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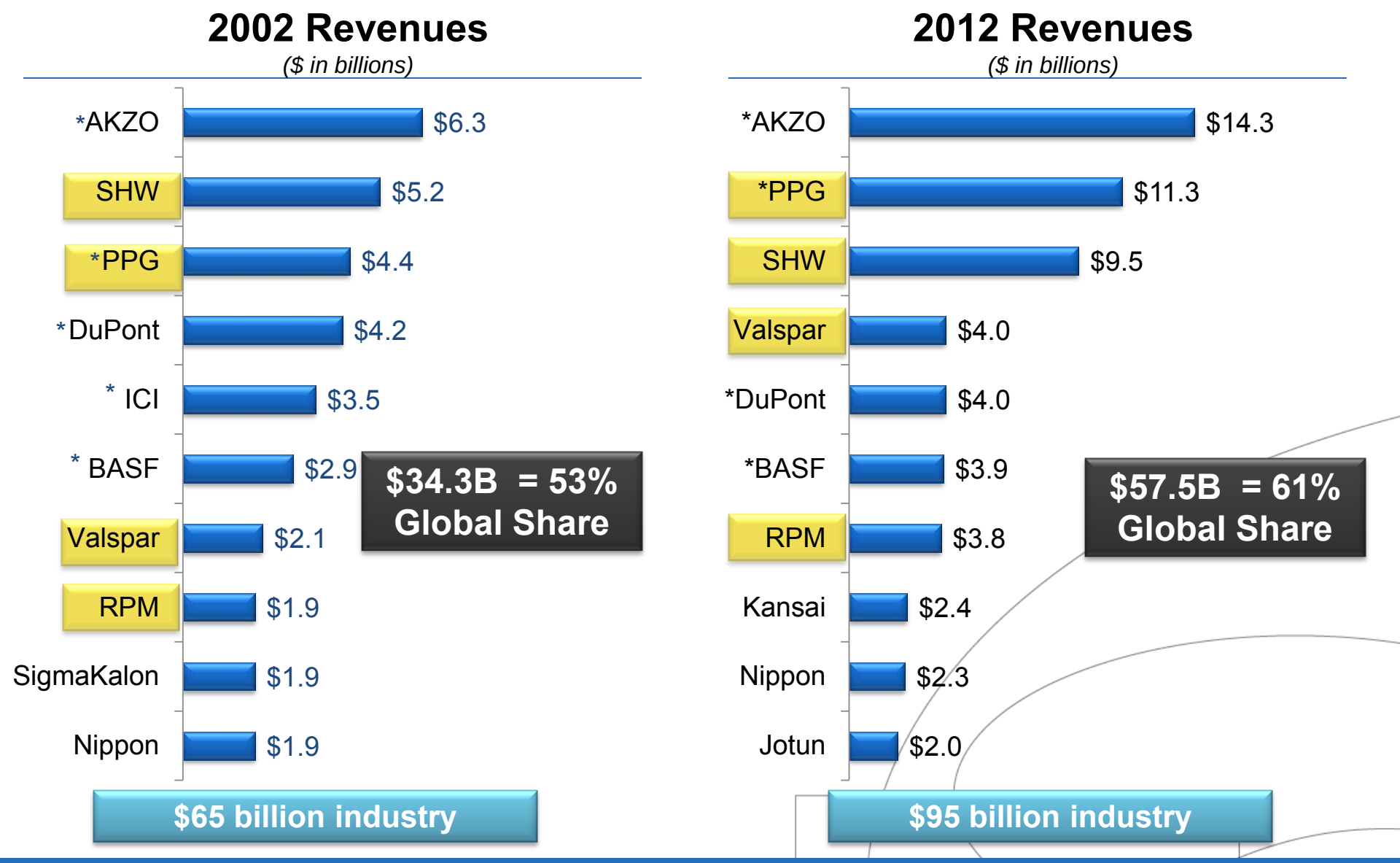
Overview of Business and Technology Trends of the Coating Industry

Dr. Robert G. Duan
Global Technical Director
Valspar Corporation

May 8, 2014, Shanghai, China
2014 China Coating Summit

Global Coatings Industry Overview



* *Excludes Non-coatings segments*
Source: company financials and Valspar estimates

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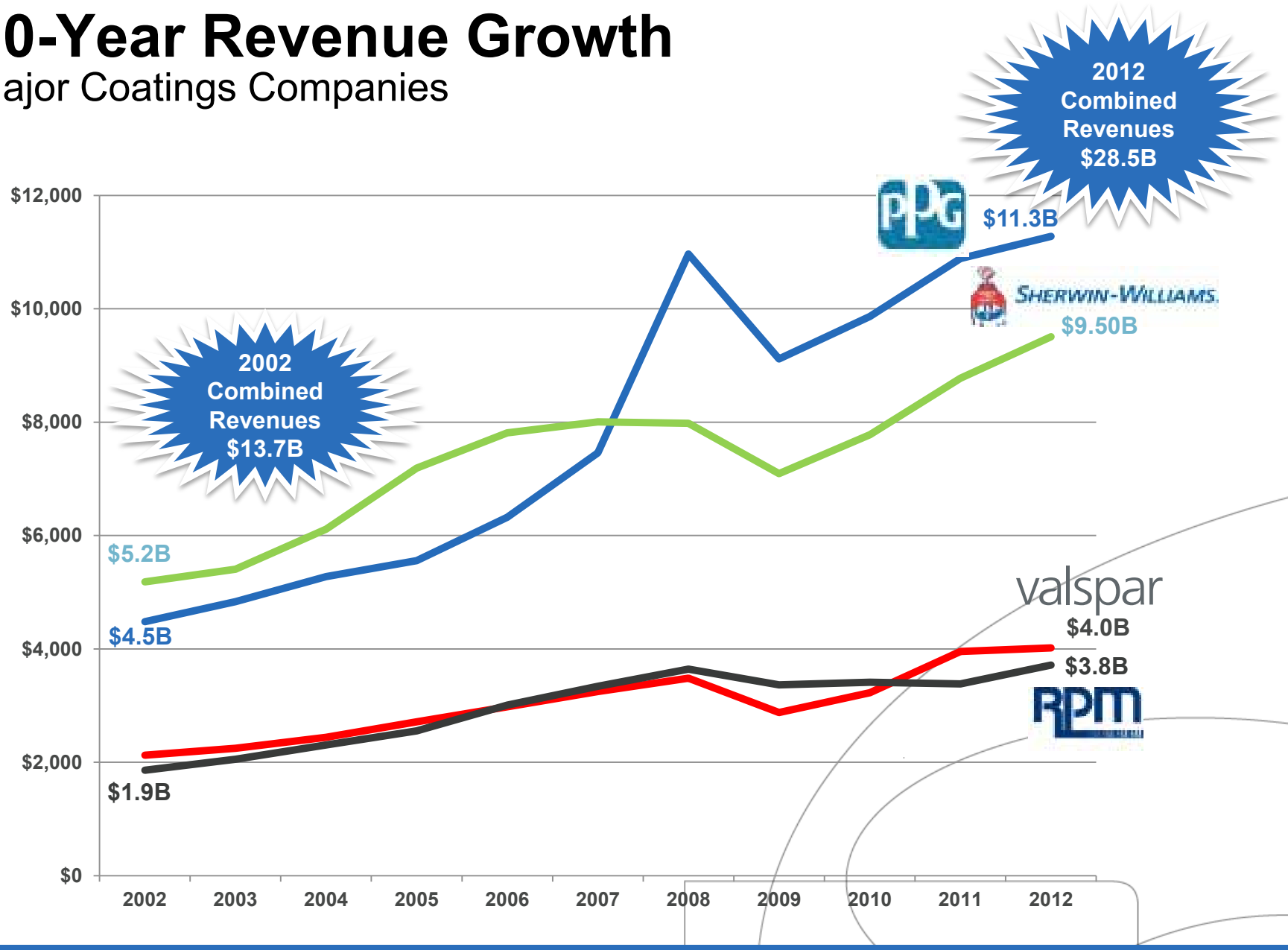
10-Year Revenue Growth

