

# Adamas<sup>®</sup>

Alumina Based Pearlescent Pigments



The World Quality Leader in  
Pearlescent Pigments Technology



# Adamas<sup>®</sup> Exterior

## Alumina Based Pearlescent Pigments



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Weather resistant pearlescent pigments developed using mica, glass, silica bases, etc., are being used in various high performance applications. Alumina-based pearlescent pigments have also been specifically surface treated to be compatible and durable in the various resin systems typically used in these applications.

In the manufacture of alumina-based pearlescent pigments the most important factor is creating the platy type alumina oxide itself, used as the base substrate. The technology involved with the manufacture of amorphous alumina is highly specialized and requires a great degree of technical and process capability, resulting in very few companies having commercialized this technology.

CQV Co., Ltd. through extensive research and development has been granted a patent for their formula and manufacturing process to produce platy alumina. They have commercialized the Adamas<sup>®</sup> platy alumina product line based on these developments and grafted them to the existing technology of manufacturing pearlescent pigments for mass production.

### Brand Story

Adamas<sup>®</sup>, in ancient Greek means, "Diamond".

Like the precious and sparkling jewel for which it is named, Adamas<sup>®</sup> can impart the same qualities to the products in which it is used.

### Special Features

- Pure platy alumina ( $Al_2O_3$ ) substrate
- Surface treated for high performance applications
- Compatible in various high performance resin systems
- Uniform thickness extremely smooth surface giving high chroma and value
- Excellent sparkle effect with small particle size

### Applications

Adamas<sup>®</sup> pigments can be applied to various fields of industry where high performance (long term durability) is required due to the specific surface treatments applied which impart humidity resistance, and color stability.

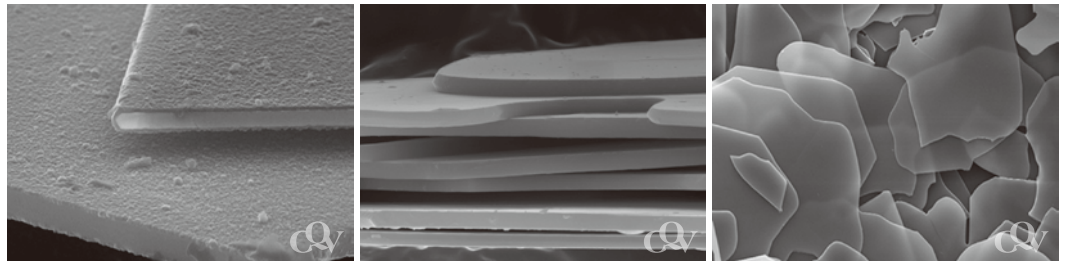
- Automotive/Transportation OEM and refinish coatings
- Architectural coil coatings
- General metal finishing for exterior use

# Why Alumina?

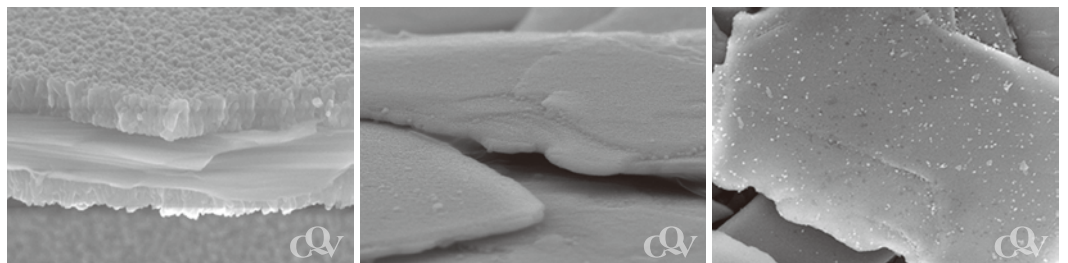
## FESEM image comparison

Each particle of an pearlescent pigments is composed of a layer of structure. Observation of SEM pictures show platy type alumina is composed of one layer with extremely uniform thickness. Existing natural mica based particles are composed of a layer structure in which the thickness of every particle is not uniform but varies throughout and across each particle.

