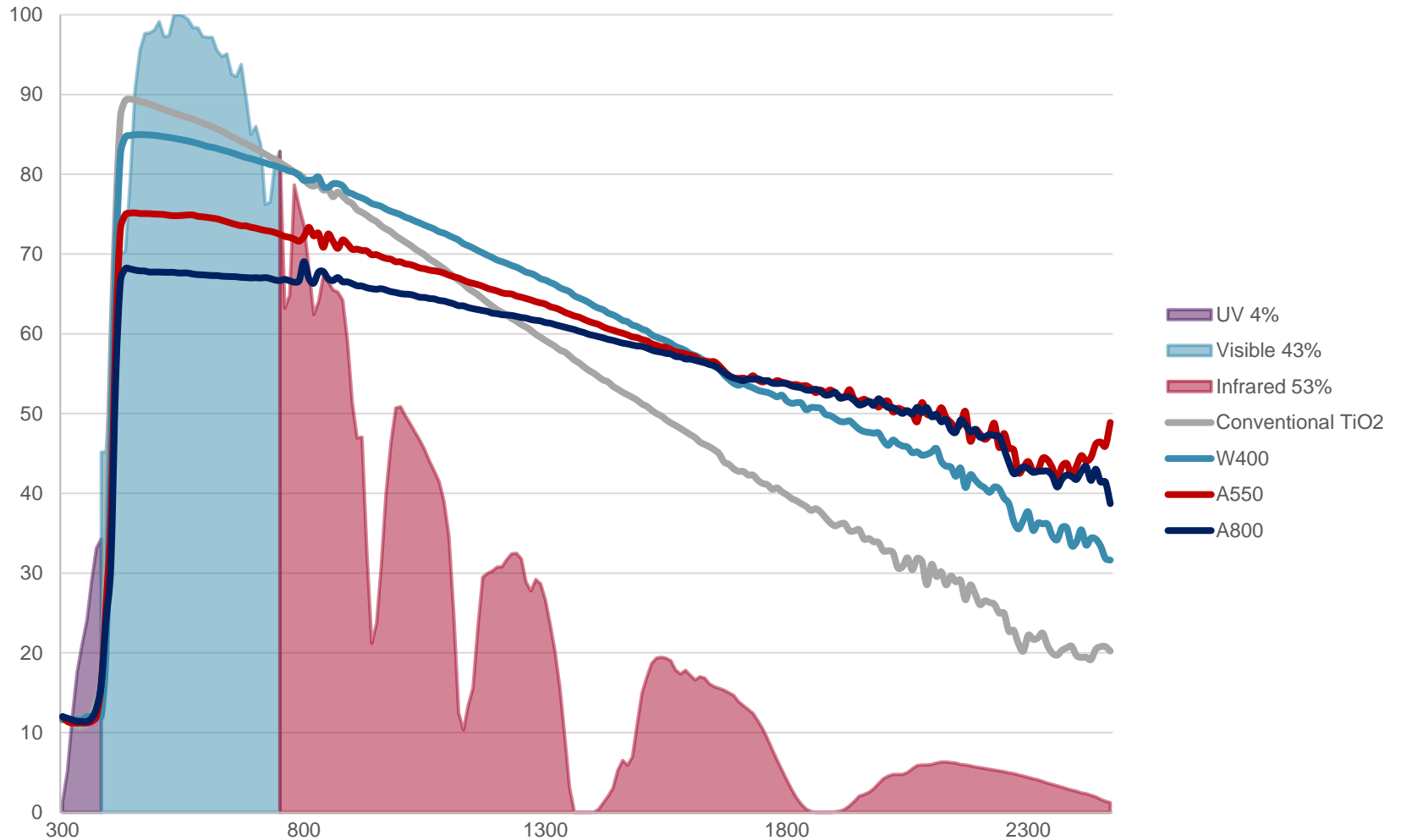
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	Size	Purpose	Relative Tint Reduction	
<b>TIOXIDE® TR60</b>	0.25 microns	Visible Opacity Blue Undertone for White Systems	100	
<b>ALTIRIS® W400</b>	0.40 microns	Solar Reflectance for White Systems and Pastel Shades	85	
<b>ALTIRIS® 550</b>	0.70 microns	Infrared Reflectance for Pastel and Mid Shades	50	
<b>ALTIRIS® 800</b>	1.00 microns	Solar Reflectance for Dark and Vibrant Colors	25	