Major Coatings Companies



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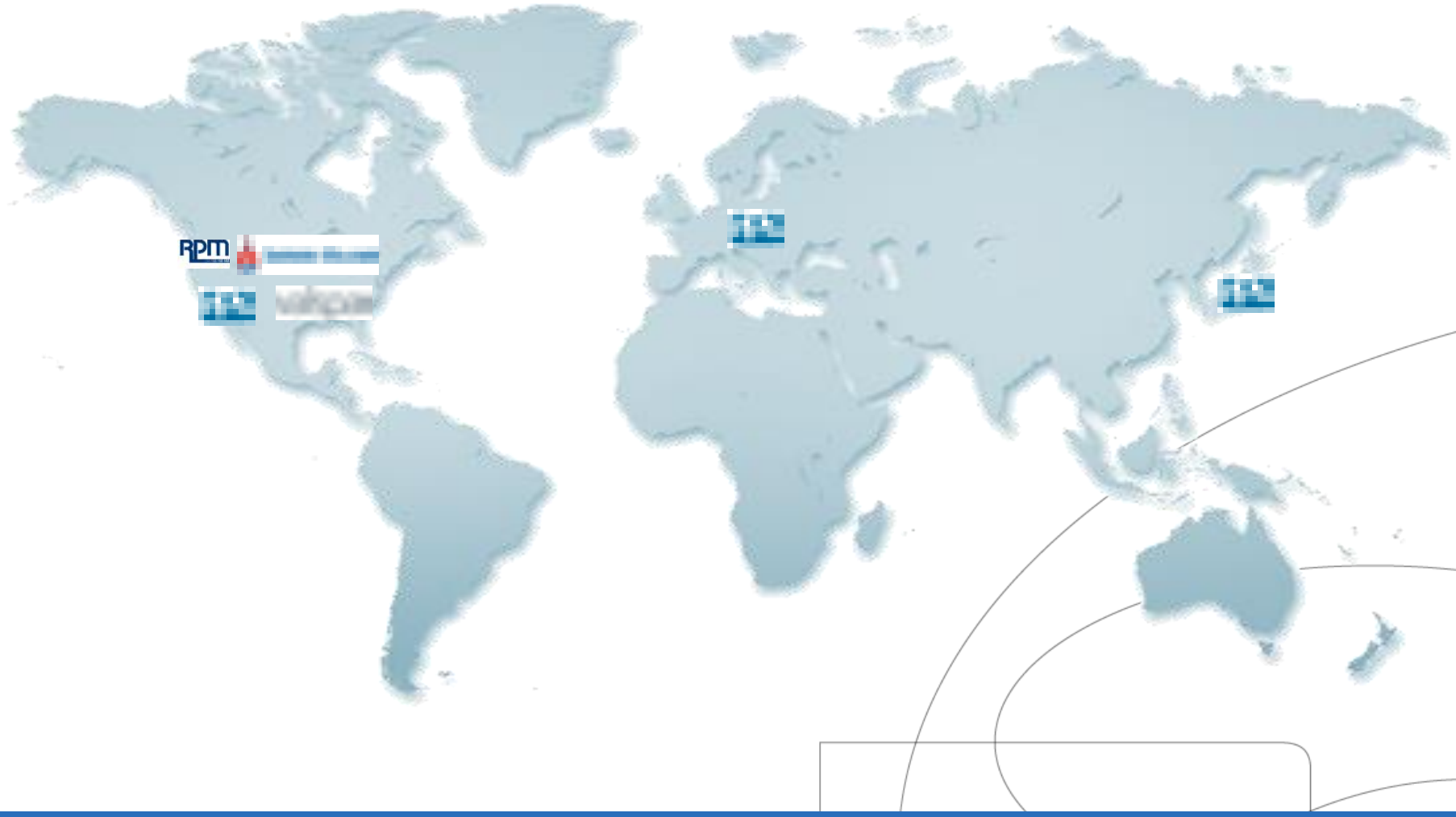
Characteristics of the Top Coatings Companies

1. Scale and Global Business Models
2. Diversified Business Mix
3. Strong Brands and Distribution Channels
4. Consistent Investment in R&D
5. Quality and Operational Excellence

Globalization

U.S. Coatings Companies Geographic Focus in 1993



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Globalization

U.S. Coatings Companies Geographic Focus in 2013

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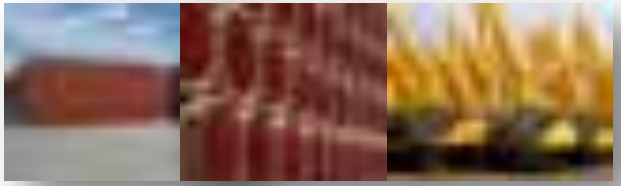
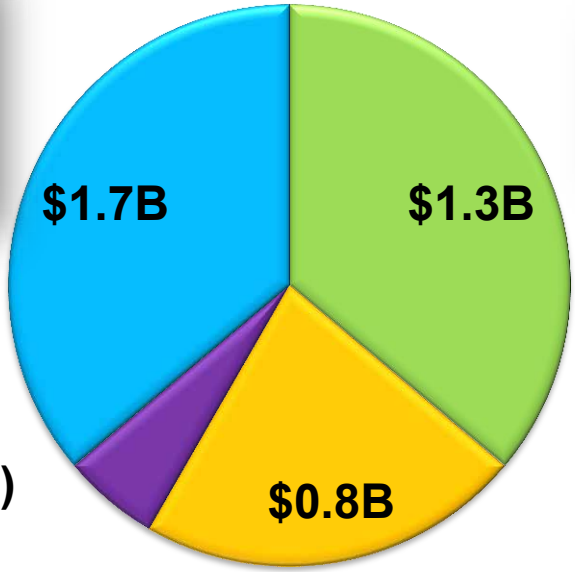
Diversified Business Mix -- Valspar

2013 sales：$4.1B

Consumer Paints ($1.8B)

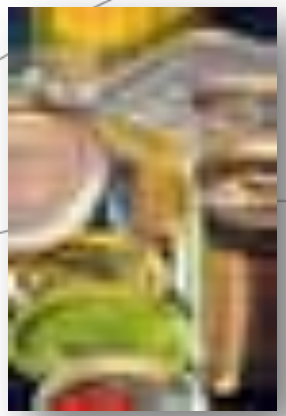
Industrial Coatings ($1.3B)





Other ($0.2B)

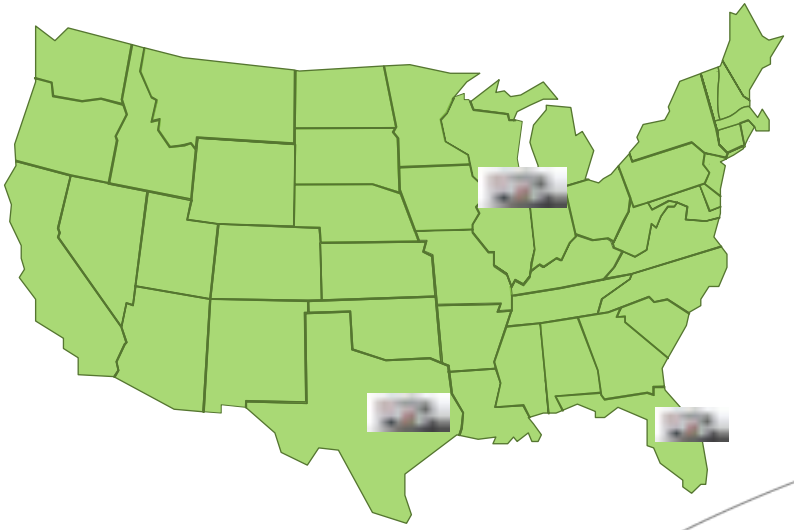
Packaging Coatings ($0.8B)



Strong Brand -- U.S. Consumer Paint Brand Landscape

		PPG	MASCO	Benjamin Moore	valspar
Distribution Channels	• Company Stores • 3rd Party Distributors	• Company Stores • Home Depot • Wal-Mart • 3rd Party Distributors • Lowe's • Menards	• Home Depot	• 3rd Party Distributors • Company Stores	• Lowe's • ACE • Target • Paint Drop • B&Q • Master • 3rd Party Distributors
Brands		OLYMPIC PITTSBURGH PAINTS GLIDDEN	BEHR	Benjamin Moore	valspar 华润涂料

New Distribution Model – The Paint Drop



PaintDrop by valspar

get paint right, on site

Invest in R&D -- New R&D Centers in China

DuPont China Global R&D Center. DuPont invested $17 million. Completed in 2004. Can accommodate 200 employees.

Dow Asia-Pacific HQ + R&D Center. DOW invested about $280 million, total area: 100,000m^2, total employees: 1500.

Evonic/Degussa invested $14.7 million in R&D center based in Shanghai

Bayer Material Science invested $20 million to build a polymer Technology R&D center in Shanghai occupying a total area of more than 7000 m^2.

Akzo R&D center in Songjiang Shanghai, inside of their manufacturing site. Total investment $45 million.

New R&D Centers in China

Carpoly Paint annual investment in R&D exceeds $1.5 million which is about 5% of total sales. Total build up area is 1200 m^2

Water-based wood coating investment exceeds $ 5.4 million in R&D and production.

- Taiho's investment in R&D exceeds $5 million and employ over 100 people.
- R&D lab total build up area is 7000 m^2
- Annual investment in innovation and R&D is about 6% of gross production value.

Valspar Applied Science and Technology Center in US and in China

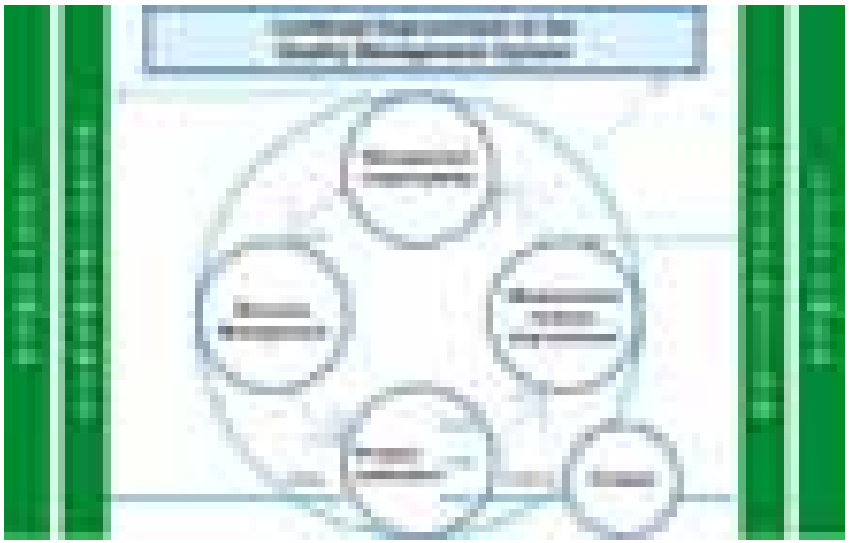
Valspar Applied Science and Technology Center in China

