Enhancing Coating Performance with Patcham Defoamers

Selection and Correct Usage of Patcham Additives

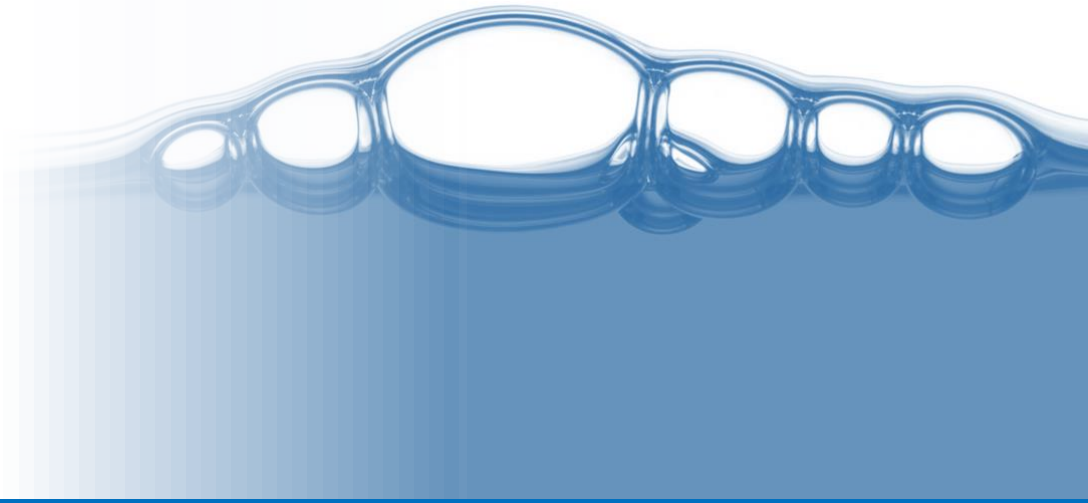
PATCHAM
www.patchamltd.com

Contents

- Introduction Foam Generation
- Defects caused by Foam
- The need for Defoamers
- Understanding the nature of Defoamers
- Selection of Defoamers/Problem Solving
- Patcham Basket of Defoamers

Foams

Foam is a stable dispersion of a gas in a liquid medium. It results when a surfactant layer forms around air bubbles and entrains them within itself.



Incorporation of Air

By mixing during the polymer/pigment grinding and let-down steps

By pumping during package filling or

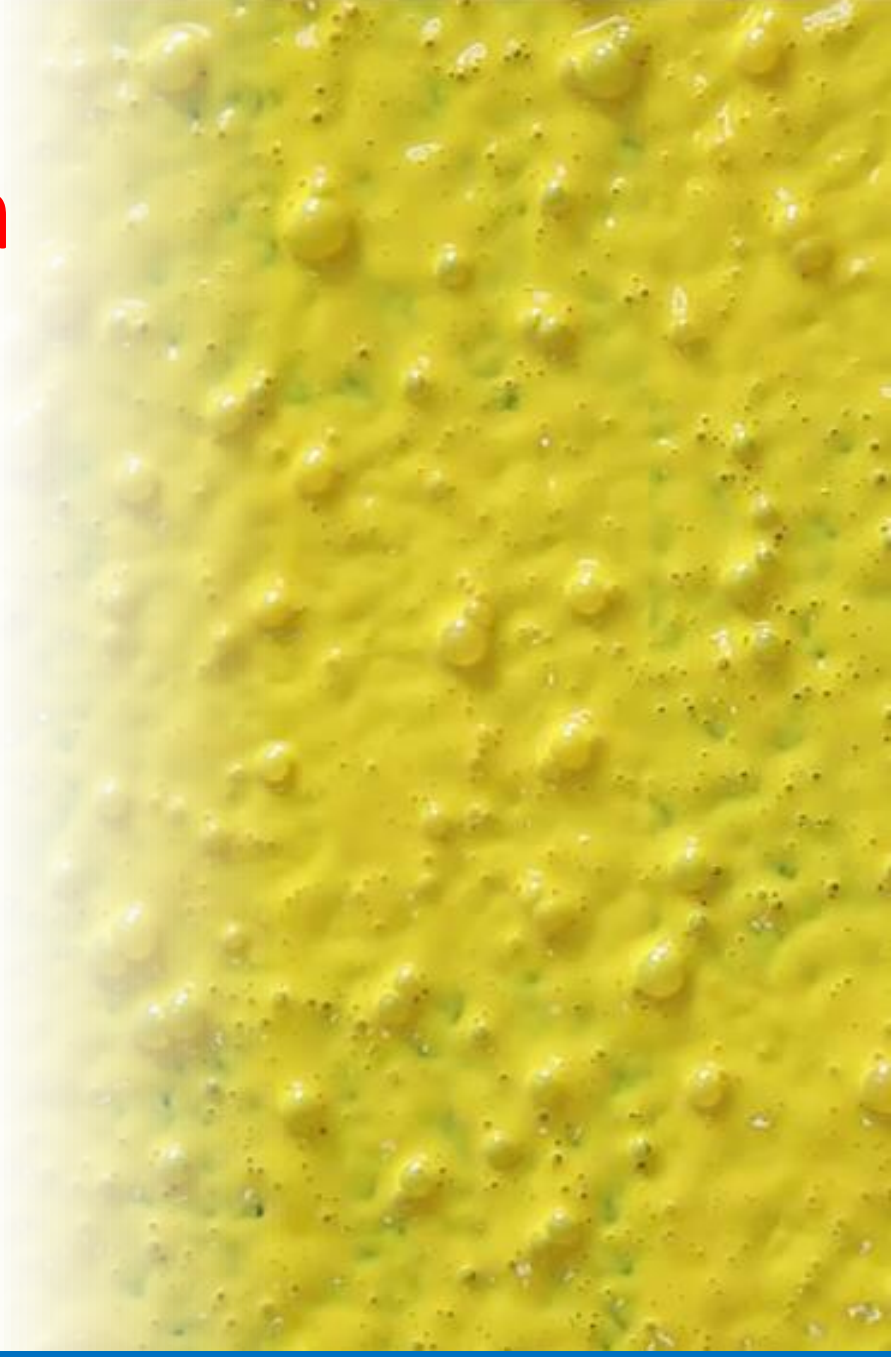
By shear or spraying during application

Defects/Effects caused by Foam

Defects	Effects
Processing and Fluid Movement	Loss of Mechanical shearing Poor pigment/polymer dispersion
	Volume increase during letdown Overflowing of mixture
	Slower package filling Inaccurate volume of finish product