# Designed to reflect the solar spectrum

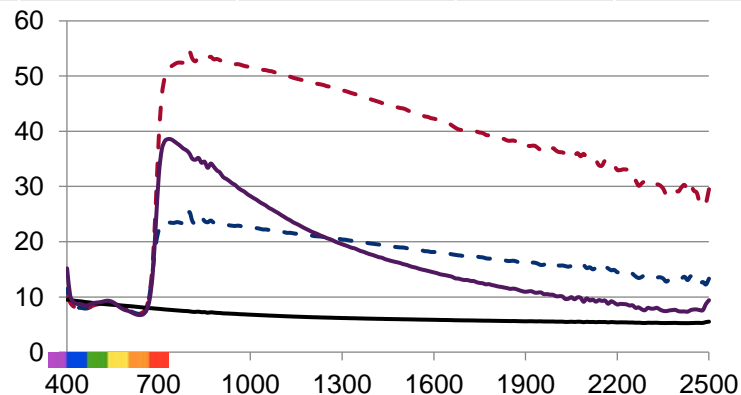
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# Pigment choice can have an impact

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	Vol% TiO <sub>2</sub>	Vol% Black	L*	a*	b*	CR	% Solar Reflectance
TR60/PBk7	2	1.6	35.12	-0.13	-2.25	100.0	7.6
TR60/PBk32	2	5.8	35.02	-3.83	-1.20	99.8	19.3
ALTIRIS® 800 PBk32	2	1.7	34.88	-3.42	0.70	98.8	16.1
ALTIRIS® 800/PBk32	8	7.3	35.01	-3.43	0.79	99.9	31.6



- 2%ALTIRIS® 800+PBk32
- - 8%ALTIRIS® 800+PBk32
- 2%TR60 + PBk7
- 2%TR60 + PbK32

PBk7 S100 (Evonik) :

PBk32 L0086 (BASF)

# A versatile pigment for use across multiple applications

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- ▶ Tiles (Clay or concrete)
- ▶ Metal coatings
- ▶ Elastomeric coatings
- ▶ Plastics
- ▶ Roofing granules/shingles
- ▶ Any exterior application where  $\text{TiO}_2$  is used



Case	Description	Solar reflectance of roof	Roof surface solar absorptance
A	Conventional reflectance paint throughout	0.28	0.72
B	Conventional reflectance paint walls and terracotta roof	0.45	0.55
C	Reflective paint throughout	0.45	0.55
D	Reflective paint walls and standard roof	0.28	0.72

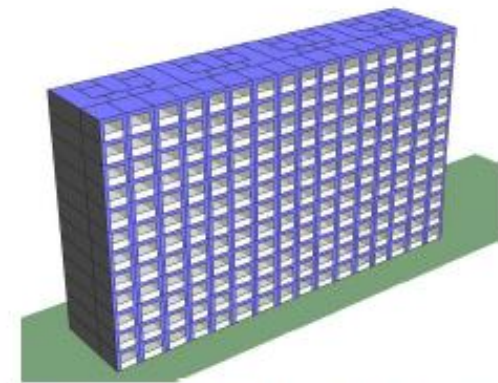


Figure 2: Screen Shot of the Apartment Block Modelled in IES

	Case A Conventional	Case B Cool roof only	Case C Cool walls and roof	Case D Cool walls only
Annual cooling savings (MWh)	0	5.6	32.1	26.6
Delta interior temperature - edge apartment (°C)	0	-1.0	-3.1	-1.0