Alumina



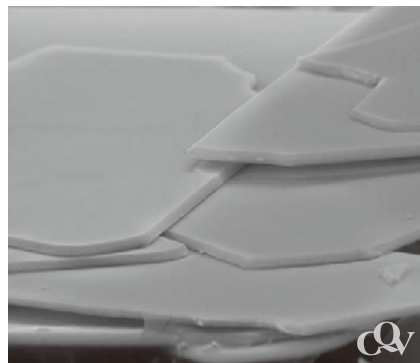
Mica



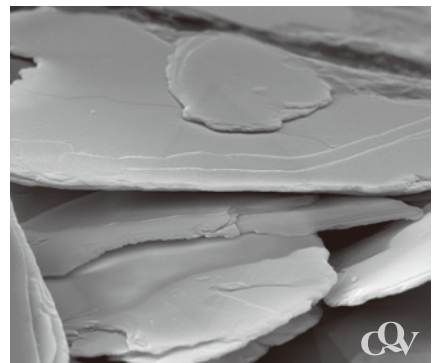
## The character of color

In the case of platy type alumina coated with high refractive index metal oxides, irregular differences in thickness of the substrate particles can cause a serious difference in the wavelengths of light reflected. This is evident under a microscope where individual particles show several different reflection colors. Substrates with uniform thickness can reflect all of the light at the same angle and wavelength, creating a color through interference that is strong and pure. In this case each individual particle observed under a microscope shows uniform color throughout.

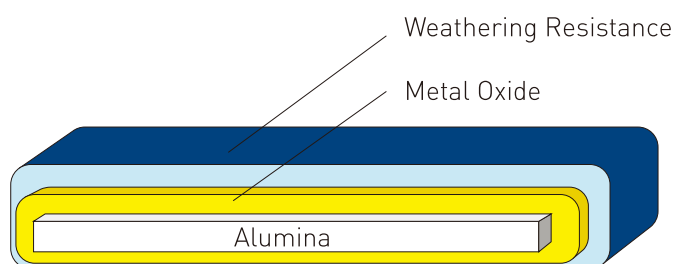
Alumina



Mica

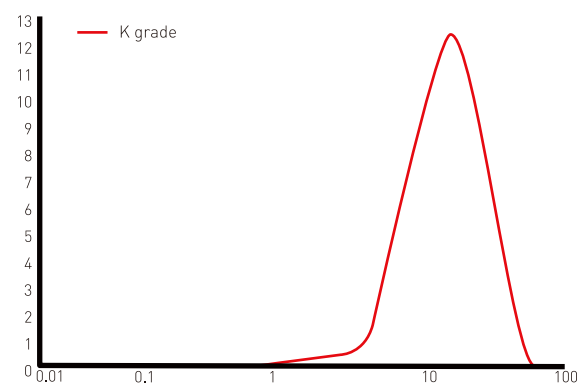


## Structure of Adamas® Exterior



Adamas® products are coated with high refractive index metal oxides of uniform thickness on the alumina substrate of equally uniform thickness, which is observed in the structural diagram. It is also subsequently surface treated with a proprietary combination of materials that give the particles their capability to be used in high performance applications.

## Particle Size Distribution



The products coated with metal oxide have a particle size distribution from 5 to 30 μm (More than 80% in range). Due to the uniformity of every particle, Adamas® pigments can be produced in very narrow particle size distributions.

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## Composition Data

Code	Product Name	Composition						
		Alumina	SnO <sub>2</sub>	TiO <sub>2</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Silane	Others
Adamas® AE-901K-SP	Adamas® AE-901K-SP Splendor White	○	○	○			○	
Adamas® AE-901K-OP	Adamas® AE-901K-OP Splendor White	○	○	○			○	
Adamas® AE-701K-SP	Adamas® AE-701K-SP Splendor Gold	○	○	○			○	
Adamas® AE-701K-OP	Adamas® AE-701K-OP Splendor Gold	○	○	○			○	
Adamas® AE-741K-SP	Adamas® AE-741K-SP Splendor Red	○	○	○			○	
Adamas® AE-741K-OP	Adamas® AE-741K-OP Splendor Red	○	○	○			○	
Adamas® AE-781K-SP	Adamas® AE-781K-SP Splendor Blue	○	○	○	○		○	
Adamas® AE-781K-OP	Adamas® AE-781K-OP Splendor Blue	○	○	○	○		○	
Adamas® AE-791K-SP	Adamas® AE-791K-SP Splendor Green	○	○	○			○	
Adamas® AE-791K-OP	Adamas® AE-791K-OP Splendor Green	○	○	○			○	
Adamas® AE-640K-SP	Adamas® AE-640K-SP Splendor Copper	○				○	○	
Adamas® AE-640K-OP	Adamas® AE-640K-OP Splendor Copper	○				○	○	
Adamas® AE-660K-SP	Adamas® AE-660K-SP Splendor Russet	○				○	○	
Adamas® AE-660K-OP	Adamas® AE-660K-OP Splendor Russet	○				○	○	
Adamas® AMP-1093K	Adamas® AMP-1093K Splendor Black	○						Ni
Adamas® AMP-1090S	Adamas® AMP-1090S Brilliant Black	○						Ni