Valspar Applied Science and Technology Center in China

Product Display and Showroom

Quality and Operational Excellence

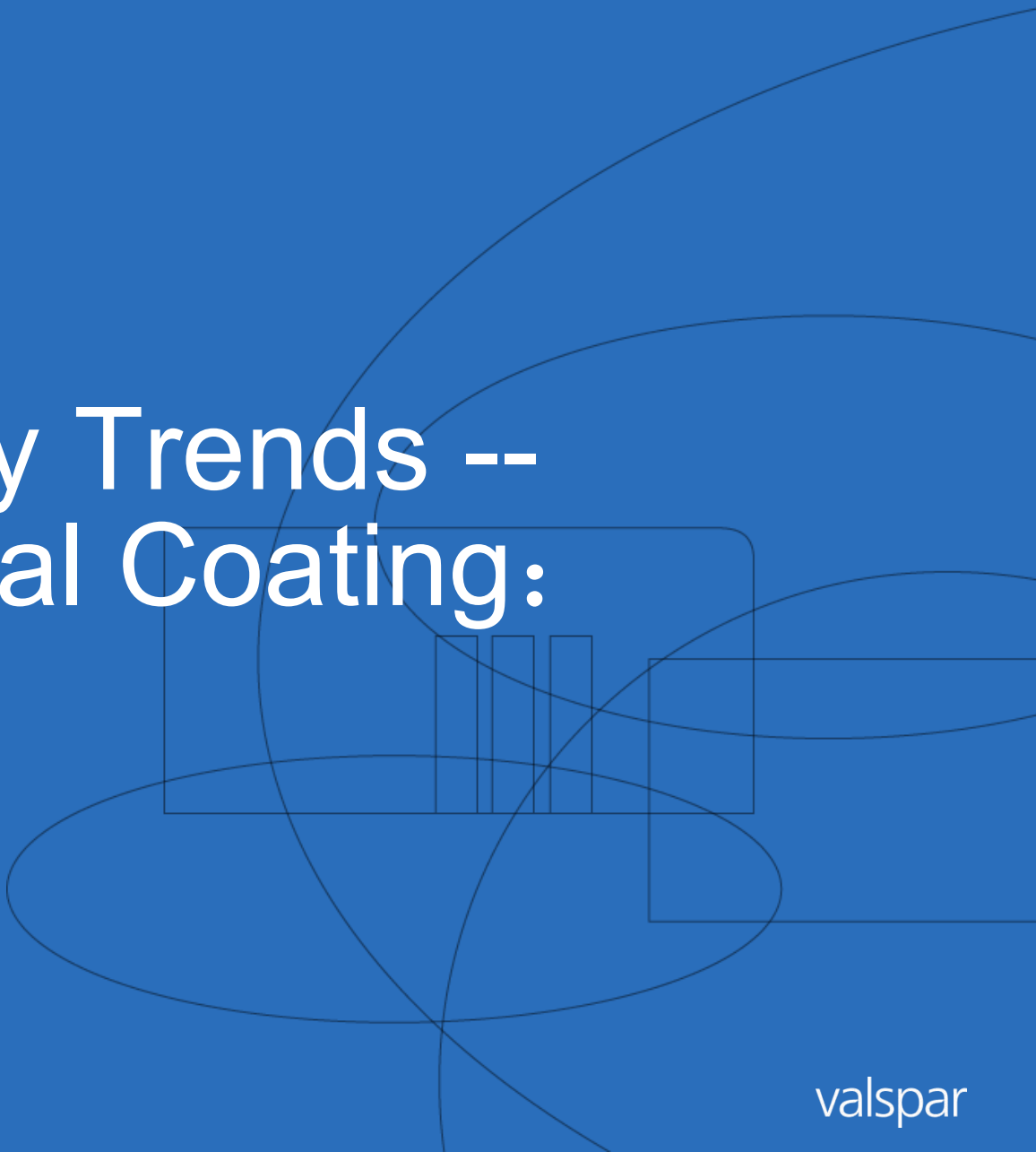
质量是企业的生命
质量是品牌的灵魂



Lean Six Sigma (LSS)
DFSS
Supplier Management
Raw Material Management
Customer Service

Lower Cost
Higher Efficiency
Improved Customer Loyalty

Technology Trends -- Architectural Coating：



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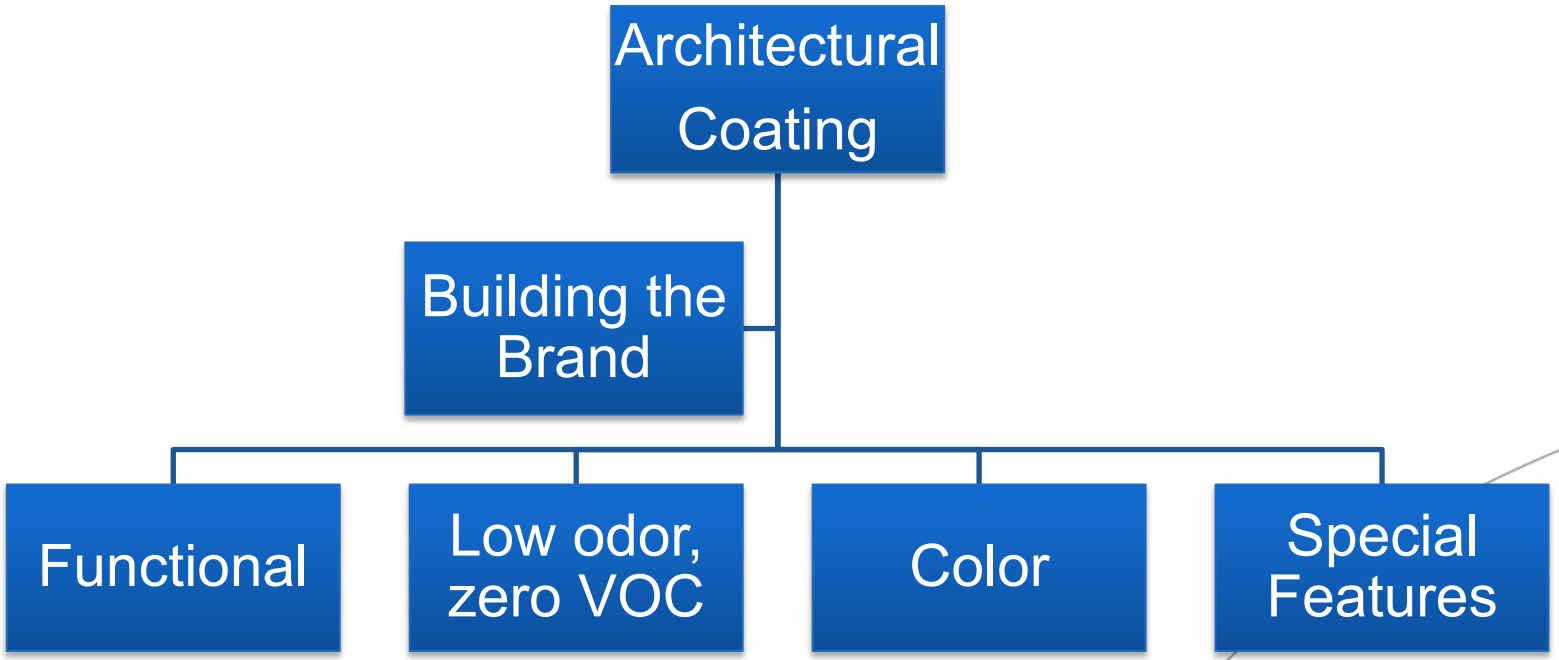
Architectural Paint Development