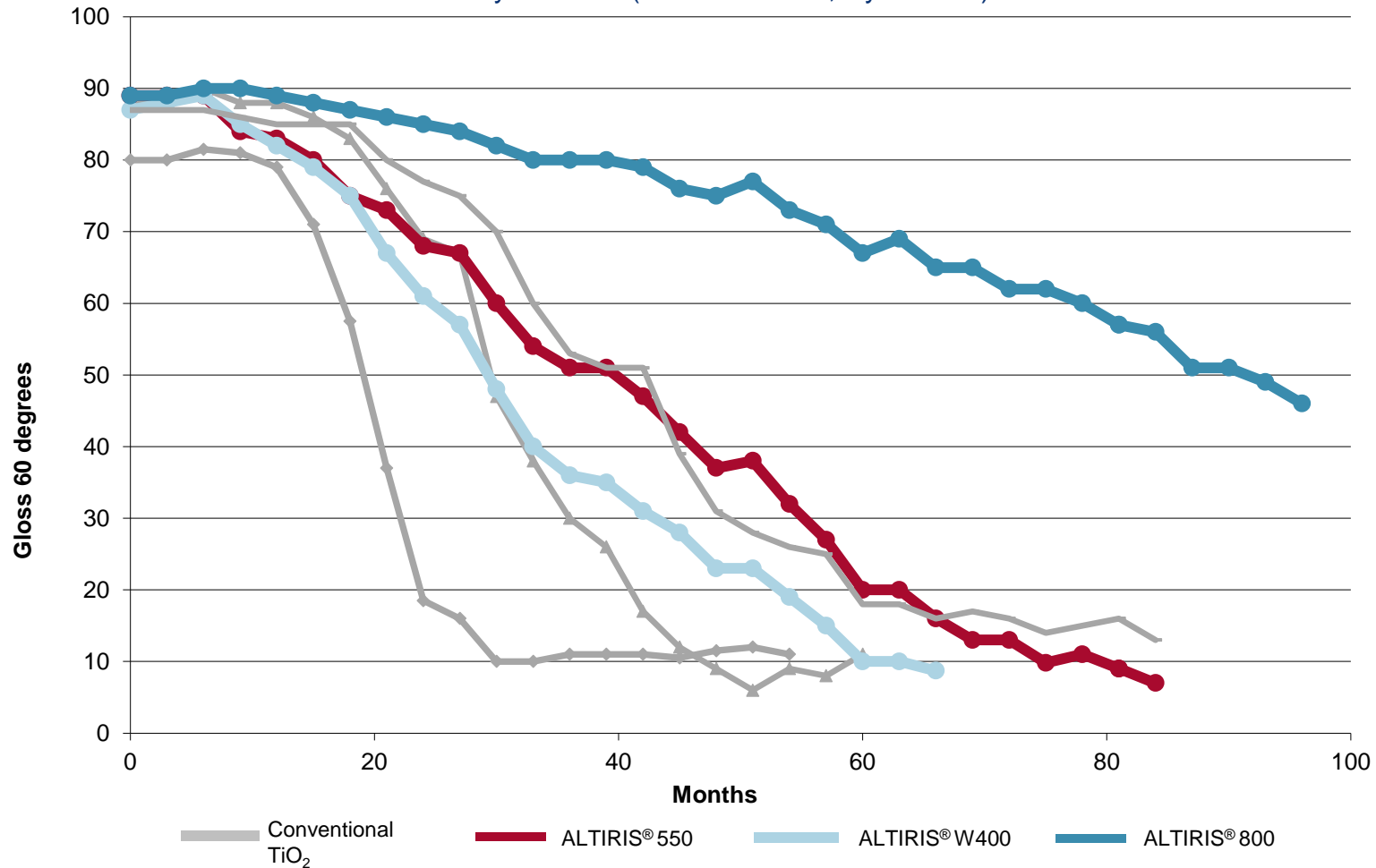


# Proven performance

8 years Florida weathering: Gloss

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Florida weathering of ALTIRIS® and competitor grades  
Polyester-MF (Uralac SN-804, Cymel 303)



# Venator – your supplier of choice

We're...