## Technical Data

Code	Particle Size(μm)		pH	Loss on Drying	Density	Oil Absorption	Conductivity
	(D10-D90)	(D50)	(10% Sol.)	(%)	(g/cm³)	(g/100g)	(μS/cm)
Adamas® AE-901K-SP	5 - 30 (More than 80% in range)	15 - 19	3 - 6	0 - 0.5	3.4 - 3.8	50 - 70	0 - 100
Adamas® AE-901K-OP	5 - 30 (More than 80% in range)	15 - 19	4 - 8	0 - 0.5	3.4 - 3.8	50 - 70	0 - 100
Adamas® AE-701K-SP	5 - 30 (More than 80% in range)	15 - 19	3 - 6	0 - 0.5	3.7 - 4.1	47 - 67	0 - 100
Adamas® AE-701K-OP	5 - 30 (More than 80% in range)	15 - 19	4 - 8	0 - 0.5	3.7 - 4.1	45 - 65	0 - 100
Adamas® AE-741K-SP	5 - 30 (More than 80% in range)	15 - 19	3 - 6	0 - 0.5	3.4 - 3.8	36 - 56	0 - 100
Adamas® AE-741K-OP	5 - 30 (More than 80% in range)	15 - 19	4 - 8	0 - 0.5	3.4 - 3.8	36 - 56	0 - 100
Adamas® AE-781K-SP	5 - 30 (More than 80% in range)	15 - 19	3 - 6	0 - 0.5	3.7 - 4.1	45 - 65	0 - 100
Adamas® AE-781K-OP	5 - 30 (More than 80% in range)	15 - 19	4 - 8	0 - 0.5	3.7 - 4.1	46 - 66	0 - 100
Adamas® AE-791K-SP	5 - 30 (More than 80% in range)	15 - 19	3 - 6	0 - 0.5	3.7 - 4.0	34 - 54	0 - 100
Adamas® AE-791K-OP	5 - 30 (More than 80% in range)	15 - 19	4 - 8	0 - 0.5	3.7 - 4.0	34 - 54	0 - 100
Adamas® AE-640K-SP	5 - 30 (More than 80% in range)	15 - 19	3 - 6	0 - 0.5	3.9 - 4.3	43 - 63	0 - 100
Adamas® AE-640K-OP	5 - 30 (More than 80% in range)	15 - 19	4 - 8	0 - 0.5	3.9 - 4.3	46 - 66	0 - 100
Adamas® AE-660K-SP	5 - 30 (More than 80% in range)	15 - 19	3 - 6	0 - 0.5	3.8 - 4.2	42 - 62	0 - 100
Adamas® AE-660K-OP	5 - 30 (More than 80% in range)	15 - 19	4 - 8	0 - 0.5	3.8 - 4.2	45 - 65	0 - 100
Adamas® AMP-1093K	9 - 40	18 - 22	7 - 10	0 - 0.5	3.7 - 4.1	45 - 65	-
Adamas® AMP-1090S	9 - 50	26 - 30	7 - 10	0 - 0.5	3.6 - 4.0	38 - 58	-

