

**COA**  
**CONTAINER**  
**COATINGS**  
**REPORT 2020**



# Eco-friendly Container Coatings

COA Members Webinar  
3 December 2020

## **Introduction:**

*House rules*

*Anti-trust statement*

*Panellists*

## **Part 1: Environmental legislation**

*Environmental legislation has been a hot topic and the driver of changes in container production coatings.*

*In this opening session we will discuss the legislation, the implications and the predicted further tightening of emission controls*

## **Part 2: New technologies**

*The COA WG report highlighted new eco-friendly technologies.*

*We discuss how these technologies are progressing in terms of being introduced into the production process and what hurdles are faced*

## **Part 3: Reefers**

*We discuss the developments with reefer container coatings.*



**Wang Cheng**  
Head of Shanghai Sales Office

Marketing Manager (KCC China)  
TSD Team Leader (KCC China)



**Cho Sungwon**  
Marine & Heavy duty Coatings Team Leader (KCC China)

Waterborne Coating R&D (KCC CRI Korea)

KCC is the global fine chemical company  
We are building the future  
with our eco-friendly technology

KCC produces diverse products from exterior and interior  
construction materials, paints and new materials  
to enrich our life at each corner.

KCC is focusing its corporate competency  
in developing products of high added values  
based on energy efficiency and eco-friendly technology.



 Headquarters 344, Sapyeong-daero, Seocho-gu, Seoul, South Korea	 Date of Foundation <b>August 12, 1958</b>	 Number of Employees <b>4,024</b> (as of September 30, 2020)	 Amt. Sales <b>3,347,336</b> (Year of 2018/million-KRW)
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## Business Area

**BUILDING MATERIALS**

Celling Materials,  
Insulation Materials,  
Gypsum Board



**WINDOWS**

PVC Windows,  
Curtain Wall,  
Solar Power



**COATINGS**

Decorative,  
General Industrial,  
Heavy-duty,  
Automotive, Plastic



**SILICONE**

Sealant, Silane/Fluid, Emulsion,  
HTV, LSR, RTV, PRC, PSA



**ADVANCED MATERIALS**

Organic Materials,  
Inorganic Materials,  
Fiberglass





# Hempel

- Founded in 1915
- Ready-mixed paints
- Partnerships with customers
- Respect and benefits for employees
- Support social, humanitarian, scientific and cultural causes
- The Hempel Foundation established in 1948 is the sole owner of the Hempel Group
- Global presence for supply of container coating (Newbuilding and Maintenance)
- [www.Hempel.com](http://www.Hempel.com)

## Kim Scheibel



- Group Segment Director, Container
- Based in Shanghai/China since Oct. 2017
- Past experience during the last 40 years with Hempel: Technical Service, Marketing, Product management, Commercial, Management, Member of Board of Directors
- [ks@Hempel.com](mailto:ks@Hempel.com)





PPG is a global maker of  
**paints, coatings**  
and **specialty materials**



**Thomas P McAfee- Global Segment Manager – Trailer and Intermodal with PPG,  
Pittsburgh, PA USA**

Mr. McAfee is a Global Segment Manager at PPG, a global supplier of paints and coatings. He has worked in the coatings and intermodal industry for 39 years. His career has been defined by his ability to lead PPG and other companies into global growth-oriented markets. Industry Boards and Associations he has belonged to include ATA, SSPC, Truck Trailer Manufacturers Association and the Container Owners Association.

Additionally, he has been published in the Journal of Protective Coatings and Linings. He currently resides in Virginia and attended Virginia Commonwealth University and The University of Richmond.