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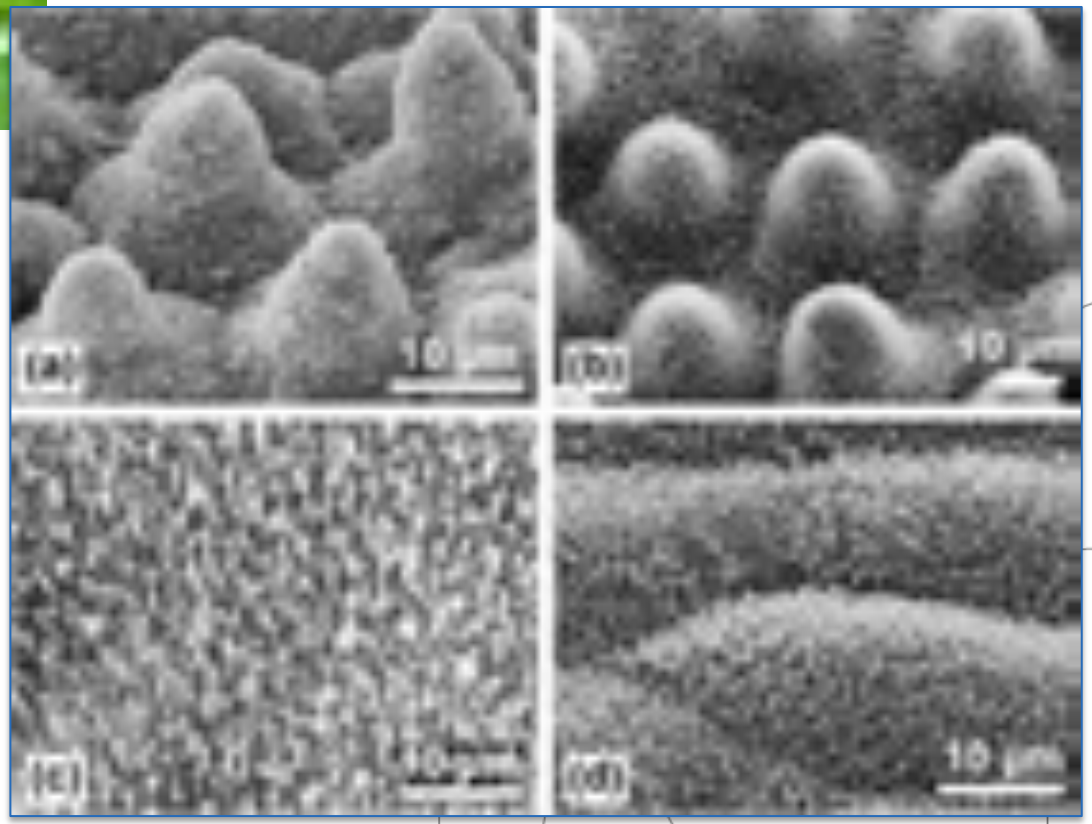
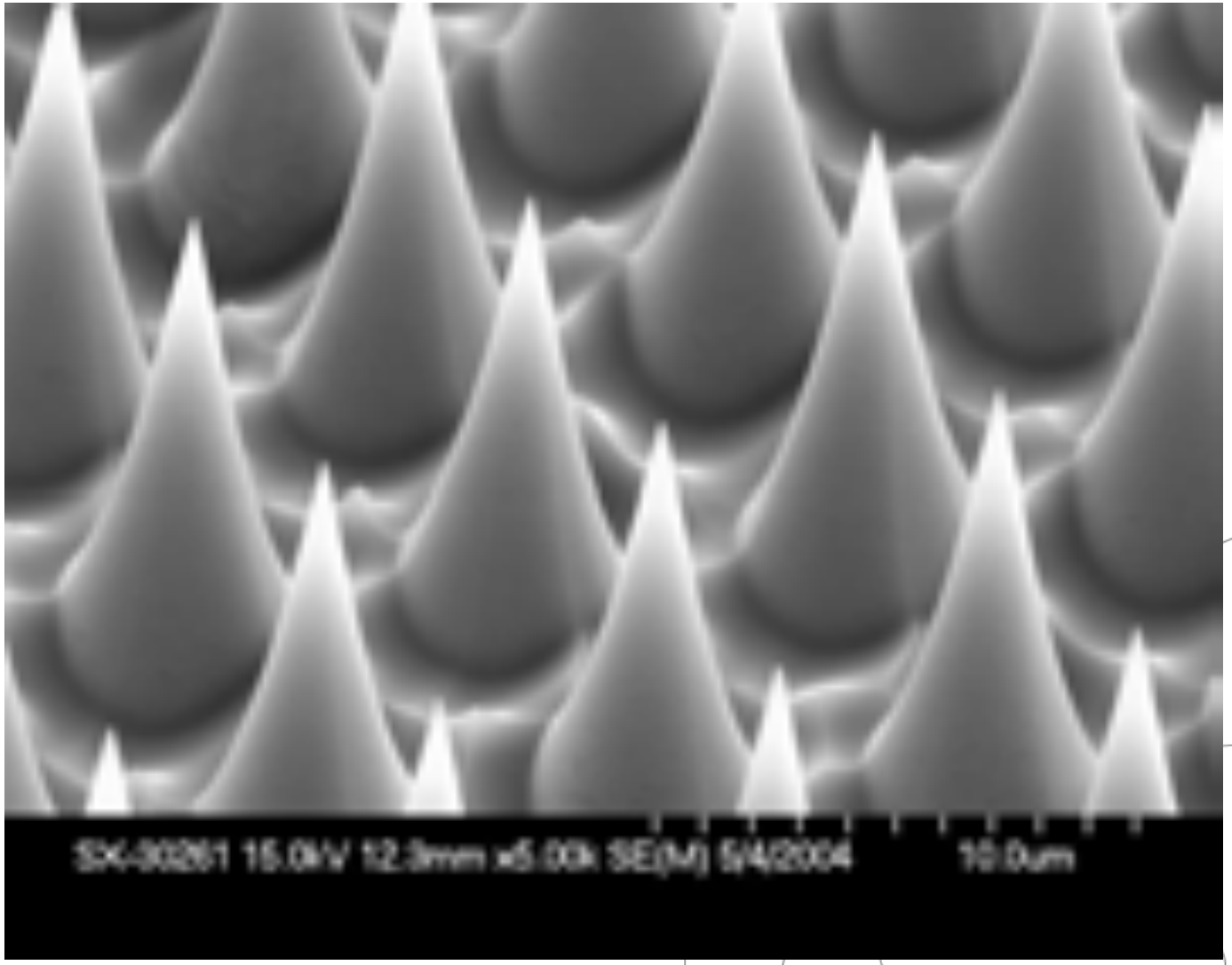
Digital Kiosk

Super-Hydrophobic Lotus Leaf Effect

Micron-sized periodicity with nano-sized features



SEM image of cones (looking at ~45 degrees)
> 1 million spikes per cm^2

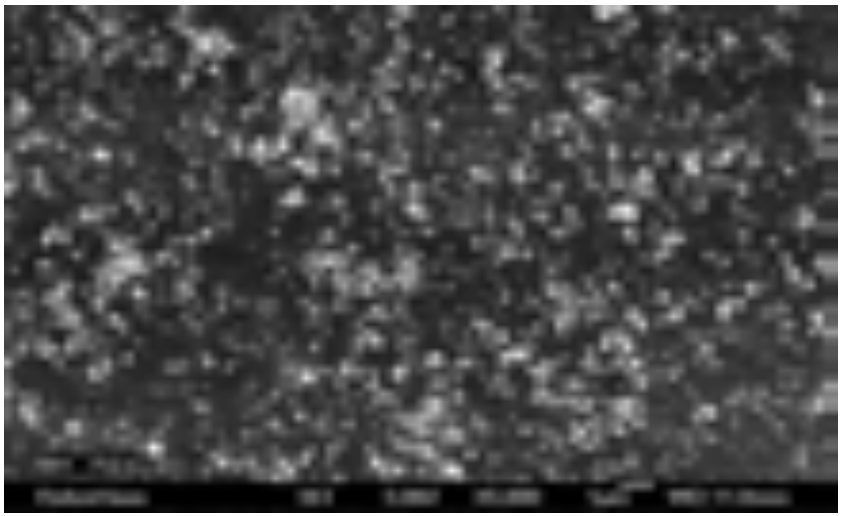


Diatoms -- Natural Spiky Material

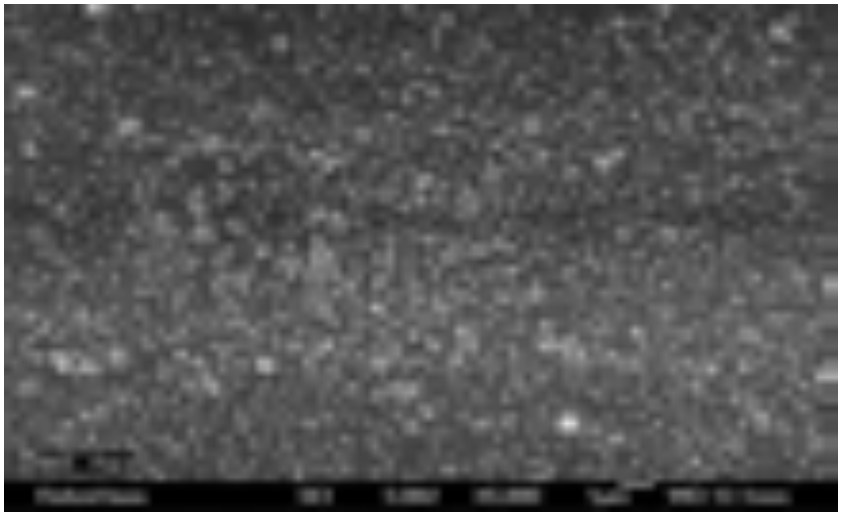
Gumowski-Mira Diatom

Diatom Mira

TiO_2 Spacing Technology



No Spacing Technology

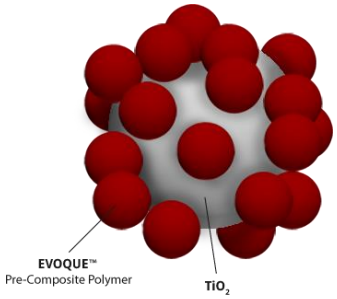


With Spacing Technology
Could reduce 10 to 20% of the TiO2 usage

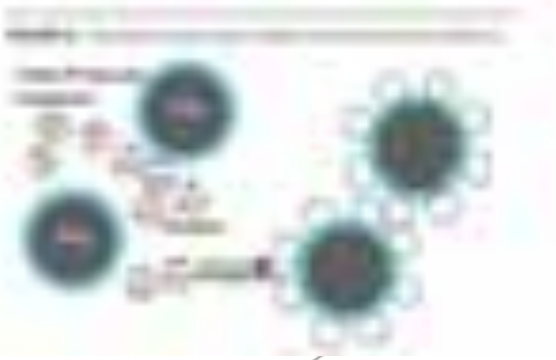
25

TiO_2 Spacing Technology

- Dow Evoque™ Technology

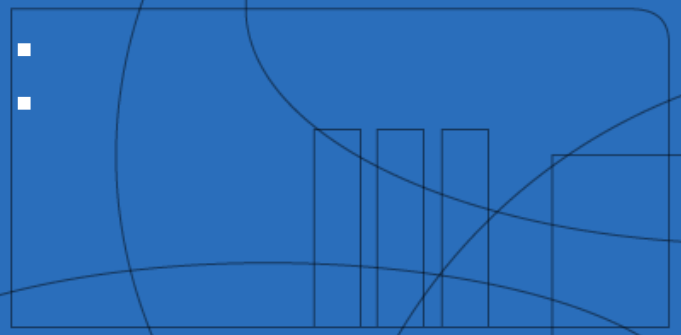


- Coatex “Bumper” Technology



- TiO_2 Encapsulation Technology

Technology Trends -- Wood Coating:



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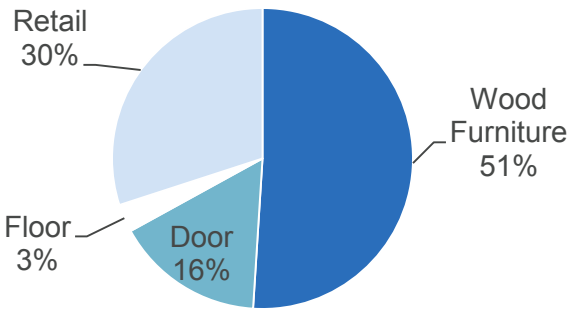
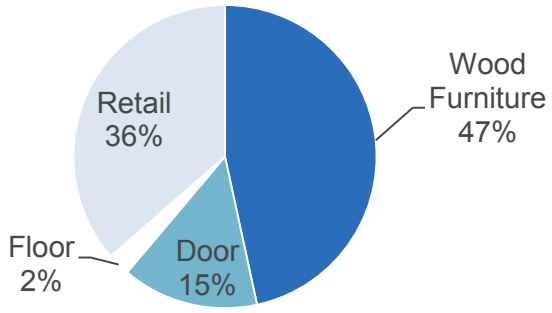
2012 China Wood Coating Segments by Application

Sales of 1 million Tons



Sales Revenue of 3.43 billion USD

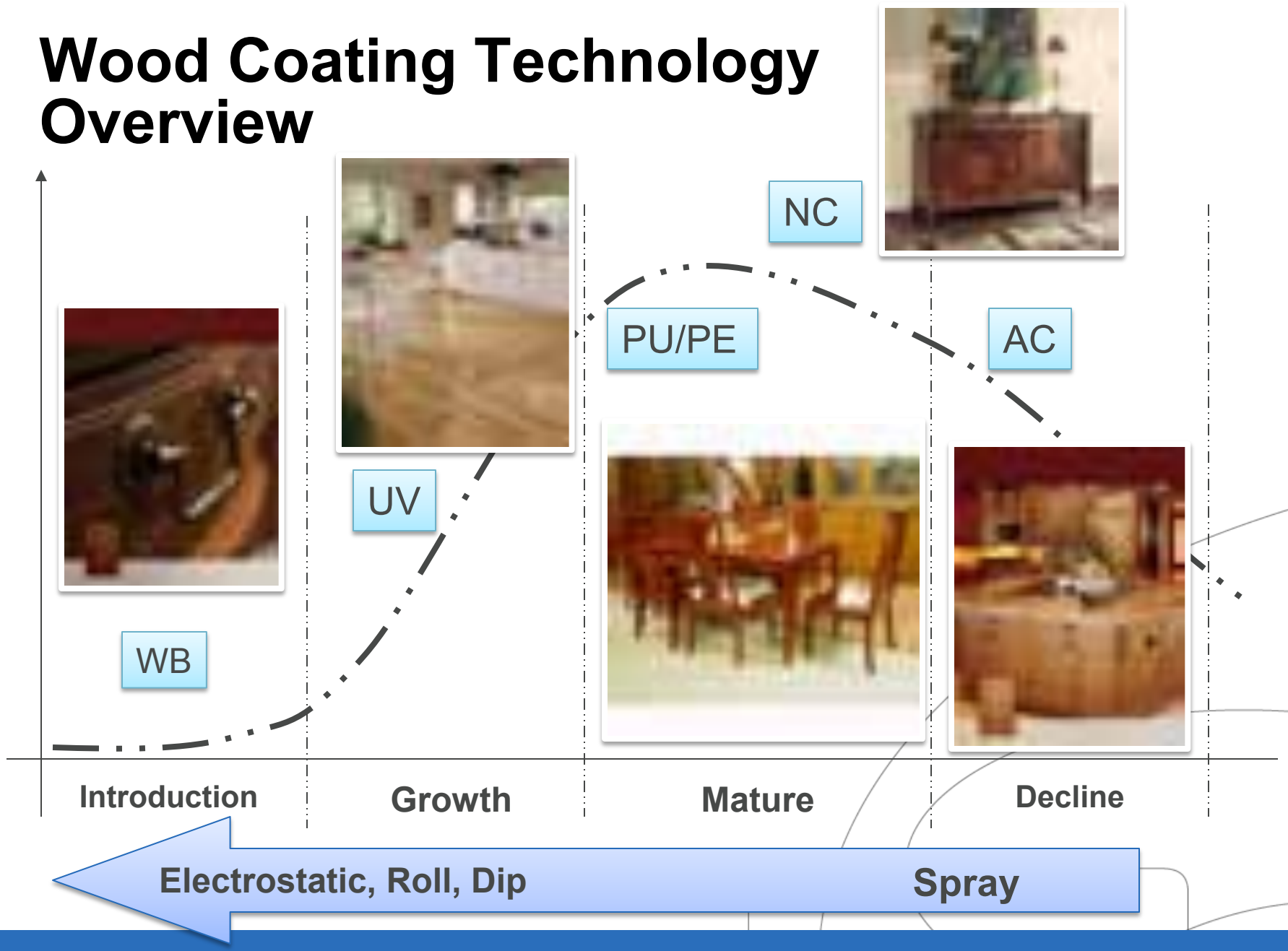


Application	2012 Sales volume (thousand tons)	2012 Sales value (billion $)
Wood Furniture	510	1.5
Door	160	0.5
Floor	30	0.083
Retail	300	1.25
Total	1,000	3.43

Source: China Coating Industry Association

- Wood coating sales volume and value are 1 million tons and $3.43B in 2012, growth are 2.0% and 3.6% respectively
  - ➢ *Retail sales volume is about 0.3 million tons, floor is 30,000 tons*
- Industrial wood coating accounts for 70% of total sales, retail wood coating accounts for about 30%
  - ➢ *industrial wood coating is mainly used in wood furniture, floor and doors*

Wood Coating Technology Overview



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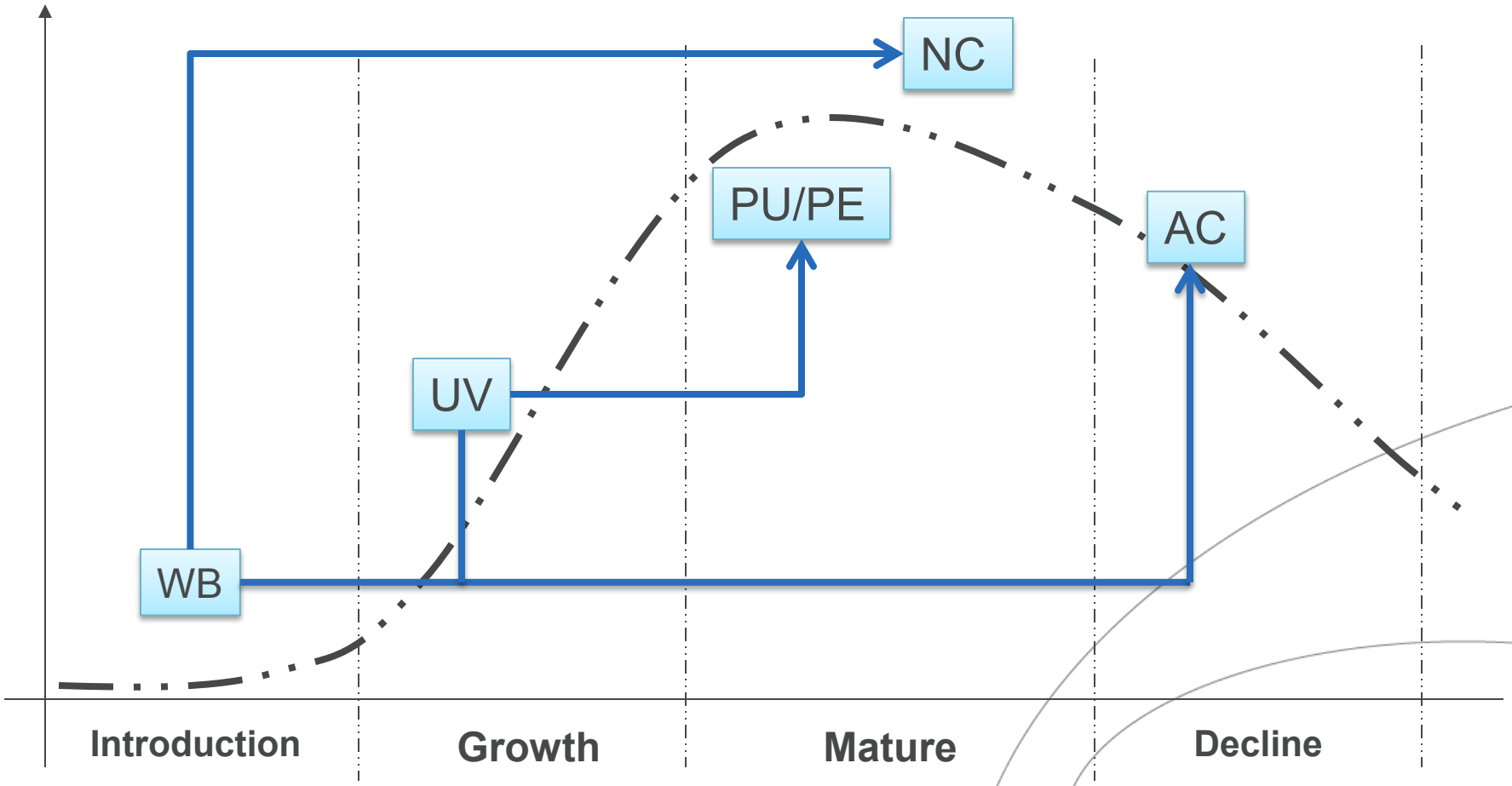
Wood Coating Technology — Green