Defects/Effects caused by Foam

Defects	Effects
Storage	Air incorporation during transport and handling
Application	Slower printing-press speeds or lower pressures during spraying
Quality	Poor appearance, reduction in gloss or less substrate protection



Need of Defoamers

Waterborne Systems

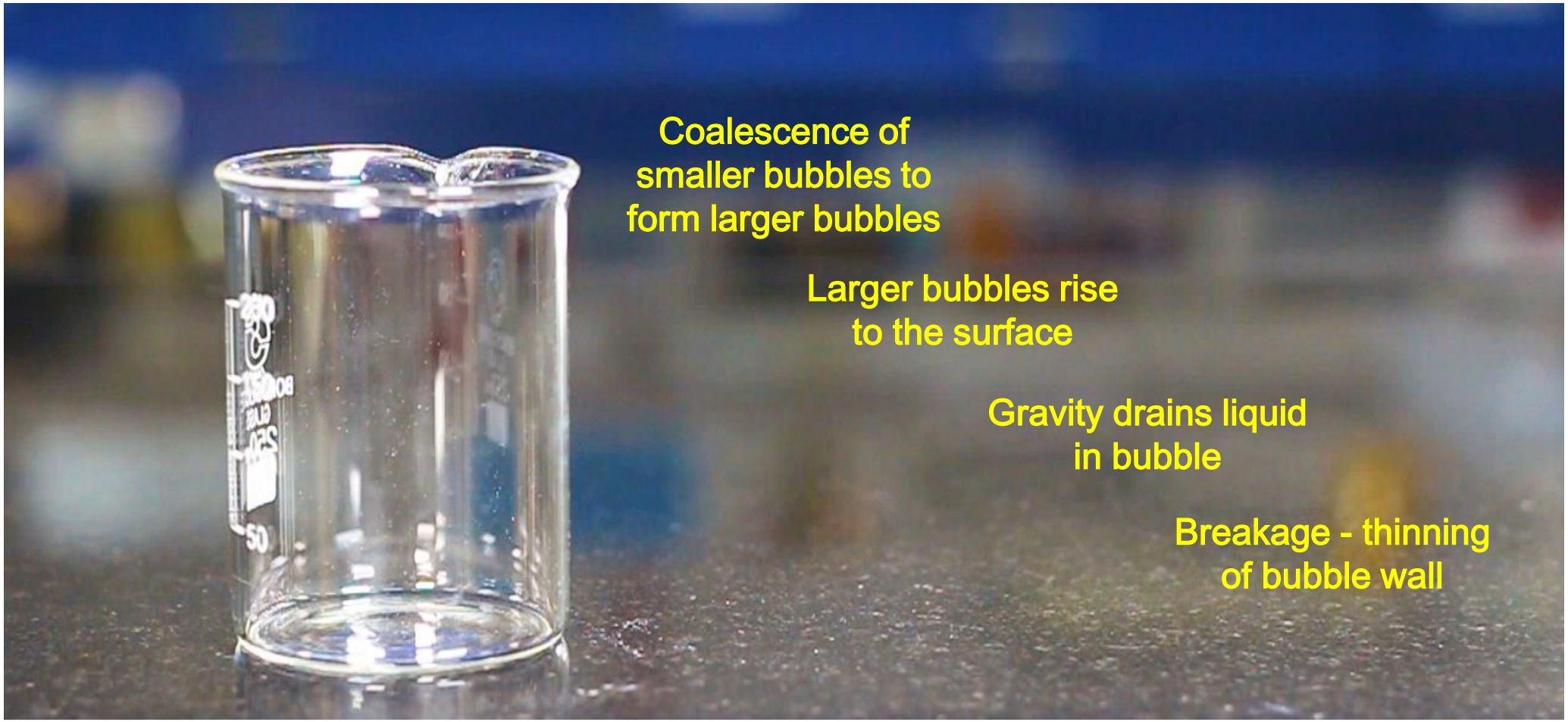
Play major role during manufacturing as well as application