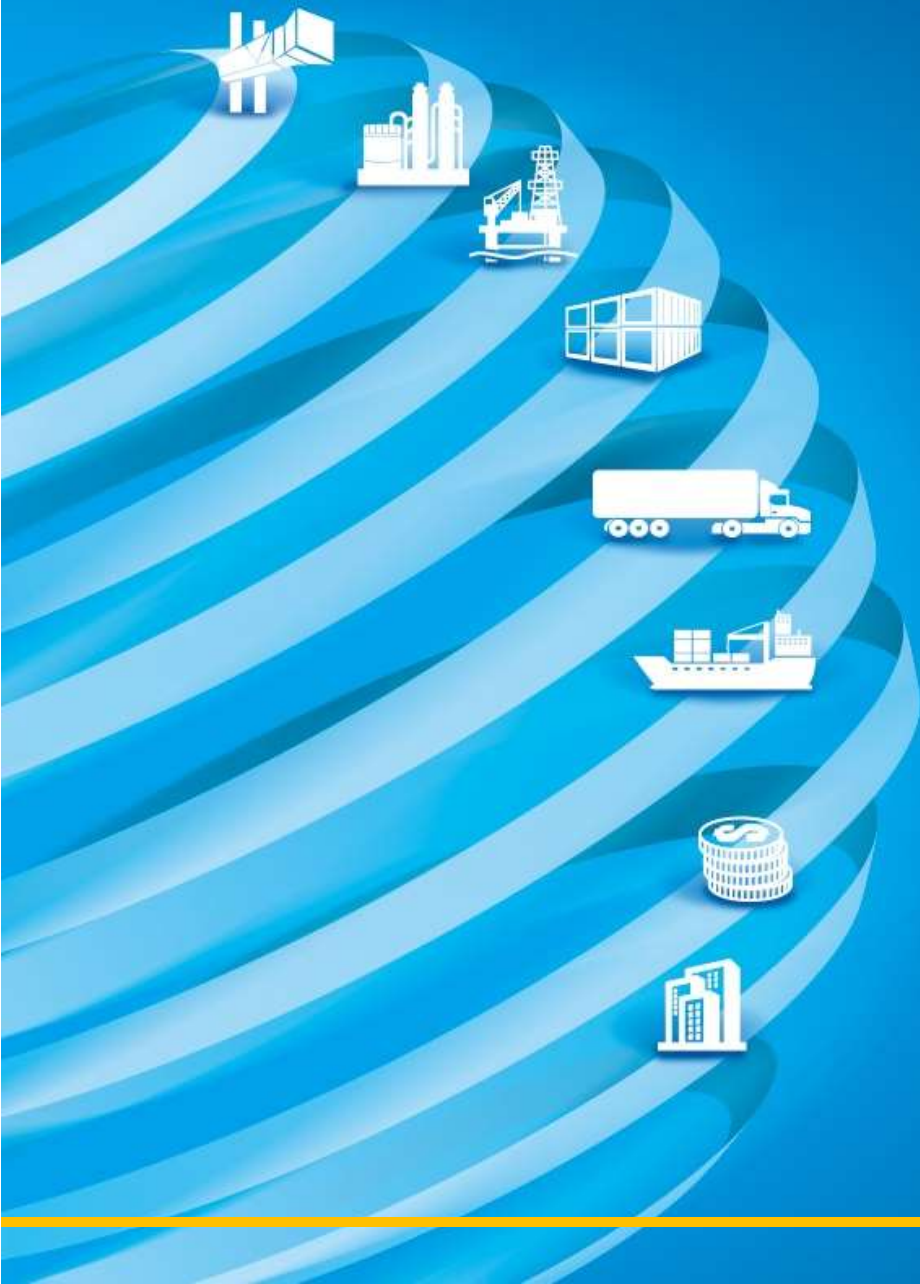
PPG is a global maker of  
**paints, coatings**  
and **specialty materials**

PPG是一家油漆、涂料及特殊化学品的全球制造商  
Founded in 1883 成立于1883

Headquarters in Pittsburgh, PA 总部在匹兹堡

47,000+ employees in 70+ countries  
\$15B annual sales  
现有47000员工，分布于70多个国家  
年销售额150亿美元

