



*Water-Only Colorants Narrow the  
Gap to Solvent-Borne Performance*

**Mark W. Ellsworth, Ph.D.**  
**Technical Director, Global Colorants**

# *Agenda*

- Colorant basics
- CCA Colorant portfolio
- Comparisons of Water-Only Colorants and Universal Colorants

# Terminology

- Colorant: Concentrated liquid dispersion of pigment. Also contains various levels of surfactants, dispersion aides, biocides, anti-settling agents and resins
- Types of Colorants
  - Water-only
  - Solvent-based
  - Universal
- Colorants are added to paints, stains and other coatings to produce a desired color



# Water-only colorants

- General features and uses
  - Compatible with water-based acrylics
  - High pigment levels
  - Low to zero VOC capable
  - POS architectural
  - In-plant tinting
- CCA products
  - NovoColor IP 85xx
  - NovoColor HP 89xx
- CCA advantage
  - Tight color tolerances
  - Low to zero VOC
  - High pigment levels

# Solvent-based colorants

- General features and uses
  - Broadly compatible
  - Volumetrically controlled
  - Minimal to no impact on coatings performance
    - Gloss
    - Chemical Resistance
    - Hardness
- CCA products
  - OptiColor XP 41xx
  - ExacTint 7xx
- CCA advantage
  - Tight color tolerances
  - Wide array of product to fit a variety of industrial applications

# Universal Colorants

- General features and uses
  - Water-based colorants formulated with additional surfactants and co-solvents
  - Compatible in water-based paints and some solvent-borne paints
  - POS architectural and In-Plant applications
- CCA products
  - NovoColor II 88xx
  - 19xx Universal Colorants
- CCA advantage
  - Tight color tolerances
  - Broad compatibility in acrylic paints, alkyd paints, and stains
  - High hiding products

# Performance

- Tinting process
  - Quality and consistency of color match
  - Viscosity drop
  - Tip dry
  - Kick-out
- Final coating
  - Block
  - Tack
  - Hardness
  - Scrubs
  - Gloss





**CCA**

# Colorant Portfolio

*OptiColor® XP*

*ExacTint®*

*NovoColor® IP*

*NovoColor® II*

*NovoColor® HP*

*NovoColor® SF*

*NovoColor® SF*

*Architectural  
POS*

*Architectural  
In Plant*

*Industrial  
POS*

*Industrial  
In Plant*

*Specialty*





# Industrial & Wood Colorants

## Point of Sale and In Plant Use

### Solvent based

#### OptiColor® XP 41XX Series

- Broad compatibility with 2K urethanes, epoxies, alkyds, CAB/Acrylics, conversion varnishes, and nitrocellulose
- Primary Markets: Industrial Maintenance  
General Industrial and Wood



## In Plant Use

### Water based

#### NovoColor® SF – SuperFine Series

- Designed for tinting of water based coatings and stains
- Superior fastness and transparency
- New and improved products coming soon