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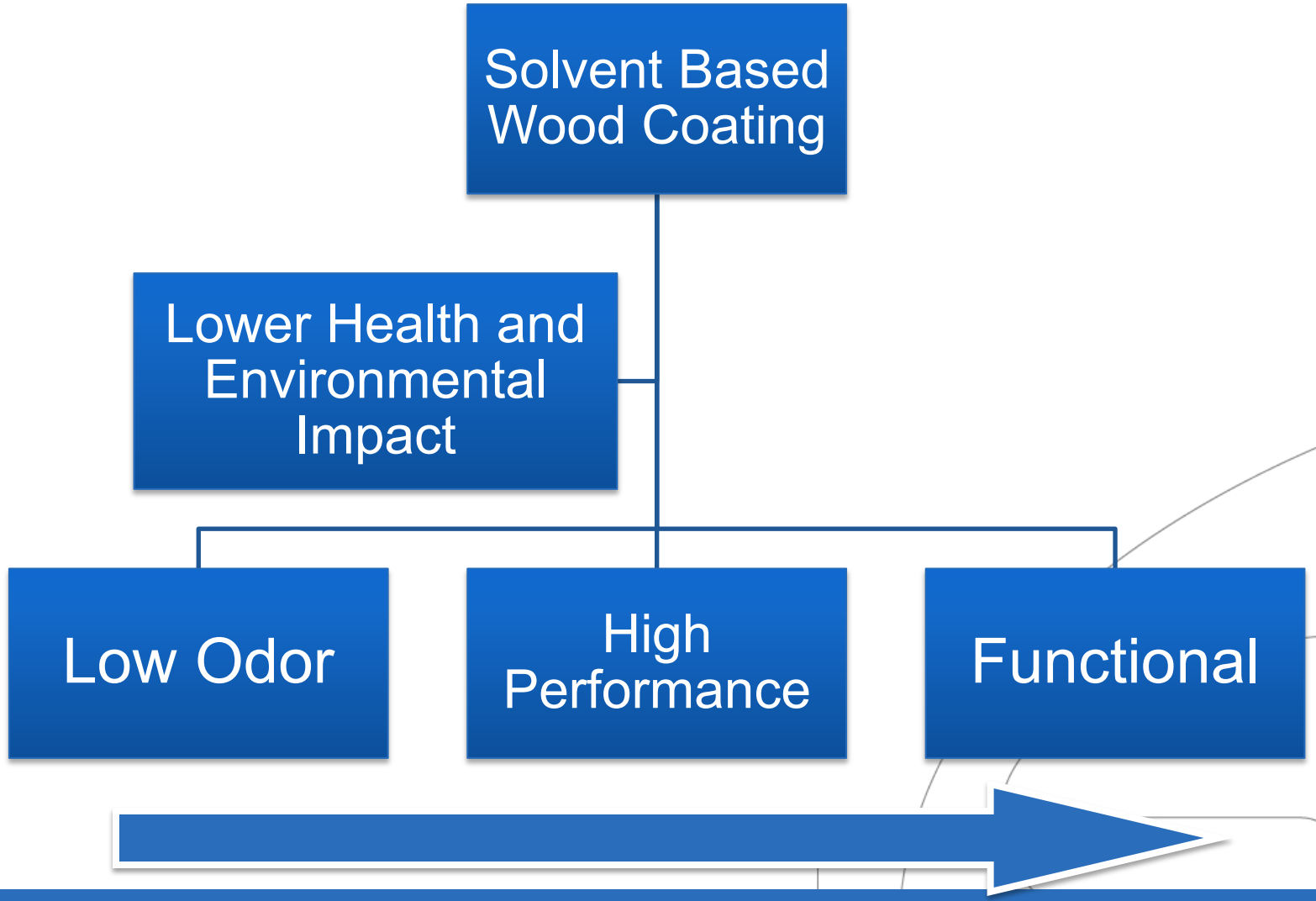
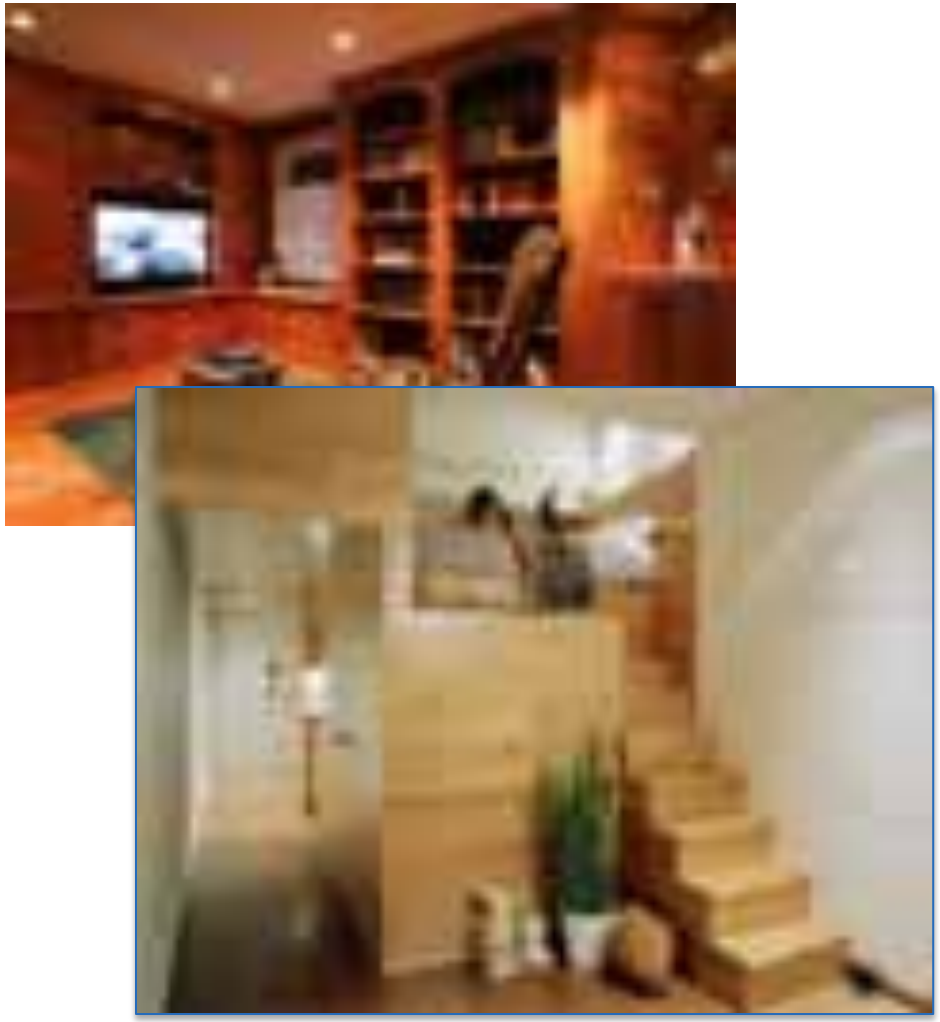
Solvent Based Wood Coating



Home Decoration in China



- Small apartment owners wants a lot of built-in wood work to gain more living space and increase comfort
- Luxury Villas use a lot of built-in wood panels to increase its appeal
- The quality of the wood and adhesives selected will directly impact the formaldehyde level experienced in the room

Products Developed

Amount of Formaldehyde-scavenging resin wt.%	4	8	12
Formaldehyde-Scavenging Efficiency %	**87.2**	**86.8**	**86.3**
Formaldehyde-Scavenging Longevity %	**62.7**	**65.9**	**69.7**
Test Requirement	≥75% Efficiency ≥ 60% Longevity		
Test Method	JC/T 1074-2008		

The testing data is from BEIJING BUILDING MATERIALS ACADEMY OF SCIENCES RESEARCH.