Solventborne Systems

If necessary, used to avoid foaming during application and dry

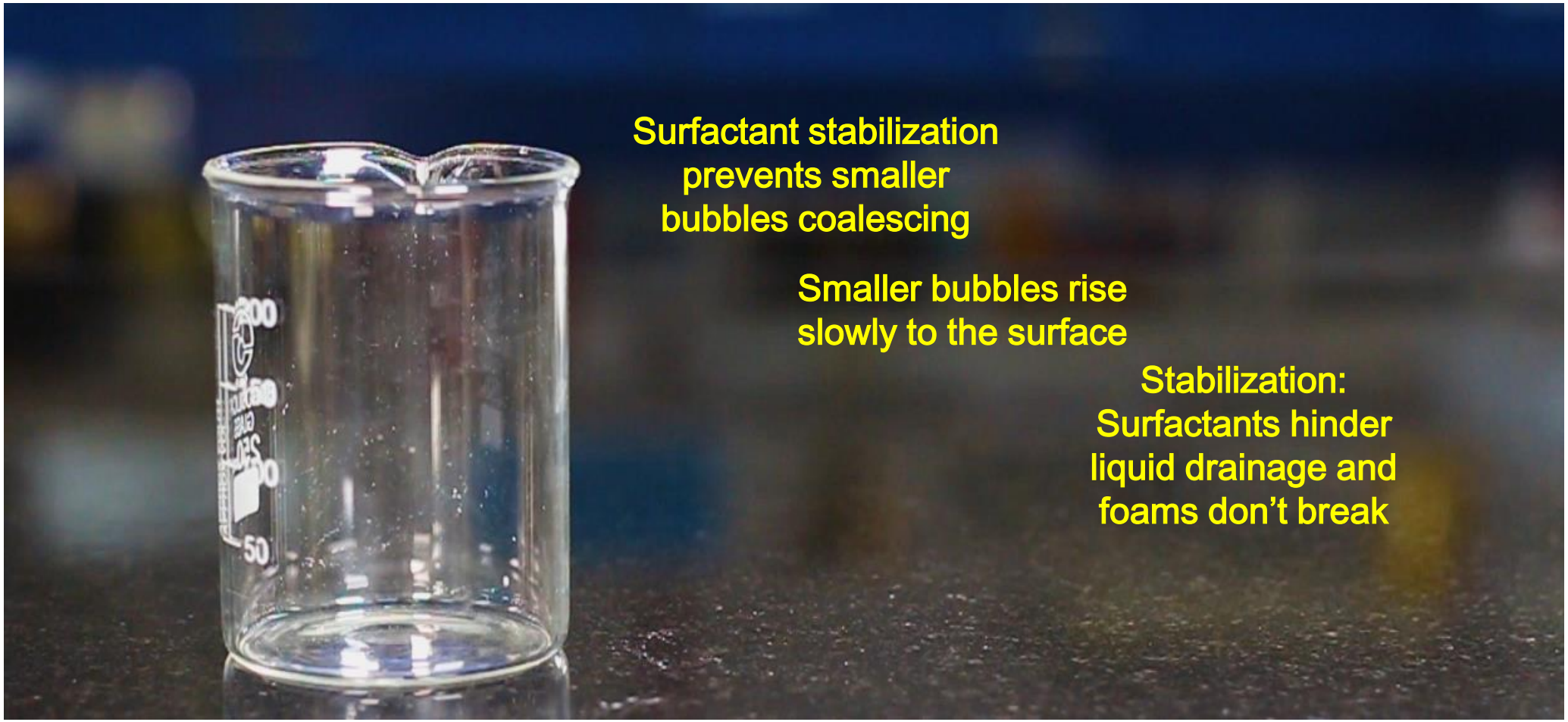
Foam

Pure Liquids

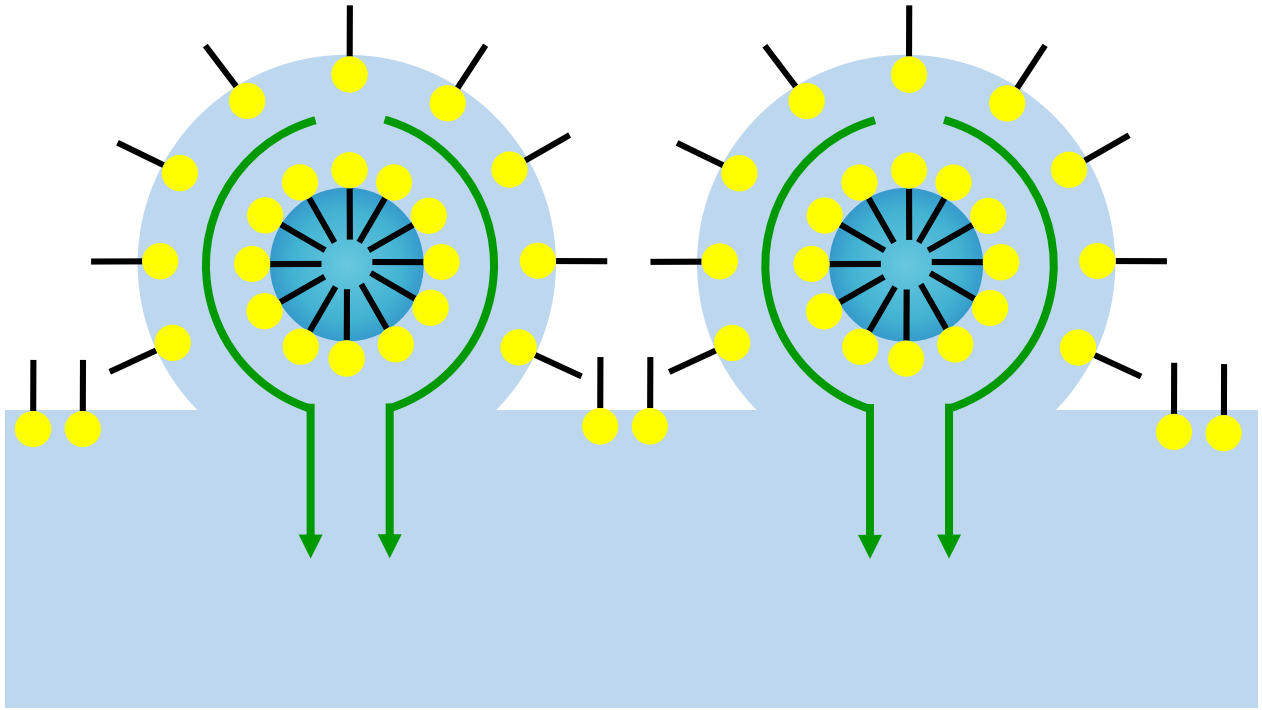


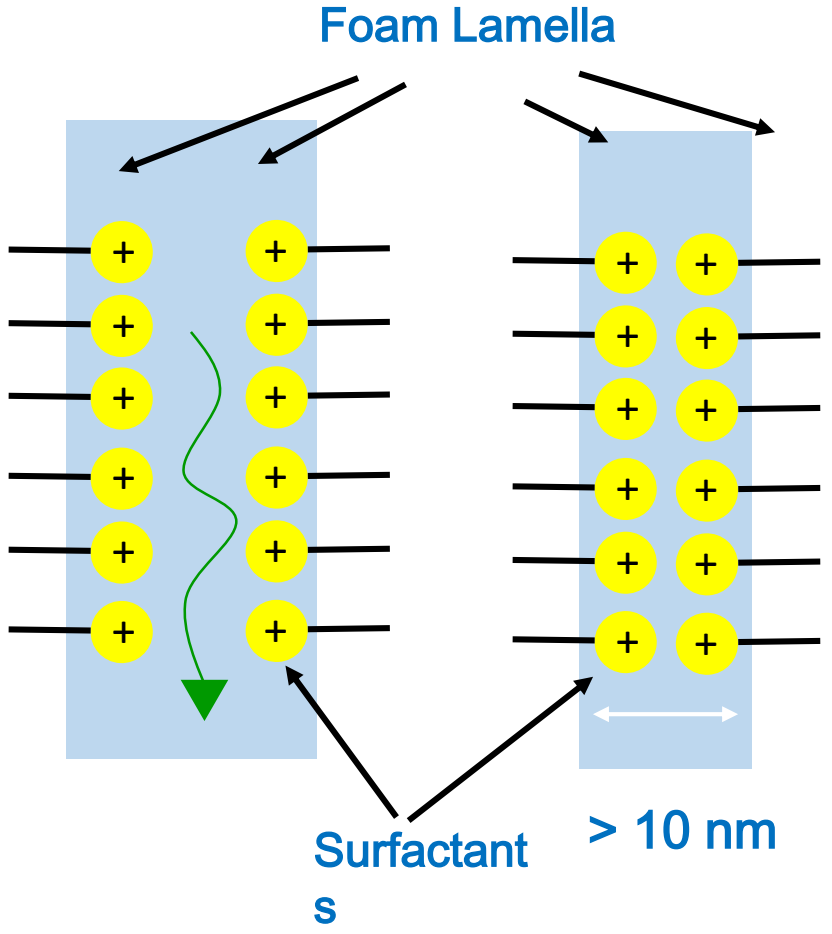
Foam

Liquids with Surfactant



Mechanism of Foam Stabilization

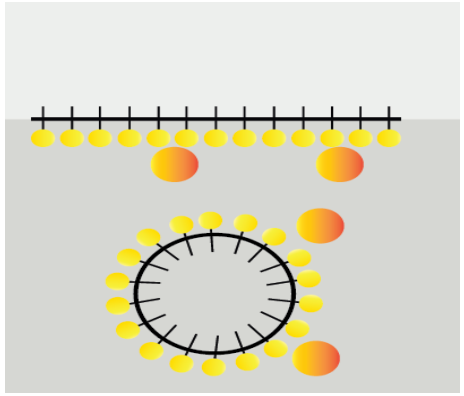




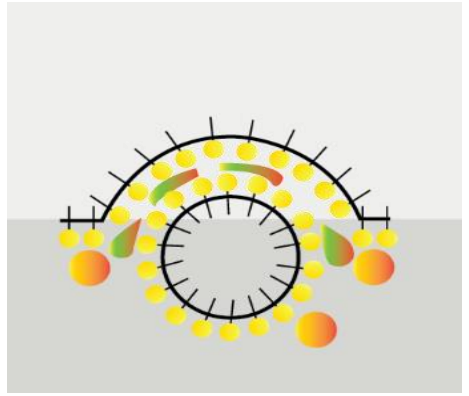
Foams get stabilized due to the electrostatic repulsion between surfactants