# VENATOR

...experts with over

**200 years  
experience**

...offering a broad

**product  
portfolio**

... a **specialized  
supplier** in  
**coatings** for  
**cool surfaces**

...experienced

in **creating  
bespoke color**

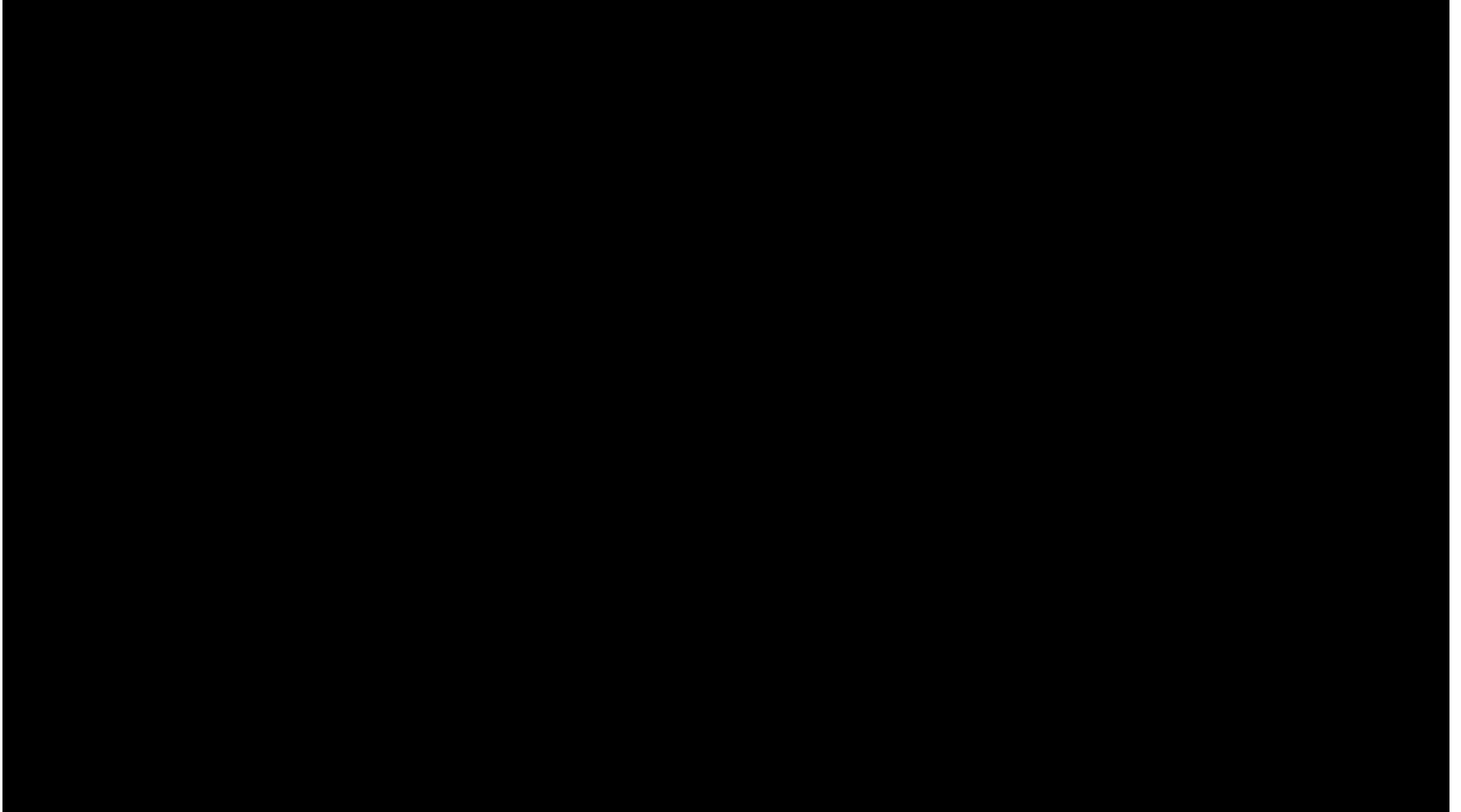
matches to meet  
customer needs

...innovative

...serious about  
**sustainability**

Let me summarize...

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## Thank you



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