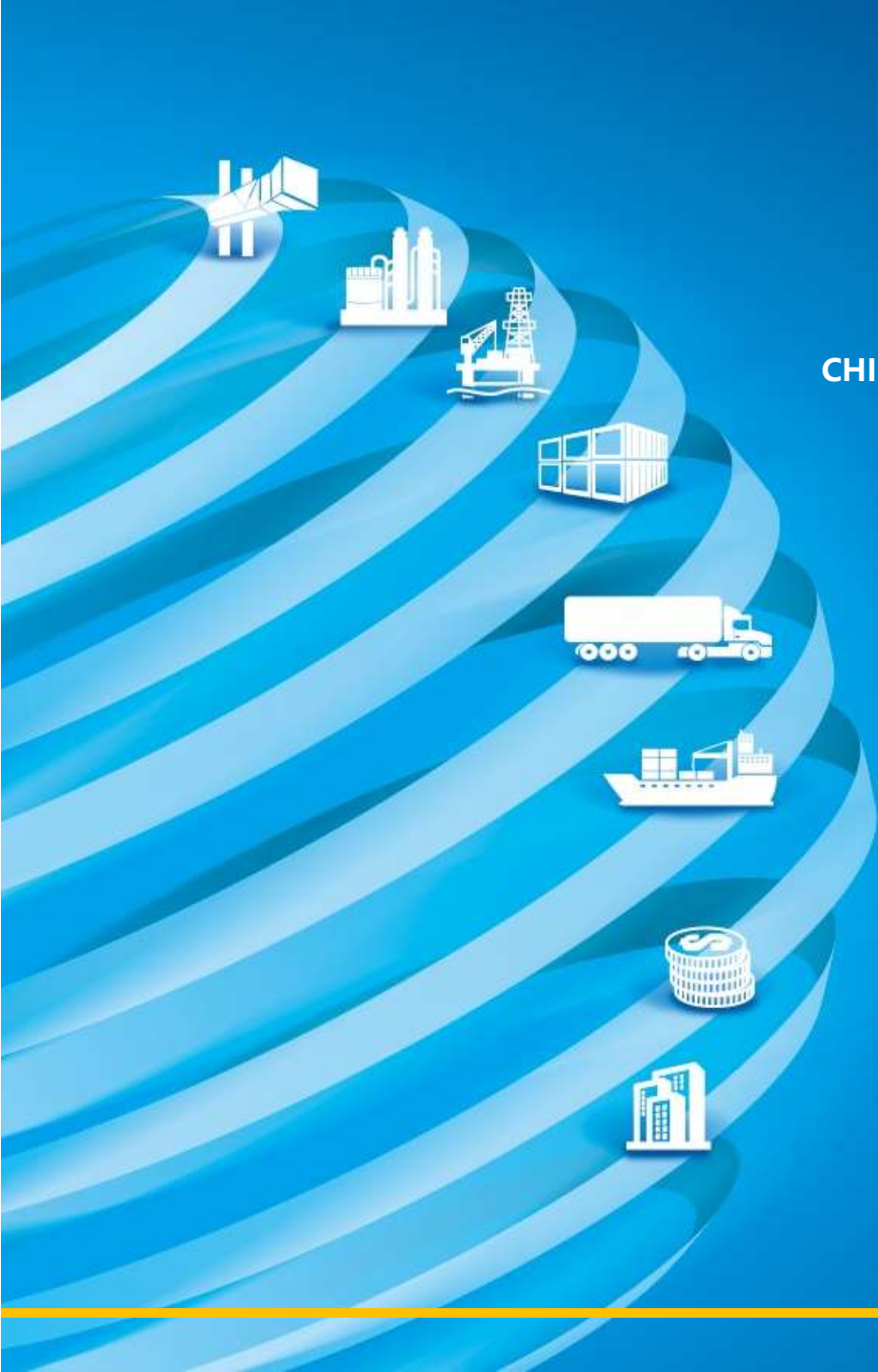




**Zorro Pan**

**Coating Technical Manager  
CIMC Container**





# CIMC

CHINA INTERNATIONAL MARINE CONTAINERS (GROUP) LTD.

- Providing high-quality and reliable equipment and services for logistics and energy industries.
- Bringing in good results for shareholders and employees.
- Creating sustainable value for society.

*Environmental legislation has been a hot topic and the driver of changes in container production coatings.*

*In this opening session we will discuss the legislation, the implications and the predicted further tightening of emission controls*



# VOCs Regulations : Contents

Chinese government continuously reinforce the regulations for environmental preservation. CCIA members follow the national guidelines.

	National regulations			Container industry's Self-discipline
Standard	HJ 2537-2014 Technical requirement for environmental labeling products	GB 30981-2020 1 Limit of harmful substances of industrial protective coatings	GB 38597-2020 Technical requirement for low-VOC content coatings product	JH/T E06-2015 The specifications of water based coatings for freight containers
Measurement Methods	GB/T 23986-2009 10.3 method	GB/T 23985-2009 8.4 method	GB/T 23985-2009 8.4 method	GB/T 23985-2009 8.3 method
VOC Contents	Primer Mid coat Top coat ≤ 200g/L ≤ 150g/L ≤ 150g/L	Primer Mid coat Top coat ≤ 350g/L ≤ 250g/L ≤ 300g/L	Primer Mid coat Top coat ≤ 320g/L ≤ 200g/L ≤ 250g/L	Primer Mid coat Top coat ≤ 14 wt% ≤ 100g/L ≤ 100g/L