# Application Data

Weathering Test Item	Test Item  2-coat OEM thermosetting paint	Q-UV 2000hr Test (ASTM D4587 Cycle Number 1)						
		Visual Assessment  Gray Scale (D-65)	Glossmeter			Color-difference meter (CM-512m3)		
			PG-1M ver1.66 / persistency rate(%)			dE*ab(D65) ∠ 10°		
			20°	60°	85°	25°	45°	75°
Adamas® AE-901K-SP	PC1.5%	5	98	99	98	0.79	0.68	0.8
Adamas® AE-901K-OP	PC1.5%	5	99	98	99	0.82	0.71	0.86
Adamas® AE-701K-SP	PC1.5%	5	99	99	99	0.75	0.40	0.17
Adamas® AE-701K-OP	PC1.5%	5	99	99	99	0.45	0.34	0.25
Adamas® AE-741K-SP	PC1.5%	5	99	99	101	0.54	0.55	0.23
Adamas® AE-741K-OP	PC1.5%	5	97	98	99	0.44	0.37	0.23
Adamas® AE-781K-SP	PC1.5%	5	99	99	99	0.32	0.56	0.26
Adamas® AE-781K-OP	PC1.5%	5	99	99	99	0.36	0.49	0.28
Adamas® AE-791K-SP	PC1.5%	5	100	99	100	0.62	0.42	0.29
Adamas® AE-791K-OP	PC1.5%	5	99	100	99	0.68	0.43	0.27
Adamas® AE-640K-SP	PC1.5%	5	99	99	99	0.85	0.66	0.22
Adamas® AE-640K-OP	PC1.5%	5	99	99	99	0.75	0.51	0.27
Adamas® AE-660K-SP	PC1.5%	5	98	99	99	0.28	0.36	0.24
Adamas® AE-660K-OP	PC1.5%	5	99	99	99	0.40	0.37	0.20

Weathering Test Item	Test Item  2-coat OEM thermosetting paint	Xenon 2000hr Test (ASTM D6695-03a Cycle Number 6)						
		Visual Assessment  Gray Scale (D-65)	Glossmeter			Color-difference meter (CM-512m3)		
			PG-1M ver1.66 / persistency rate(%)			dE*ab(D65) ∠ 10°		
			20°	60°	85°	25°	45°	75°
Adamas AE-901K-SP	PC1.5%	5	98	99	99	0.96	0.86	0.92
Adamas AE-901K-OP	PC1.5%	5	98	99	98	0.94	0.82	0.91
Adamas AE-701K-SP	PC1.5%	5	99	99	98	0.76	0.56	0.35
Adamas AE-701K-OP	PC1.5%	5	99	99	98	0.84	0.63	0.46
Adamas AE-741K-SP	PC1.5%	5	99	99	98	0.31	0.68	0.65
Adamas AE-741K-OP	PC1.5%	5	98	99	97	0.76	0.70	0.54
Adamas AE-781K-SP	PC1.5%	5	98	99	98	0.81	0.73	0.48
Adamas AE-781K-OP	PC1.5%	5	98	98	98	0.86	0.69	0.58
Adamas AE-791K-SP	PC1.5%	5	98	98	97	0.82	0.65	0.62
Adamas AE-791K-OP	PC1.5%	5	98	98	98	0.89	0.79	0.53
Adamas AE-640K-SP	PC1.5%	5	99	99	99	0.65	0.57	0.61
Adamas AE-640K-OP	PC1.5%	5	98	98	99	0.72	0.67	0.35
Adamas AE-660K-SP	PC1.5%	5	98	99	99	0.74	0.66	0.68
Adamas AE-660K-OP	PC1.5%	5	99	98	98	0.68	0.62	0.58