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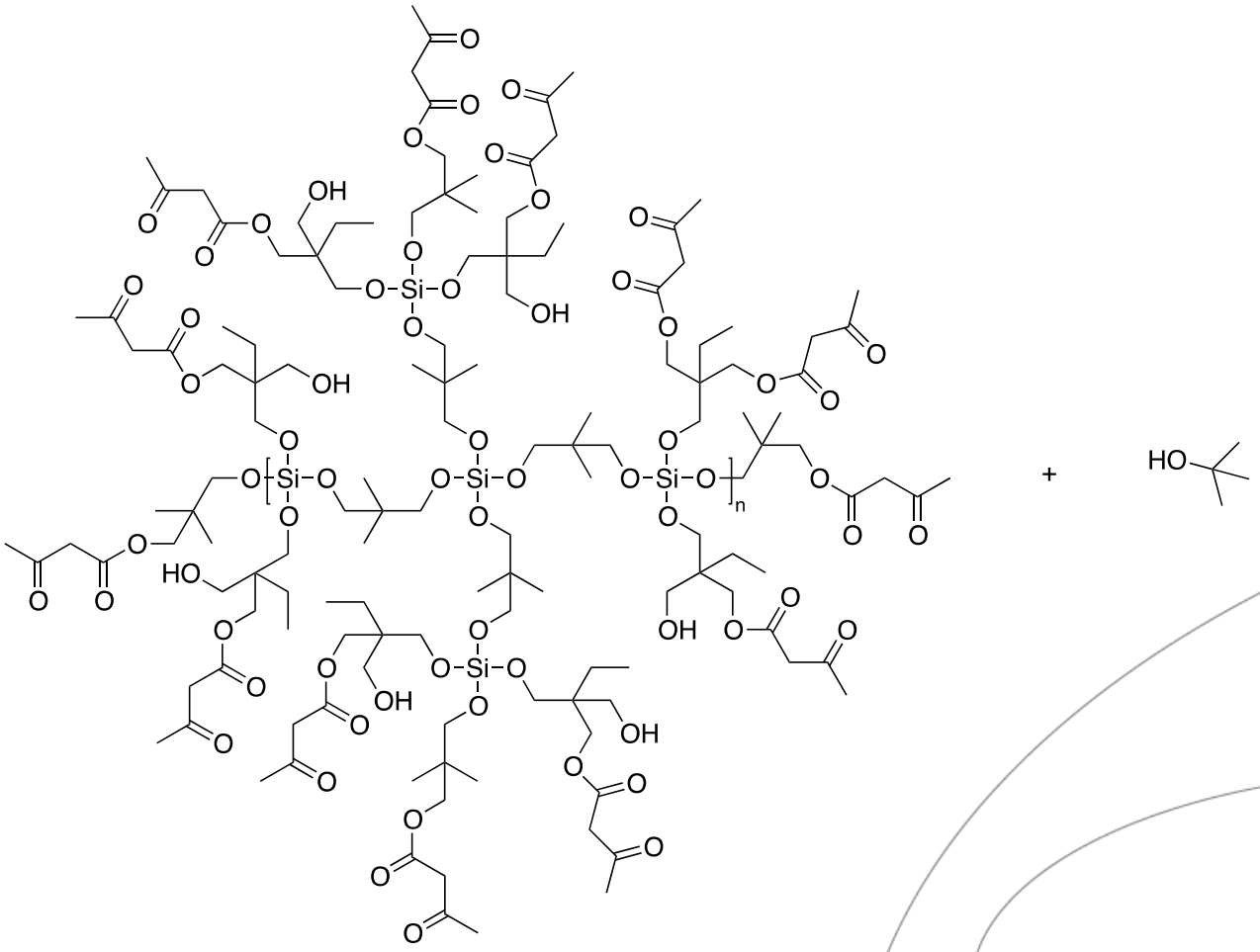
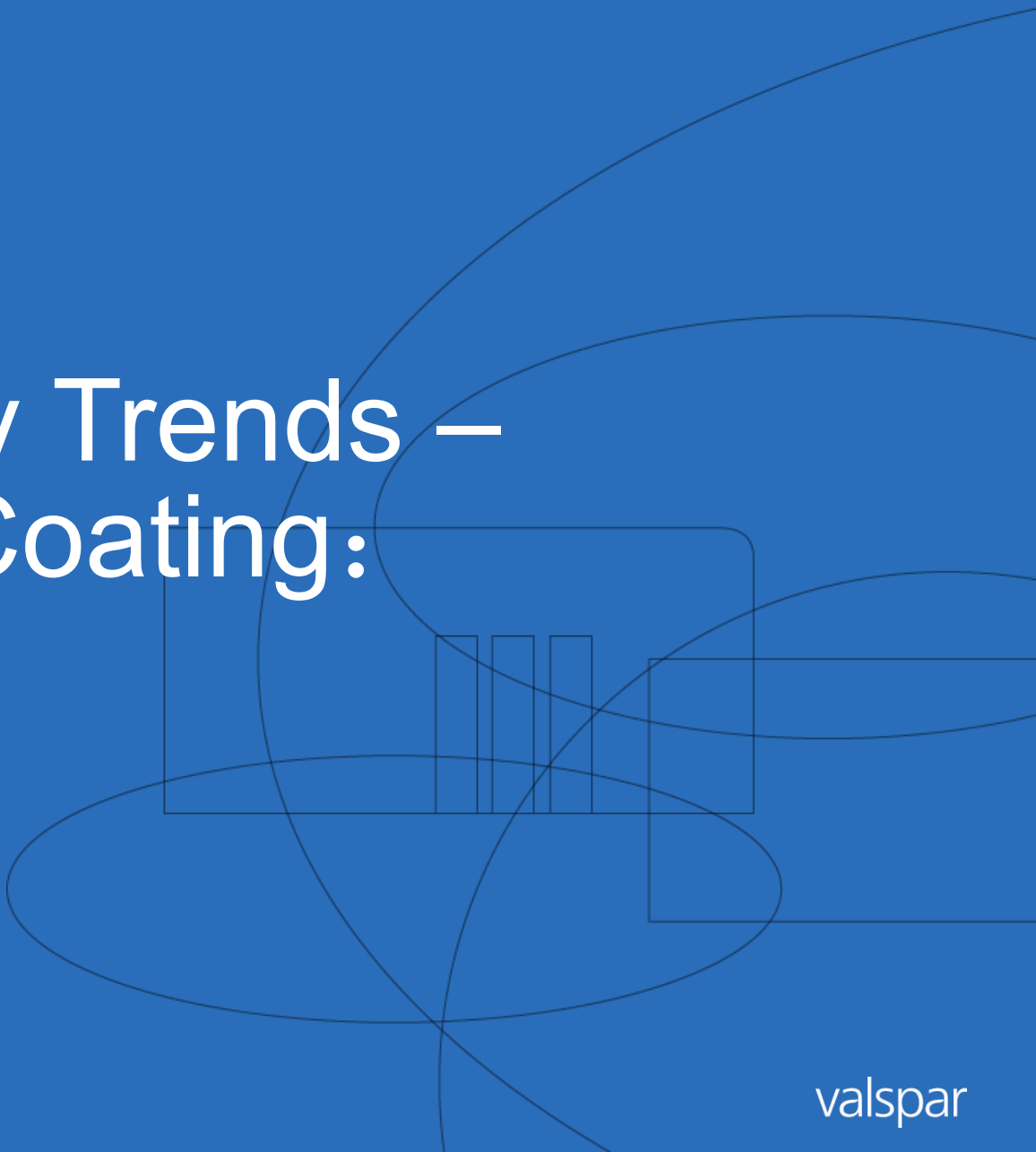
Formaldehyde Reduction Resin Structure



Intumescent Wood Coating

- **Thermal Shielding**
  - Insulation barrier to prevent heat reaching substrate
  - Char formation prevents continued combustion through barrier

Technology Trends – Industrial Coating:



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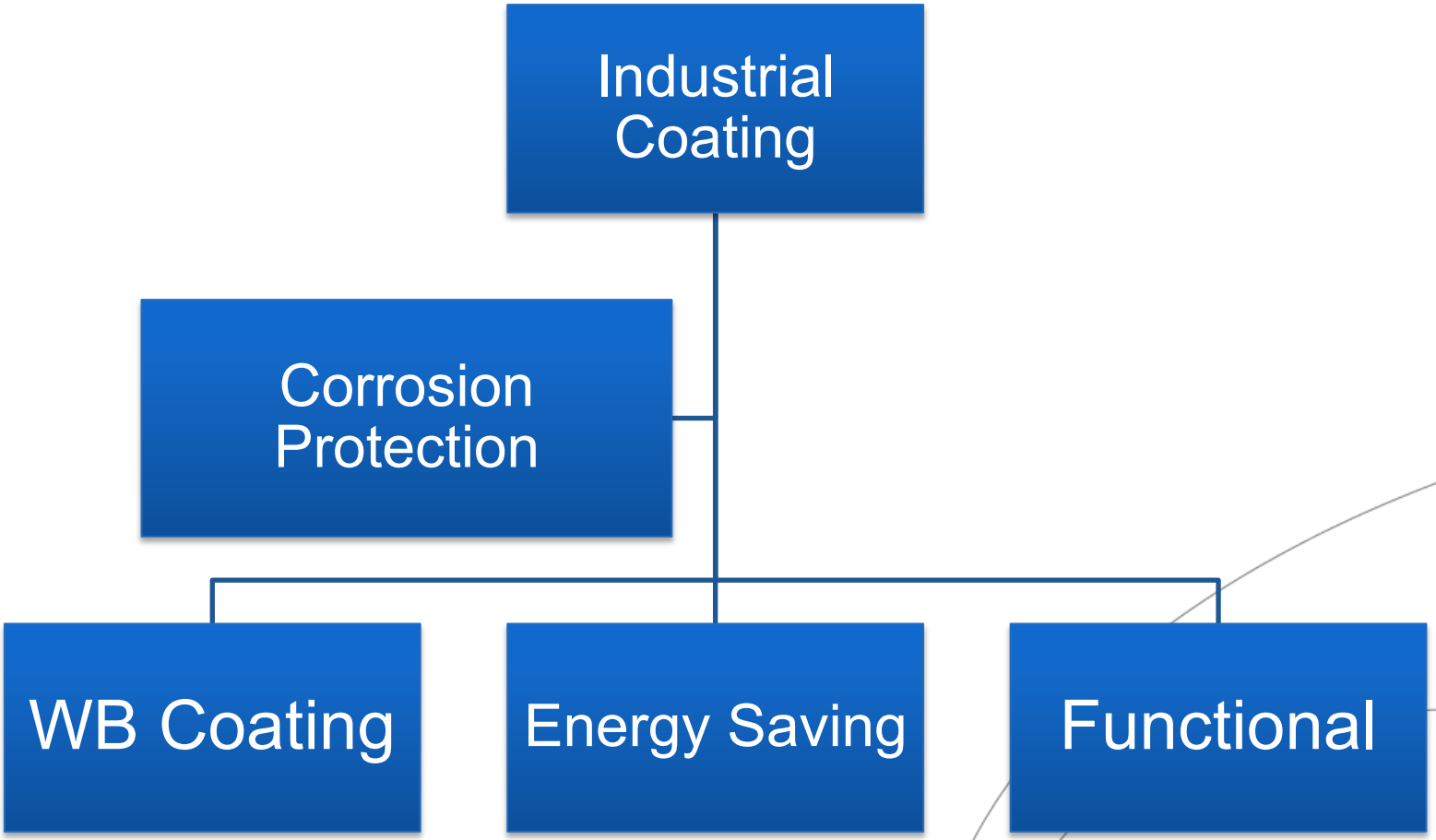
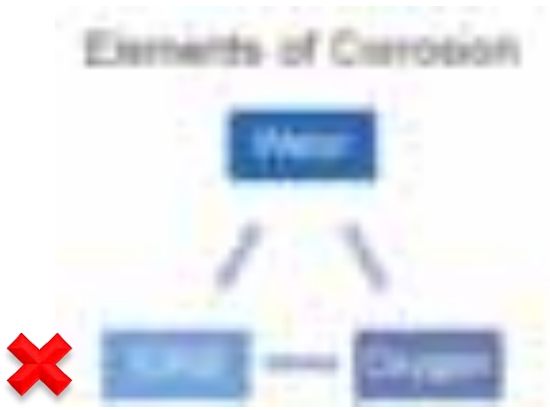
Industrial Coating Technology Trends