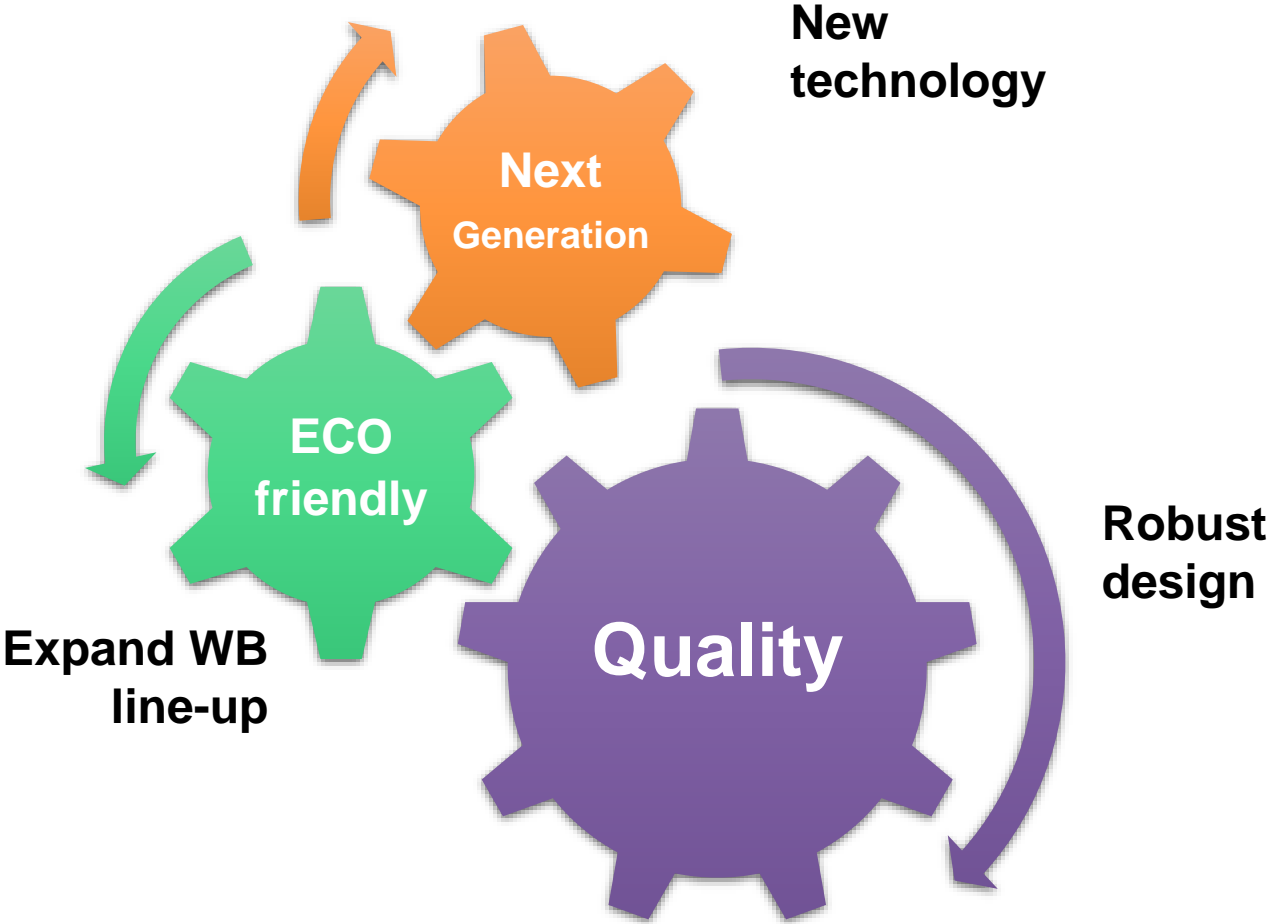
# Regulations : VOC Emission

Each province governments set the regulations for reduction of VOCs emission from coating facilities





# Waterborne Coatings for Dry Van Containers



*The COA WG report highlighted new eco-friendly technologies.*

*We now discuss how these technologies are progressing in terms of being introduced into the production process and what hurdles are faced*



# Waterborne Coatings for Dry Van Containers



COA Members  
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KCC eco-friendly coating system successfully applied  
from 1<sup>st</sup> July 2016 to now.