\* Ongoing Florida Exposure Test

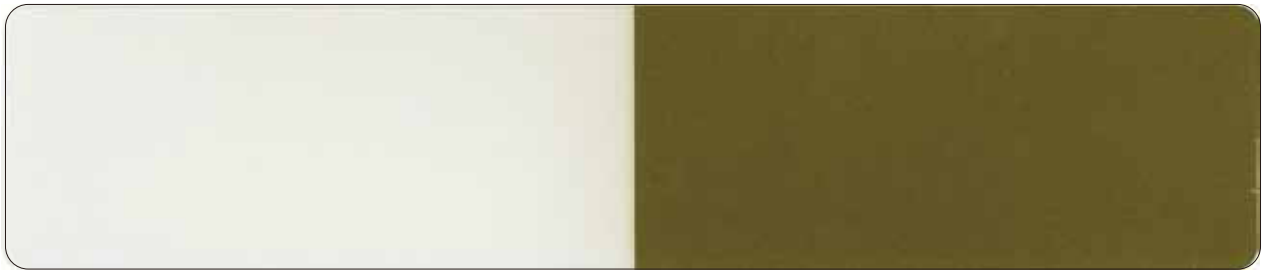


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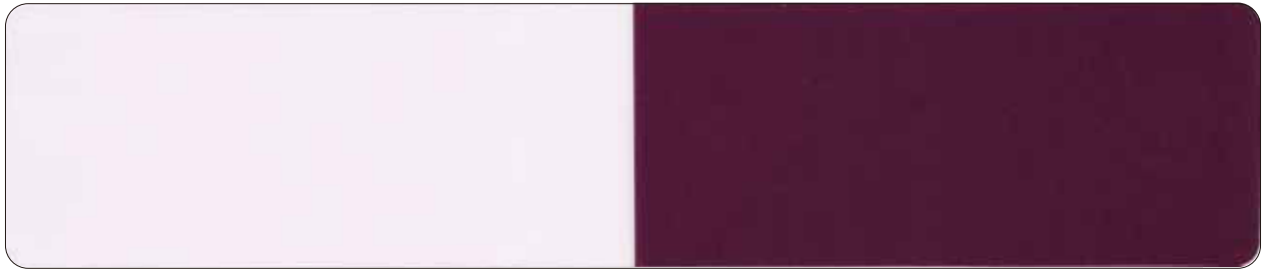
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Adamas® AE-901K-SP/OP Splendor White      Size(μm) 5 - 30 (More than 80% in range)



Adamas® AE-701K-SP/OP Splendor Gold      Size(μm) 5 - 30 (More than 80% in range)



Adamas® AE-741K-SP/OP Splendor Red      Size(μm) 5 - 30 (More than 80% in range)

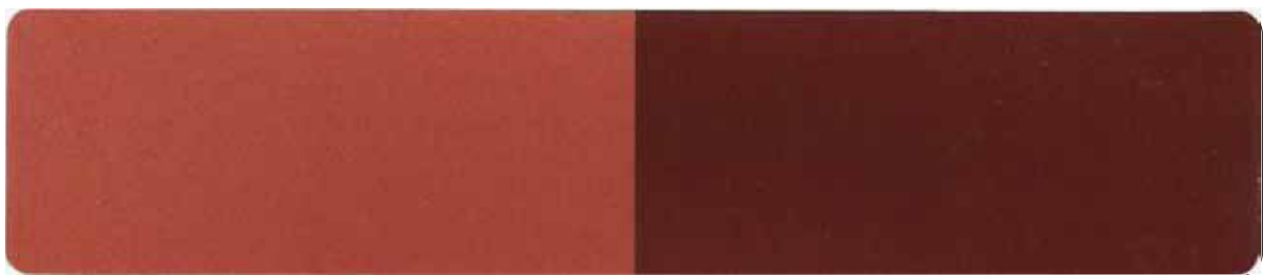


Adamas® AE-781K-SP/OP Splendor Blue      Size(μm) 5 - 30 (More than 80% in range)



Adamas® AE-791K-SP/OP Splendor Green      Size(μm) 5 - 30 (More than 80% in range)





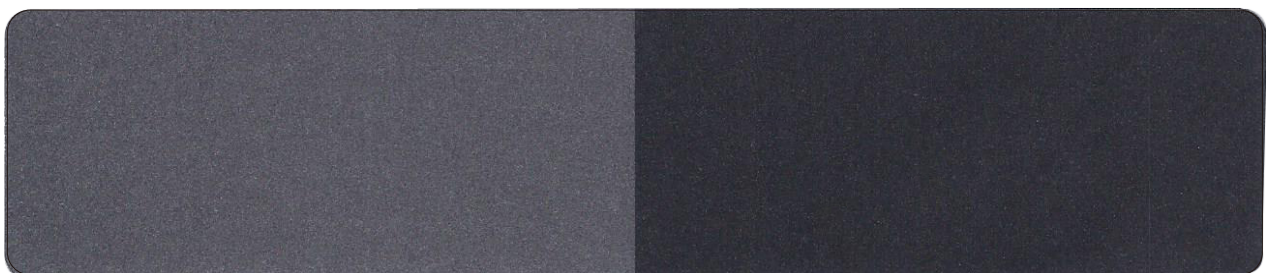
Adamas® AE-640K-SP/OP Splendor Copper    Size(μm) 5 - 30 (More than 80% in range)