Defoamers and Deaerators

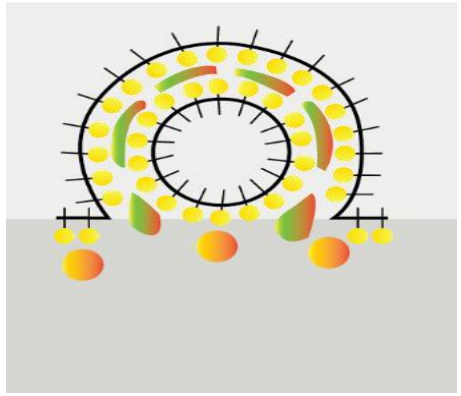
- Defoamers destroy air bubbles at the surface
- Renders the foam lamella unstable
- Deaerators allow smaller bubbles to fuse to form larger bubbles; increase speed to surface
- Defoamers are low ST; Deaerators are low polarity



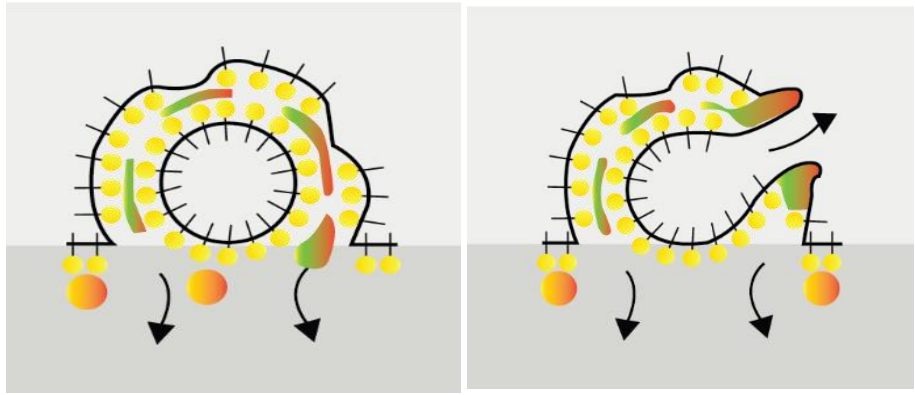
Stable foam moves towards the liquid surface