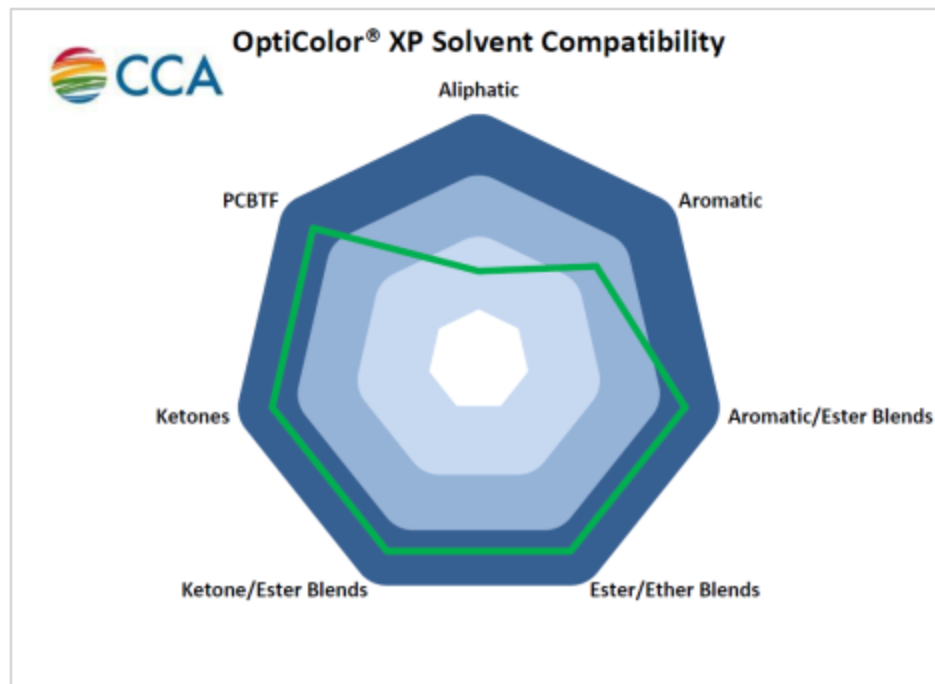
# OptiColor XP – 41XX Series

- Solvent-borne Industrial Colorants
  - Wide compatibility, particularly in NC lacquers
  - Low VOC – 19% on average
- Hydroxyl functionality allows the grinding resin to react into urethane coatings
- Tightest tint strength and color specification in the industry
  - +/- 1% Tint strength and dE <1.0 FMCII, by volume
  - Hegman grind – 7.0 minimum

XP Product Code	844 Product Code	Product description
4100	844-0061	TITANIUM WHITE
4110	844-2852	ORGANIC YELLOW
4112	844-2555	L/F MEDIUM YELLOW
4121	844-5558	PHTHALO GREEN BS
4132	844-7262	PHTHALO BLUE RS
4139	844-9451	QUINACRIDONE VIOLET
4142	844-0550	NAPHTHOL RED YS
4144	844-1063	RED IRON OXIDE
4148	844-0451	QUINACRIDONE RED
4166	844-0982	L/F ORANGE
4177	844-1863	YELLOW IRON OXIDE
4183	844-2075	RAW UMBER
4185	844-1352	BURNT UMBER
4188	844-1352	BURNT UMBER
4191	844-9955	LAMP BLACK
4192	844-9955	LAMP BLACK
4193	844-9956	CARBON BLACK

# Industrial & Wood Colorants: OptiColor XP

		OPTICOLOR XP
ACRYLICS	THERMOSET, CARBOXYL	++
	THERMOSET, HYDROXYL	++
	THERMOPLASTICS	++
ALKYDS	BAKING ENAMELS	++
	SHORT AND MEDIUM OIL	++
	LONG OIL/MINERAL SPIRITS	o
	SILICONE MODIFIED	++
	STYRENATED	++
	UREA	++
	VINYL-TOLUENE	++
	CHAIN STOPPED	++
	CELLULOSIC	
LACQUERS	ETHYL CELLULOSE	++
	NITROCELLULOSE	++
CHLORINATED RUBBER		++
EPOXIES	AMIDE CURE 2K	++
	ONE PACK	++
METHACRYLATES		++
POLYESTERS		+
POLYUREA		+
POLYURETHANES	OIL MODIFIED	++
	2K	++
	MOISTURE CURED	++
UNSATURATED POLYESTERS	STYRENE	o
	NON-STYRENE	o
VINYL LACQUERS	POLYVINYL BUTYRAL	o
	VINYL ACETATE/CHLORIDE	+
		++ HIGHLY COMPATIBLE + COMPATIBLE o LIMITED USE