To cover over **2,360,000** TEUs of dry van containers,

we have been supplying **170,000** Tons of Waterborne paints.

Meanwhile, we have been reducing  
more than **100,000** Tons of VOCs in the industry.



- Interior: Electrocoat
- Exterior: Electrocoat + Powder



- **Superior corrosion protection:**
  - Tested to IICL Specifications
  - Exceeds performance of waterborne and solvent spray systems
- **Process automation and consistency:**
  - Reduce labor by 80%
  - Less material- Material efficiency above 90%
  - less rework
- **Environmental sustainability:**
  - VOC < 1.0 lbs
  - Total applied system cost reduction





# Current application of Electro-coat & Powder



*Although reefers were exempt from the first stage of environmental polices, legislation is now being introduced.*

*We discuss the developments with reefer container coatings.*



# CCIA: Reefer Environmental Policy



CCIA members discussed the need to meet legislative standards for reefers and other special containers

Reefer container coatings to be changed to waterborne.



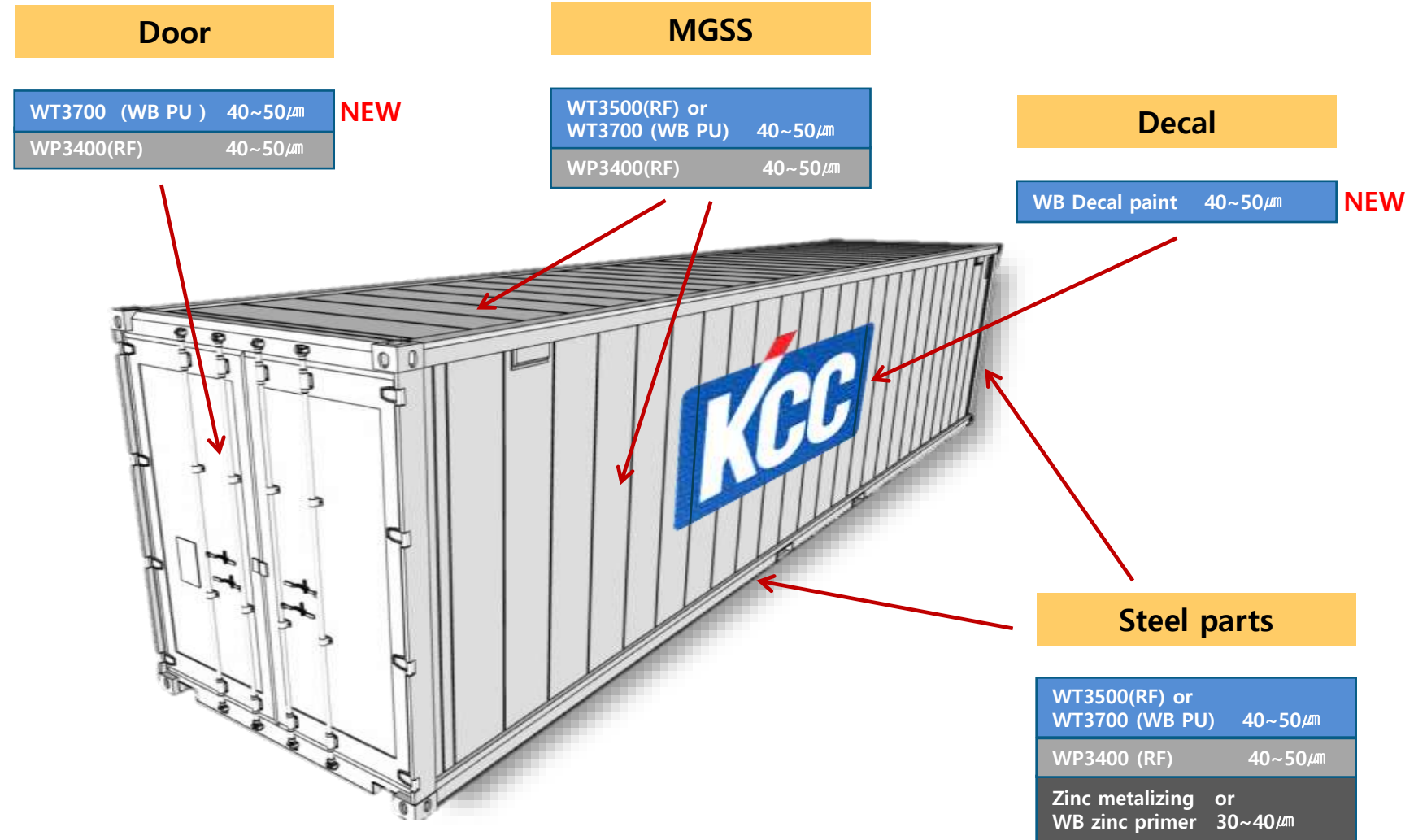


# Waterborne Coatings for Reefer Containers

Recently, developed two new products:

- Waterborne urethane
- Decal paint.