Adamas® AE-660K-SP/OP Splendor Russet    Size(μm) 5 - 30 (More than 80% in range)



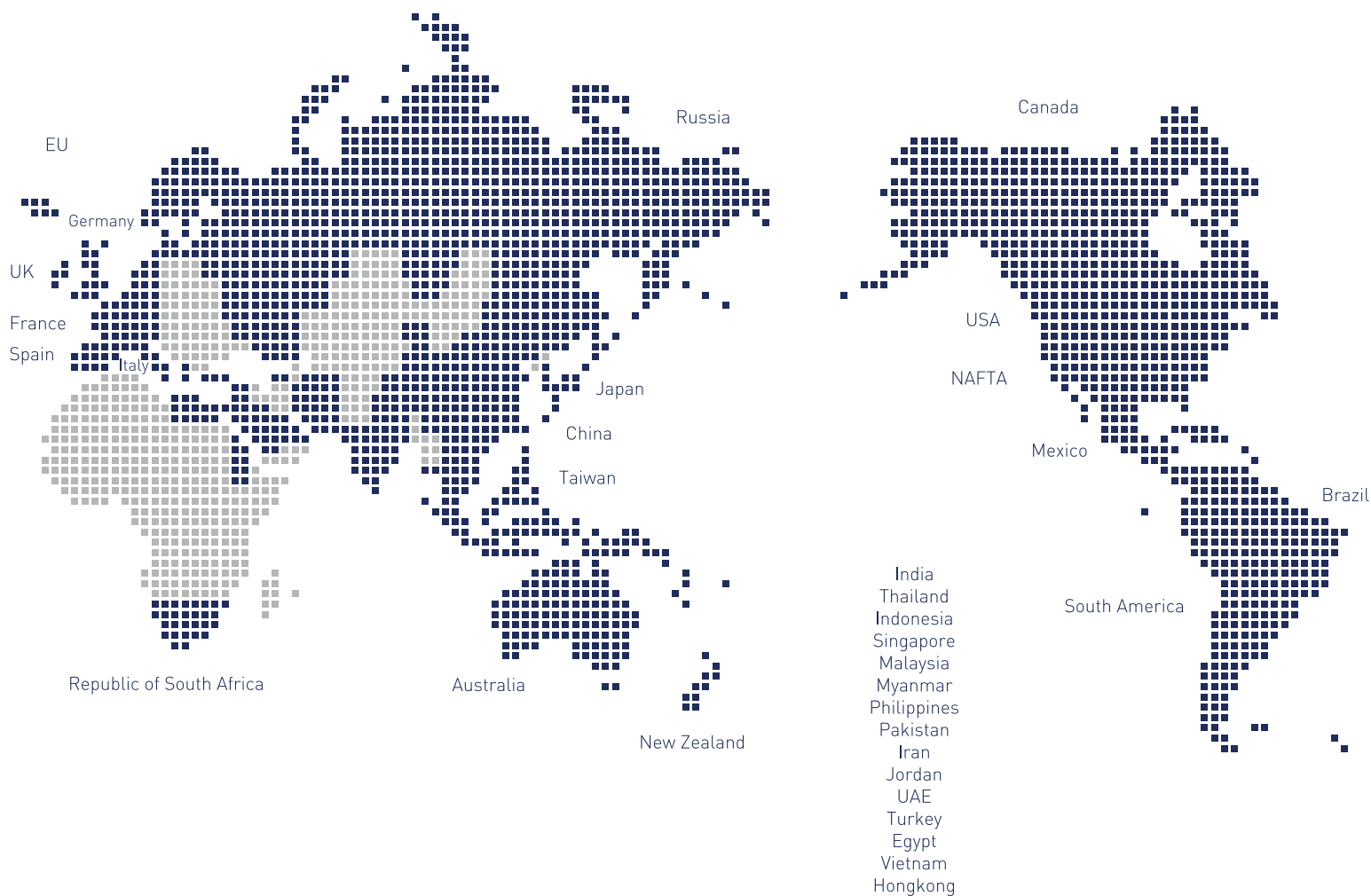
Adamas® AMP-1093K Splendor Black    Size(μm) 9 - 40



Adamas® AMP-1090S Brilliant Black    Size(μm) 9 - 50

# CQV GLOBAL NETWORK

“World Leading Pigments Material Provider”



Creation of Quality Value

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