- Highly recommended
- Recommended
- Limited use
- Rating for OptiColor XP

# Architectural Product Lines

## Point of Sale Use

### Universal Colorants

#### NovoColor® II 88XX Series

- Low VOC according to 40 CFR 59.406
- Compatible with latex and solvent systems

### Water-Only Colorants

#### NovoColor® HP 89XX Series

- Low VOC as determined by ASTM D6886
- Compatible with latex systems only

## In Plant Use

### Water based

#### NovoColor® IP – 85XX Series

- High strength in plant dispersions for water based architectural and industrial systems
- Low VOC according to 40 CFR 59.406
- Primary markets are Wood Coatings, and General Industrial 2-Coat Applications, 1K and 2K systems





*Water Only Colorant versus  
Universal Colorant  
Comparison*

# Colorant Evaluation

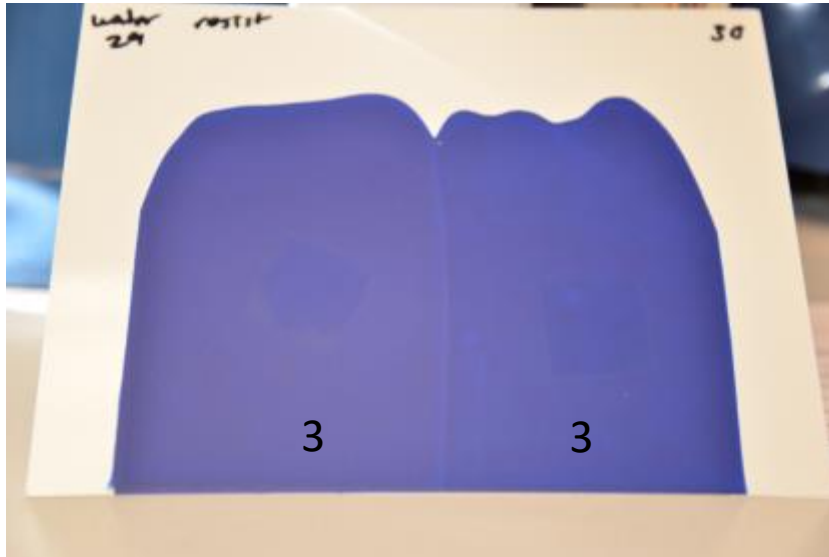


# VOC Comparison

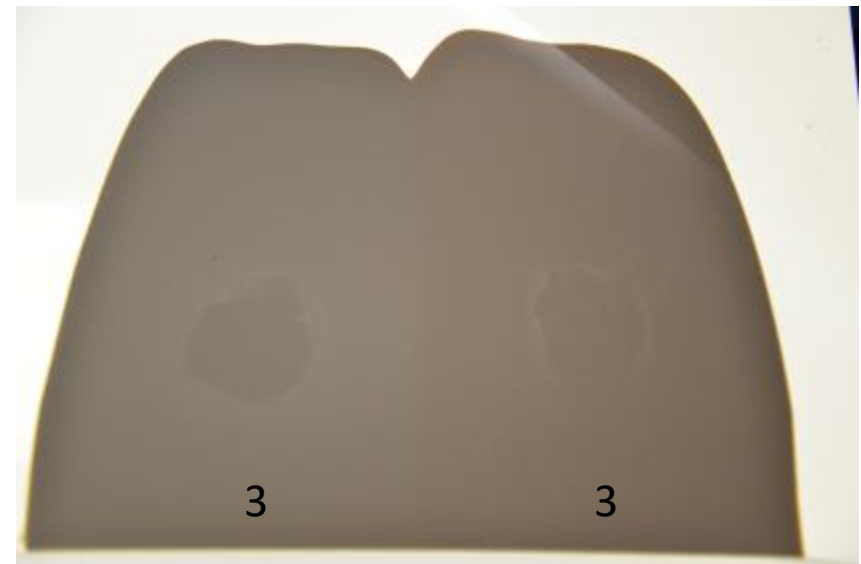
Color	Competitive	CCA	CCA
Compatibility	Universal	Universal (NovoColor II)	Water Only (NovoColor HP)
Yellow Oxide	93 g/L	21 g/L	1.5 g/L
Phthalo Green	127 g/L	17 g/L	1.9 g/L
Phthalo Blue	127 g/L	18 g/L	0.9 g/L
Red	119 g/L	13 g/L	0.8 g/L