The full waterborne coating system for reefer containers.

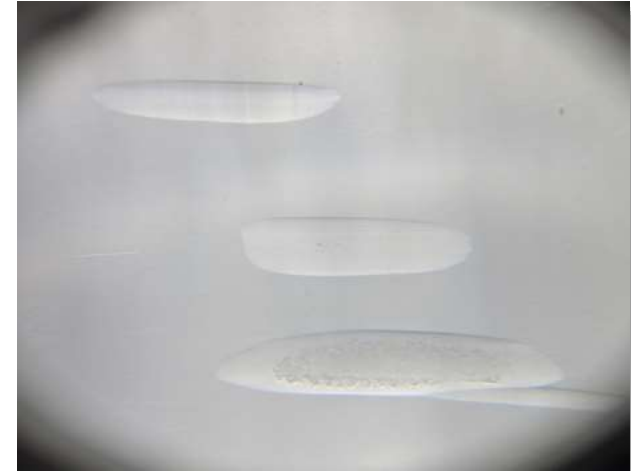


# Waterborne Coatings for Reefer Containers

Waterborne coating system shows acceptable workability and appearance.

Latest test in QCRC

- Main box and door panel
- 2020.11.8 / 11.29
- 40H \* 5 units (Acrylic top)
- 40H \* 5 units (Urethane top)

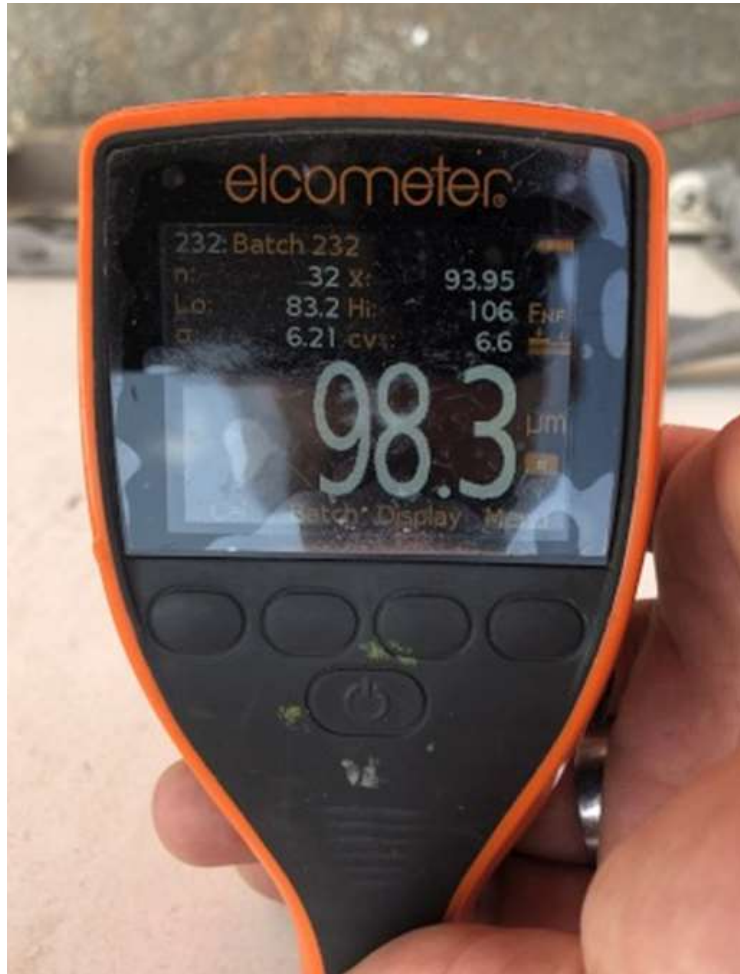


Hempel's polyurea applied to 5x40' reefers in 100mic DFT directly on hot zinc metallization and sweep blasted MGSS.  
Applied by manual spray using a dedicated 2-K pump with automatic mixing and potentially heating (30°C) in winter season.