Positive spreading and entering coefficients drives defoamer into lamella



Displacing surfactants to make lamella unstable



Unstable lamella collapse = Defoaming

Types of Defoamers and Deaerators

Mineral Oil

- Mineral Oil
- Dispersant
- Hydrophobes
- PDMS

Polysiloxane

- Modified PDMS
- Hydrophobes
- Fluoro-modified

Polymeric

- Acrylic
- Polyester
- Hydrophobes

Defoamers and Deaerators - Pros and Cons

Mineral Oil

- Low risk
- Long lasting efficiency in foam prevention
- Limited effect on cost

Cannot be used in clear

Modified PDMS

- Suitable for No or Low PVC systems
- Can be Incorporated using medium shear
- Lower dosage gives good defoaming

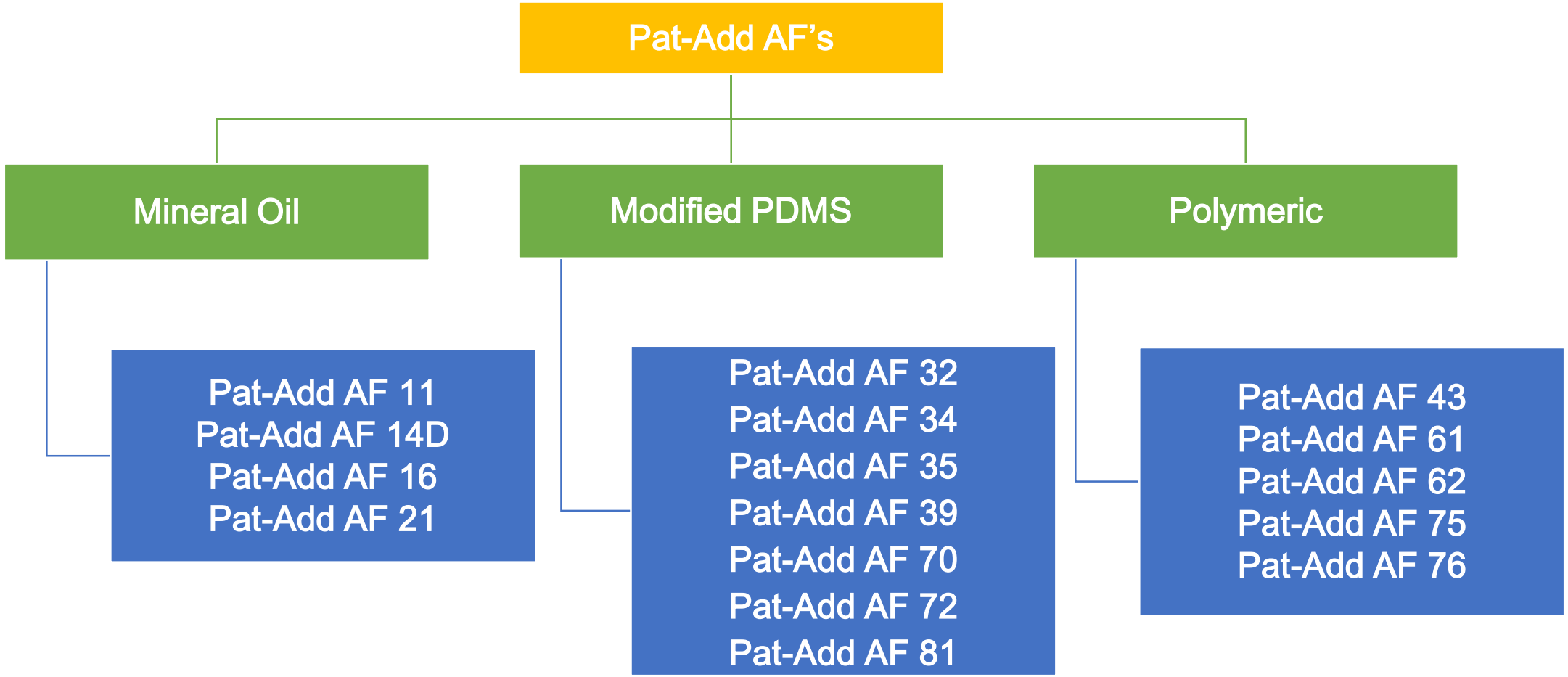
Highly incompatible, so can cause craters at high dosage