\* Tested via ASTM D6886 using Methyl Palmitate as BP Marker

# Standing Water Resistance Test

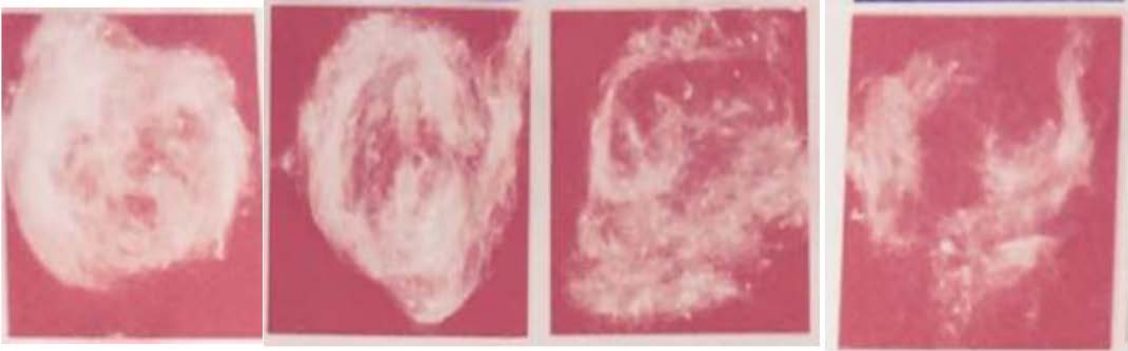


Initial	
5 No Effect	No bubbles, no wrinkling, no surface distortion
4 Very Good	No bubbles, no wrinkling, slight ring
3 Good	Some small bubbles
2 Fair	Many small bubbles, no wrinkling
1 Poor	Many small bubbles, moderate to high wrinkling
0 Failure	High wrinkling & lifting of paint film
Recovery	
5 No Effect	No ring, darkening may be present
4 Very Good	Very slight ring and/or darkening present
3 Good	Slight ring and darkening present
2 Fair	Some wrinkles
1 Poor	Many wrinkles
0 Failure	Paint film did not adhere to substrate