# 100mic polyurea after 2 years in service



*(Doors are coated with epoxy primer and PU topcoat)*

Impact and scratch resistance very high – limiting/reducing maintenance.



Impact resistance in real life – polyurea is flexible enough to follow indents without flaking/lifting







Scratch resistance on MGSS

Superior adhesion to hot zinc metallization



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*Thank you*



**CONTAINER OWNERS**  
**ASSOCIATION**

*Additional Slides (not presented today)*



# KCC New product : WB Urethane

## WT3700

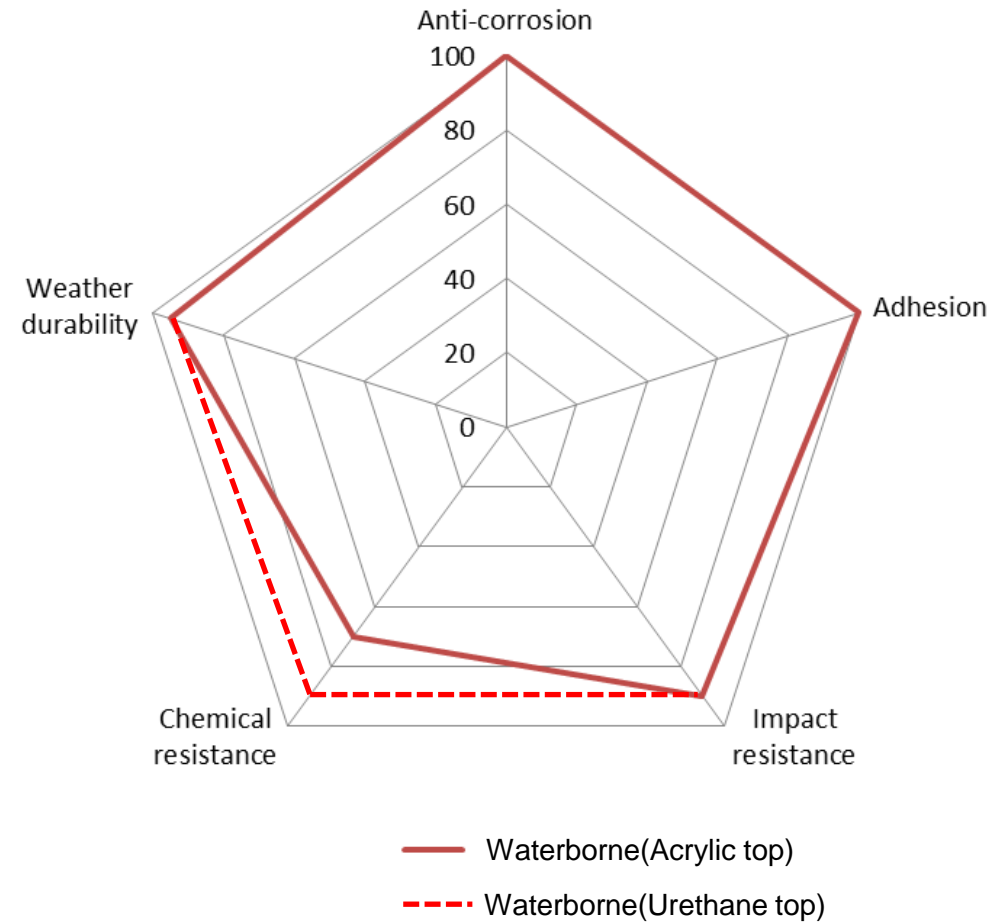
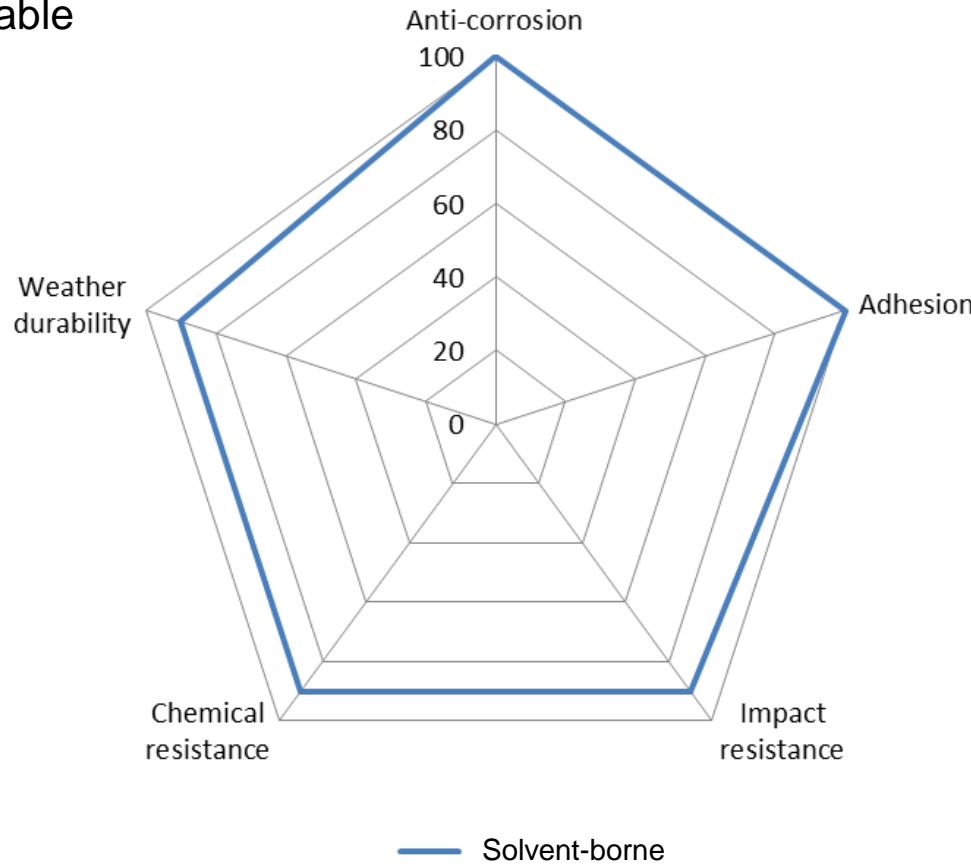
Newly advanced  
waterborne Polyurethane