Zinc Free Performance

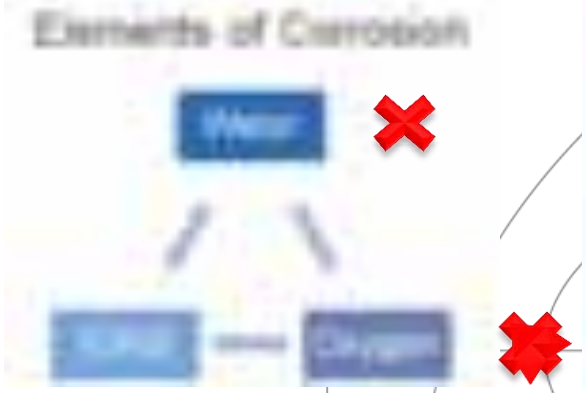
Zinc Coating Systems

- To stop corrosion, zinc based coatings remove the Ion potential
- To accomplish the removal, the Zinc “sacrifices” itself, degrading, to slow the rusting process
- The “sacrifice” produces a larger rust area than waterborne solutions



Valspar Aquaguard™ Solution

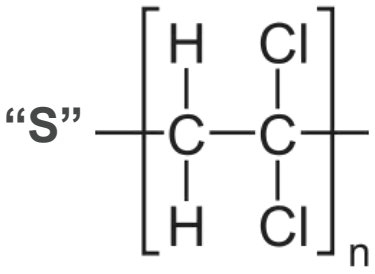
- Prevents water from reaching the surface to mix with Oxygen
- Prevents Oxygen from reaching the metal
- Performs without “sacrificing” itself, holding corrosion to smaller area



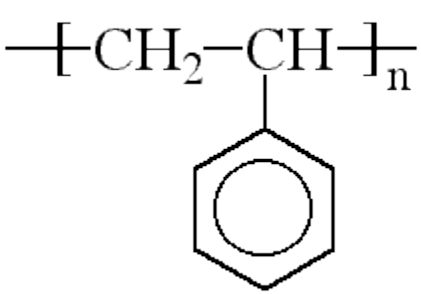
Why You Don't Need Zinc?

Resin	Oxygen (g*mil/(100 in2*day)	Nitrogen (g*mil/(100 in2*day)	Carbon Dioxide (g*mil/(100 in2*day)
SPVDC Polymer	0.12 - 0.16	0.04 - 0.4	0.4 – 2.0
Polystyrene	2400 - 3200	160 - 200	8,000 - 12,000
Polypropylene	1200	240	4800

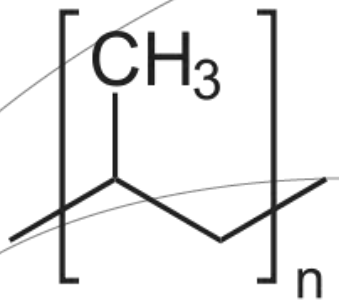
**Kirk-Othmer: Encyclopedia of Chemical Technology*, Forth Editions, Vol. 24 NY



SPVDC



Polystyrene



Polypropylene

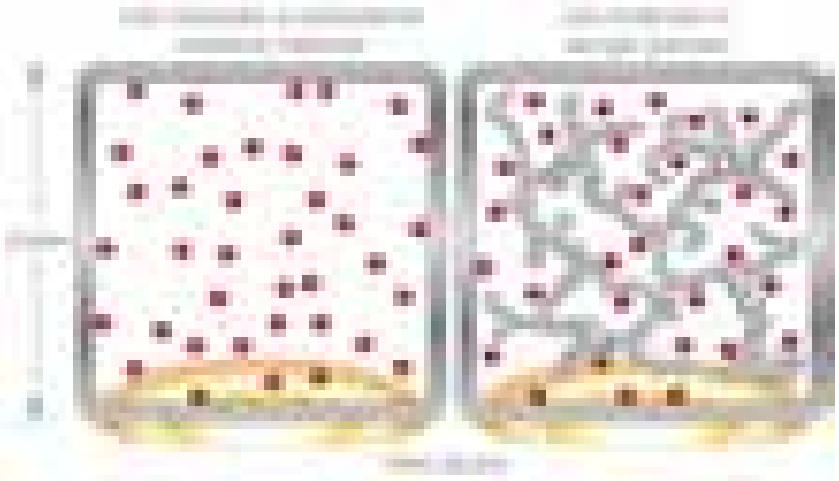
Shipping Container Outlook

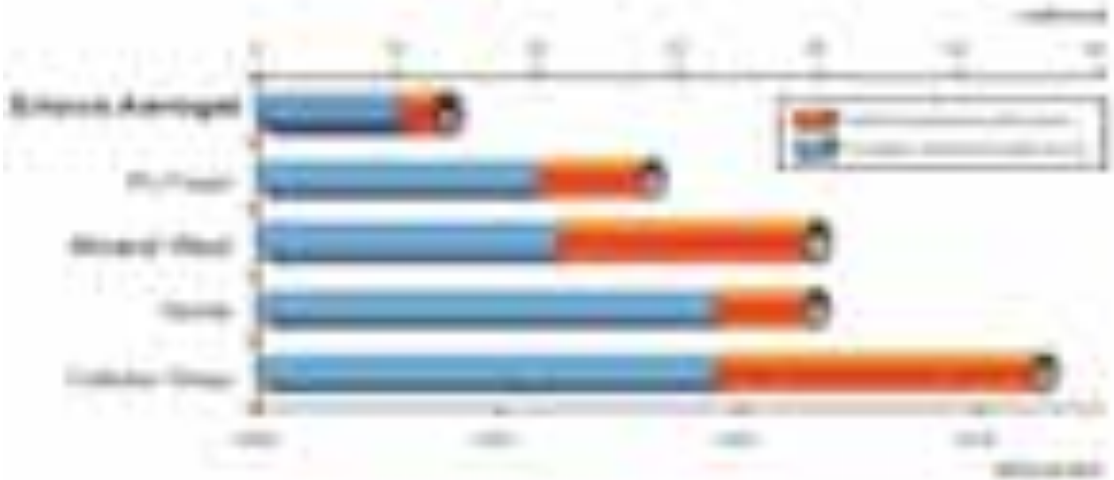
2010 Production:
2.7 Million Containers

Estimated 2016 Production:
4 Million Containers

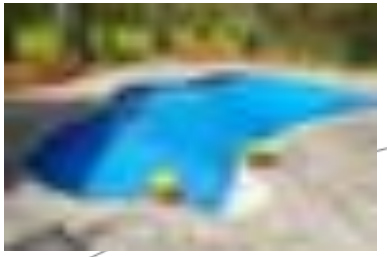
Coating	2010	2016	VOC per Container
Solvent	141,000 tons	208,800 tons	52.2kg
Aquaguard		4400 tons	1.1kg

Silica Aerogel – The world's best insulating solid





Potential Applications



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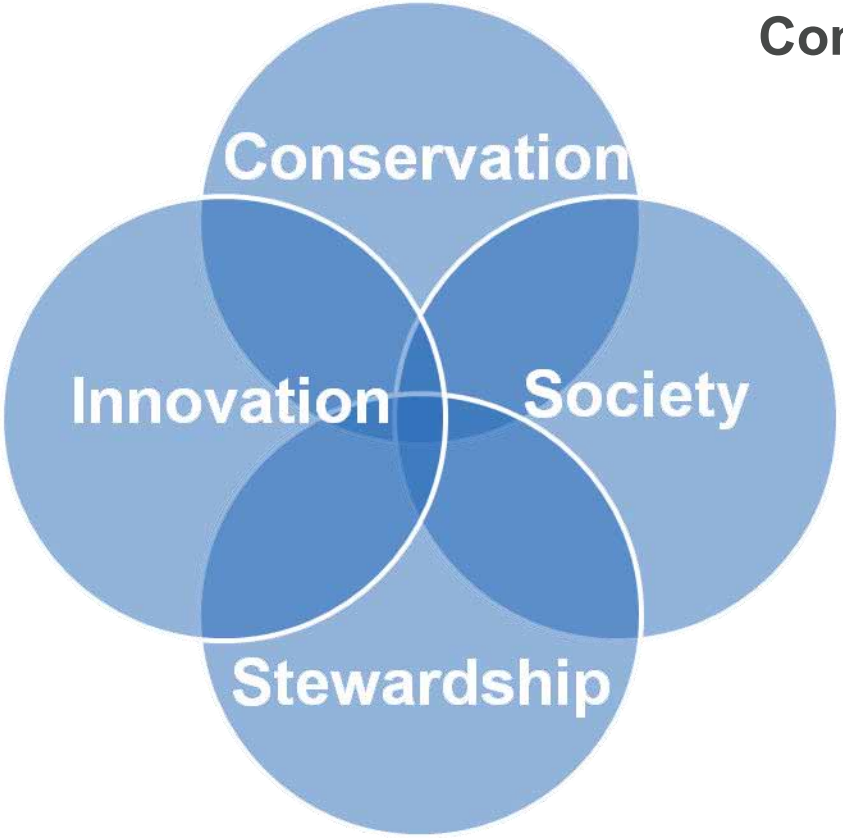
if it matters, we're on it.℠

Valspar's Commitment



Commitment to…

- Innovative Technology Development
- Delivering products that have minimal impact to the environment while meeting our customers needs
- Driving positive change for the coatings and paints industries

Thank You!