# Cotton Ball Tack Test Ratings Scale

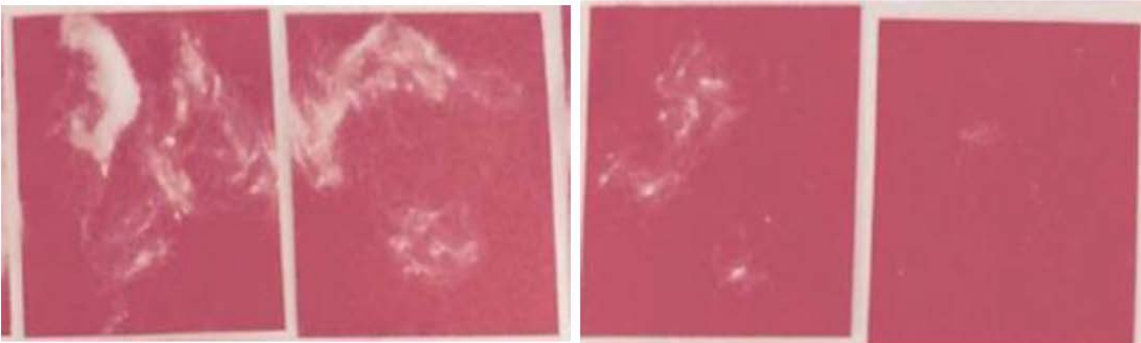


1

2

3

4



5

6

7

8

No residue

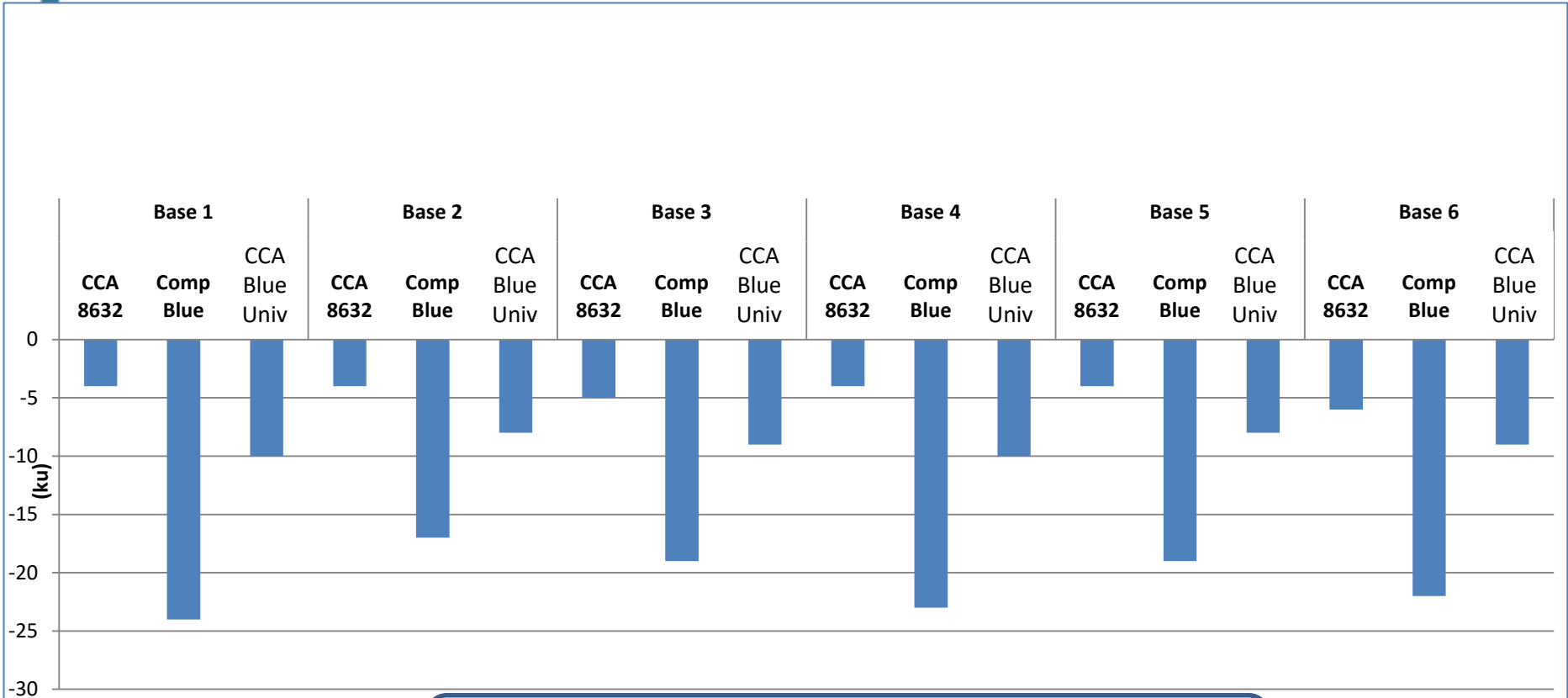