Polymeric

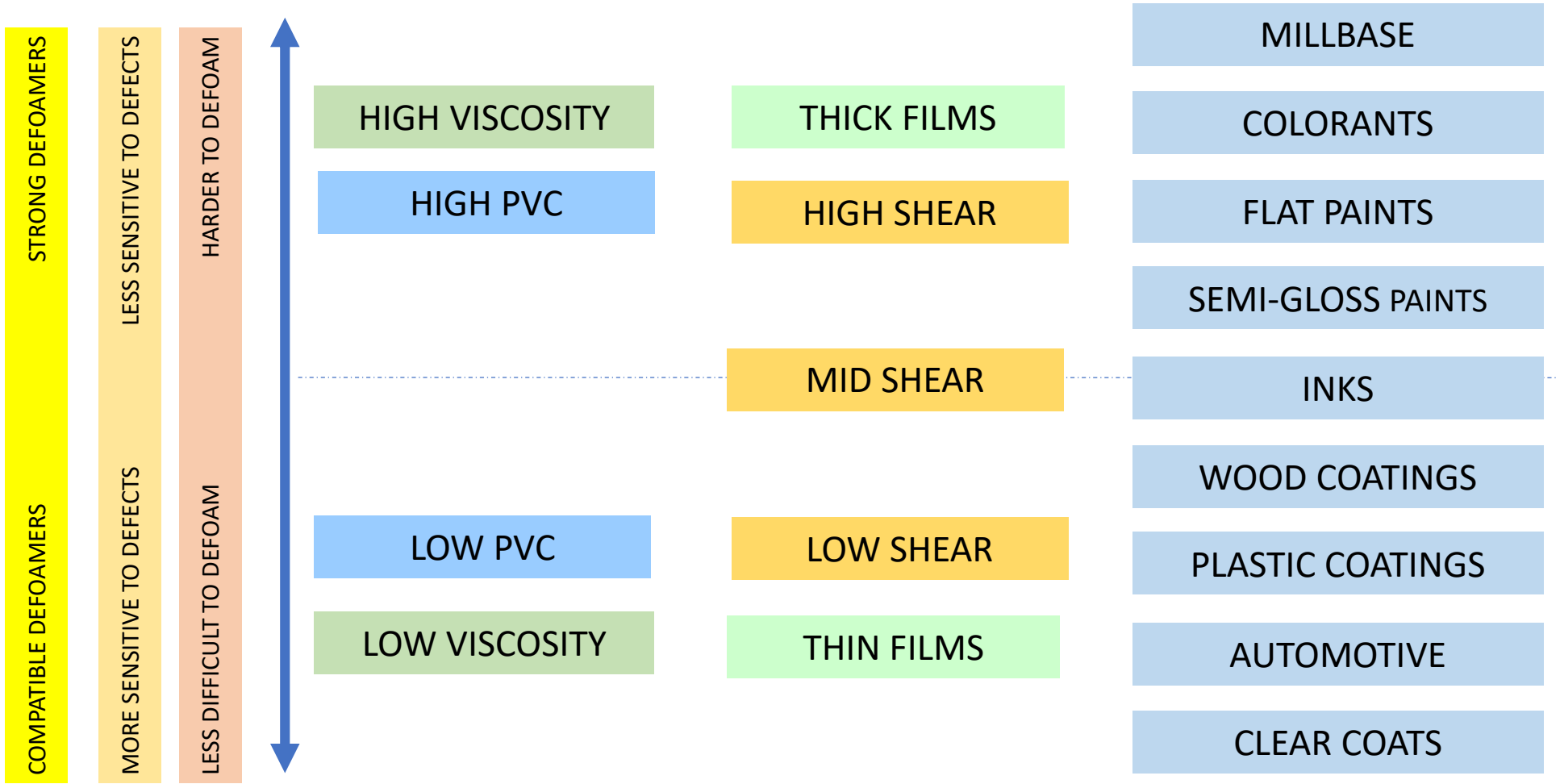
- Reduce risk of cratering
- Reduces risk of recoatability issues
- First Choice for Clear coat systems

Lower efficiency as compared to Modified PDMS

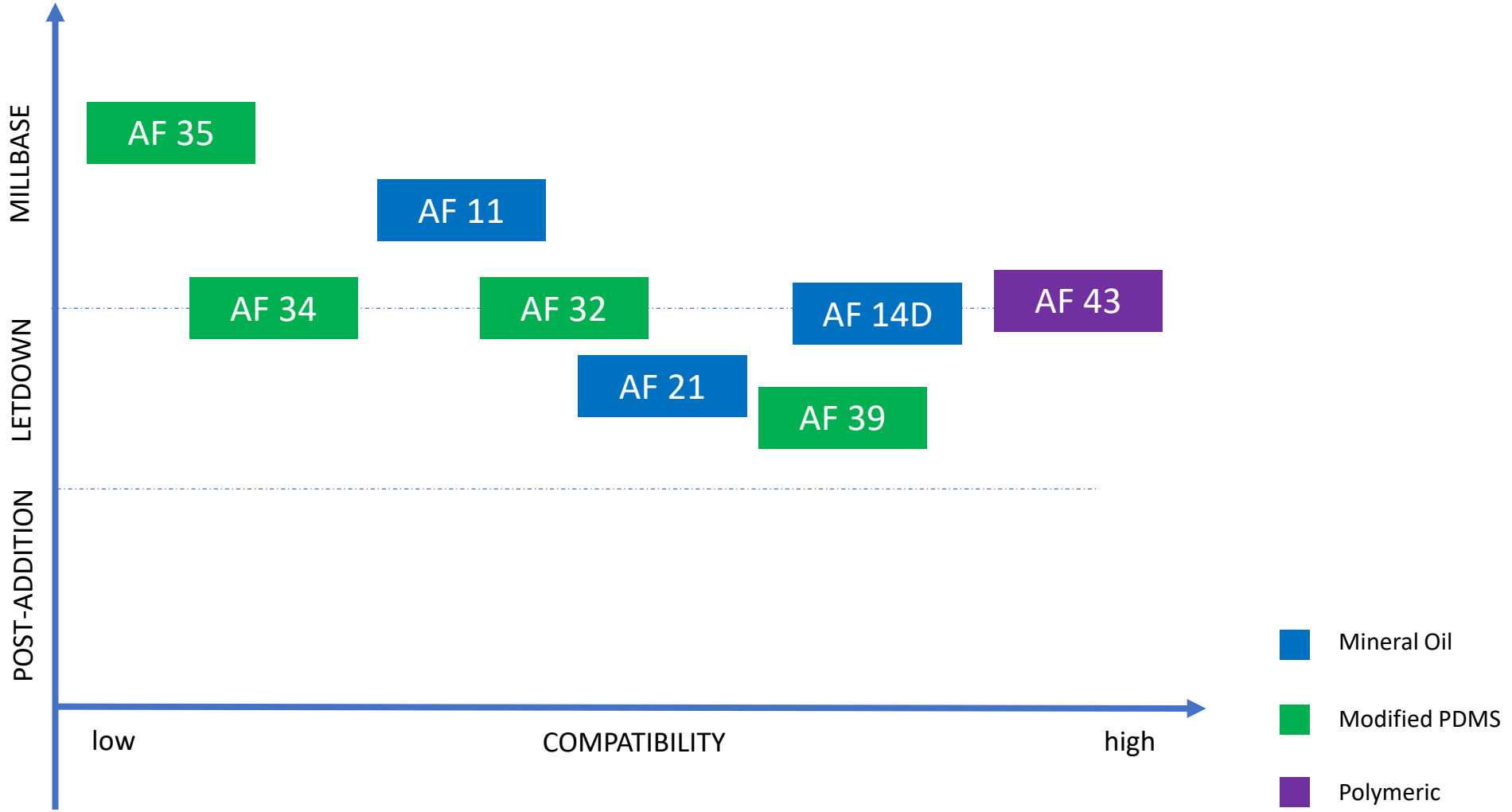
Patcham Basket of Defoamers and Deaerators