- Excellent performance
- Low VOCs : 100 g/L
- Good weather durability
- High gloss : 75GU @60°

Category		Items	Results
Accelerated aging test	Salt fog 1000hours	Rust	10
		Blistering	10
		Rust creep	Below 1mm
	WOM Xenon-arc 600hours	Color difference	DE Below 0.3
		Gloss retention	Min. 90%
		Adhesion	5B
Mechanical performance	Forward impact	Forward impact	100 lbs·in
	Pencil Hardness	H	H
Chemical resistance	Acid	Sulfuric acid 5% aq.	5 days, No damage
	Alkaline	Sodium hydroxide 5% aq.	5 days, No damage
Pot life	25°C	30°C	40°C
	4 hours	3 hours	1 hour
Drying time	Set-to-touch	Dry hard	Dry through
	1.5 hours	6.5 hours	8 hours

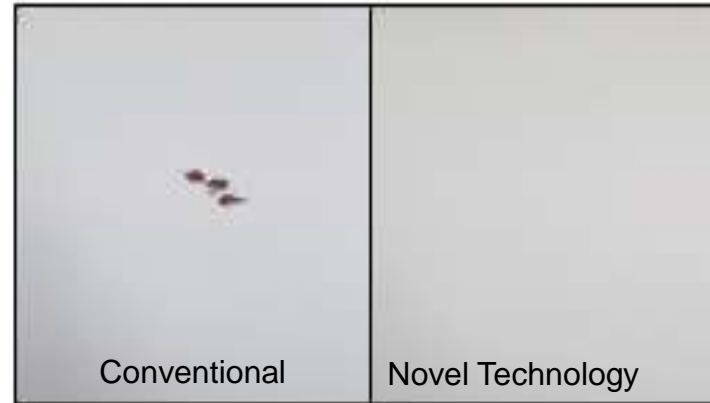
# KCC Waterborne Coatings for Reefer Containers

New waterborne coating system shows acceptable overall performance.



# New product : WB Decal Paint

- Waterborne fast dry paint
- Low VOCs : below 40g/L
- Semi-gloss : 50GU @60°
- Good weather durability
- Good dirt pick-up resistance
- Good adhesion to WB topcoat



Good early water resistance  
: This products can minimize force drying, shows excellent early water resistance  
※ Dry condition  
: R.T (25°C/50%RH) 30 minutes or IR Heating 8minutes  
→ immersion

Very low VOCs contents  
Approx. 90% VOCs reduction