9

# RD029 - Surfactant Leaching Test Method



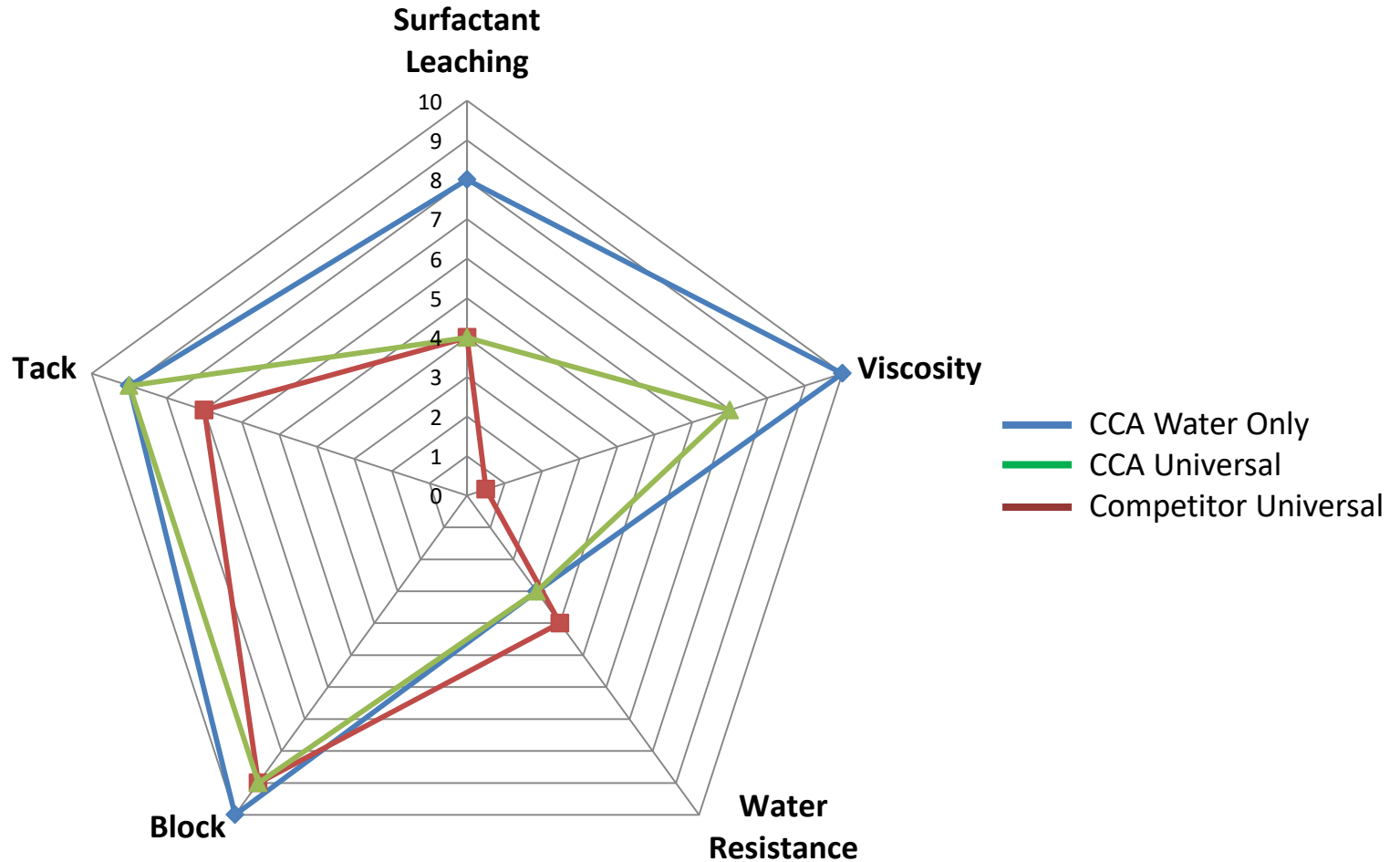
Rated on a 0 – 10 Scale  
With 10 being no visible streaking

# Viscosity Drop

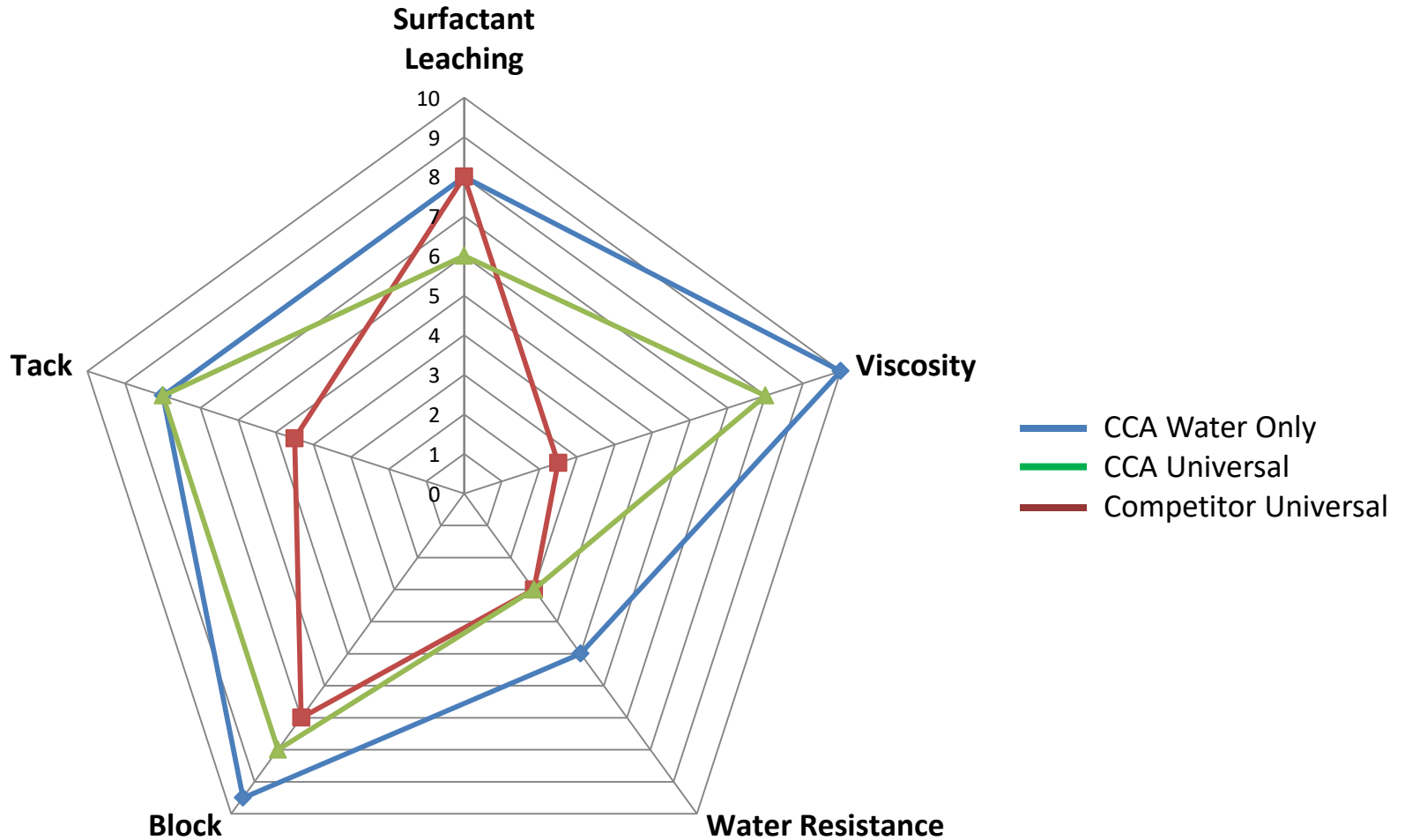


CCA water-only colorant provides superior resistance to viscosity drop in bases

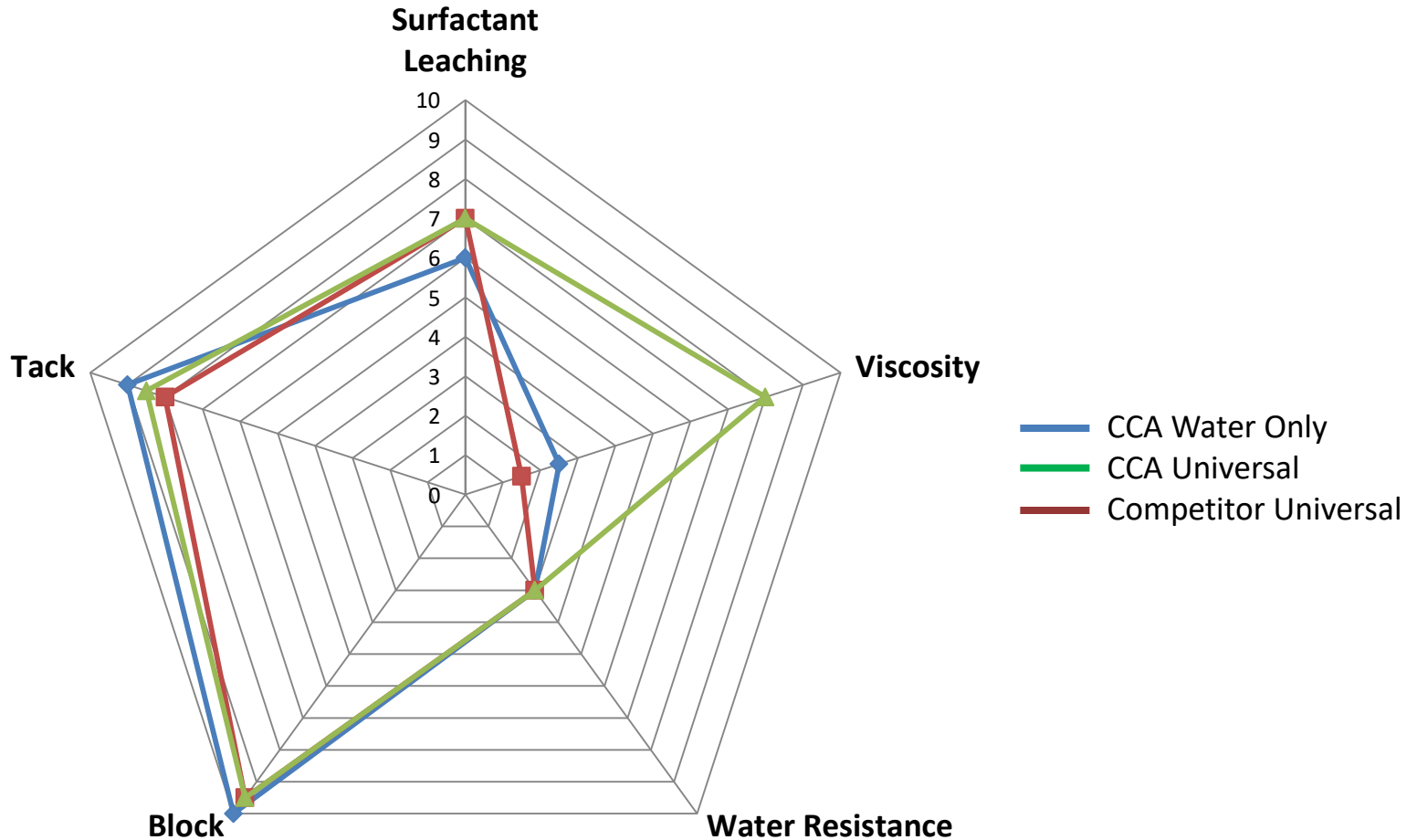
# Example of Blues Base #4



# Example of Blues Base #5



# Example of Umbers Base #4



# *Conclusions and Next Steps*

- We have identified VOC level, viscosity drop, water sensitivity, block and tack as some key test parameters to show value of using water-only colorants.
- We see improvement in multiple properties with water only colorants versus universal colorants.
- Remaining colorants in testing, with White Paper detailing the results to follow

# CCA Technical Contacts

Mark Ellsworth  
Technical Director  
502-772-5531  
mark.ellsworth@ccofoa.com

Benita Bush  
Color Services  
502-772-5530  
bbush@ccofoa.com

Mark Coward  
Architectural Colorants  
502-772-5528  
mccoward@ccofoa.com

Phil Tomes  
Industrial Colorants  
502-772-5536  
ptomes@ccofoa.com



*Thank You!*