Selection of Defoamers

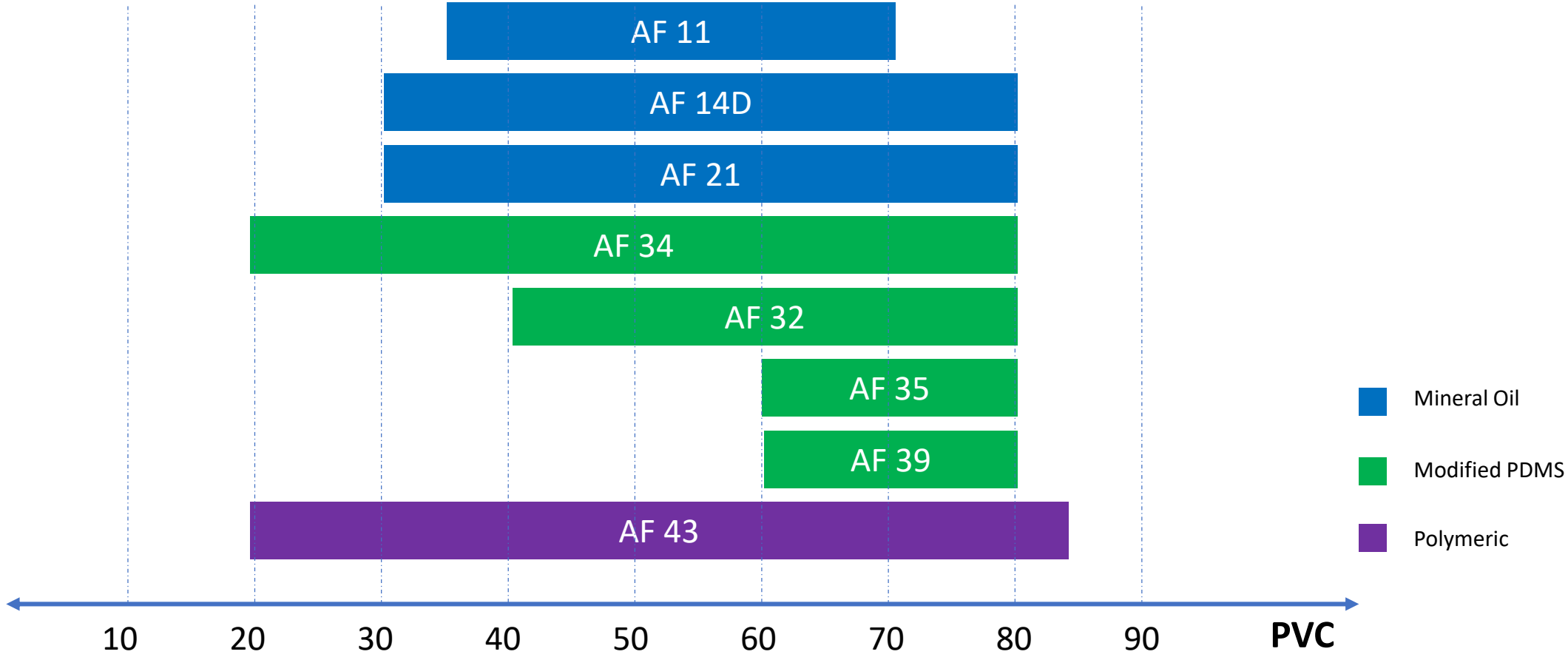


WB Defoamers

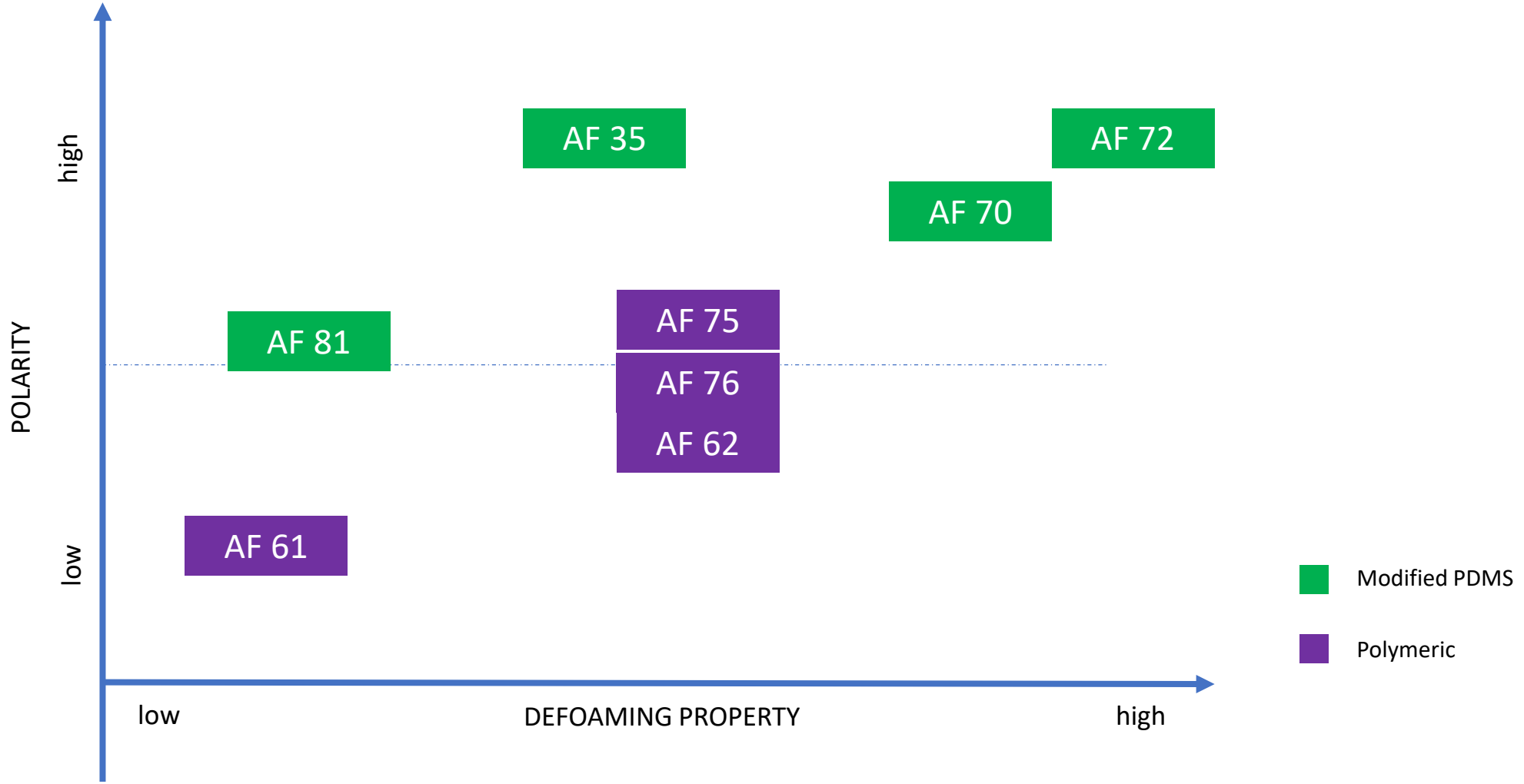


WB Defoamers

Various PVC Emulsions



SB Defoamers



Pat-Add Defoamers

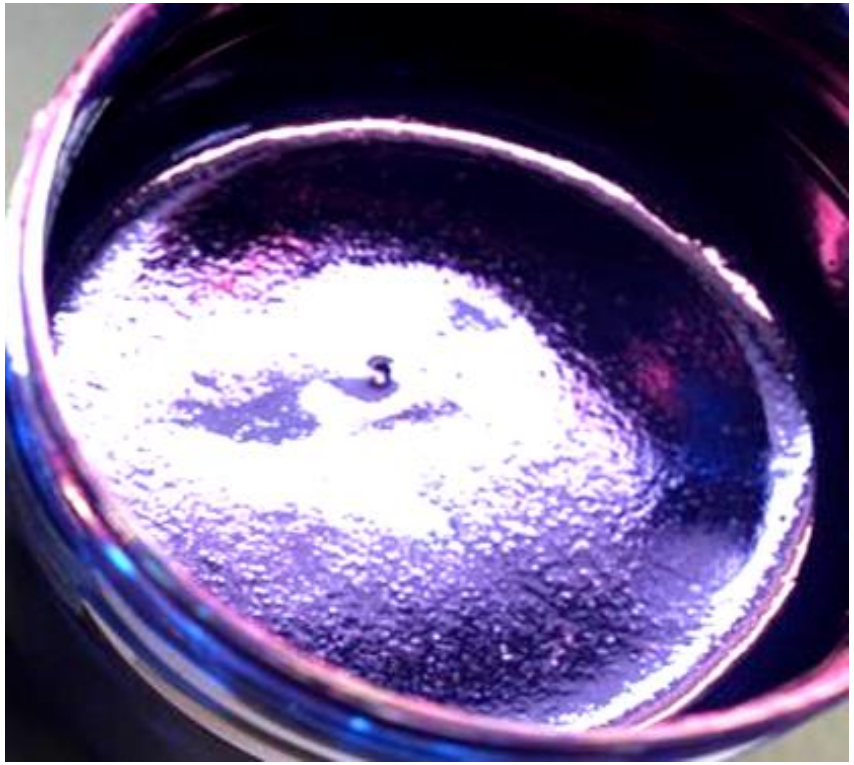
Pat-Add AF 34

- Polyether modified Polysiloxane defoamer for WB
- Oil and VOC- free defoamer
- Effective defoamer during manufacturing and application
- Reduces the risk of micro-foam
- Effective at lower dosage, minimizing film defects
- Suitable for RFPC and industrial WB paints and inks

Processing of WB Pigment Dispersion

PC Blue 15:3

Reference



Presence of stabilized foam after letdown of pigment dispersion

Pat-Add AF 34

Foam free dispersion

Pat-Add AF 35

- Organically modified polysiloxane defoamer for WB, solvent-borne and solvent free systems
- Oil and VOC- free defoamer
- Excellent for high shear manufacturing process
- Reduces the risk of micro-foam specially recommended for Pigment dispersions
- Outstanding deaeration in aqueous paints independent of pH
- Can be combined with other chemistry defoamers

Pat-Add AF 35

Performance

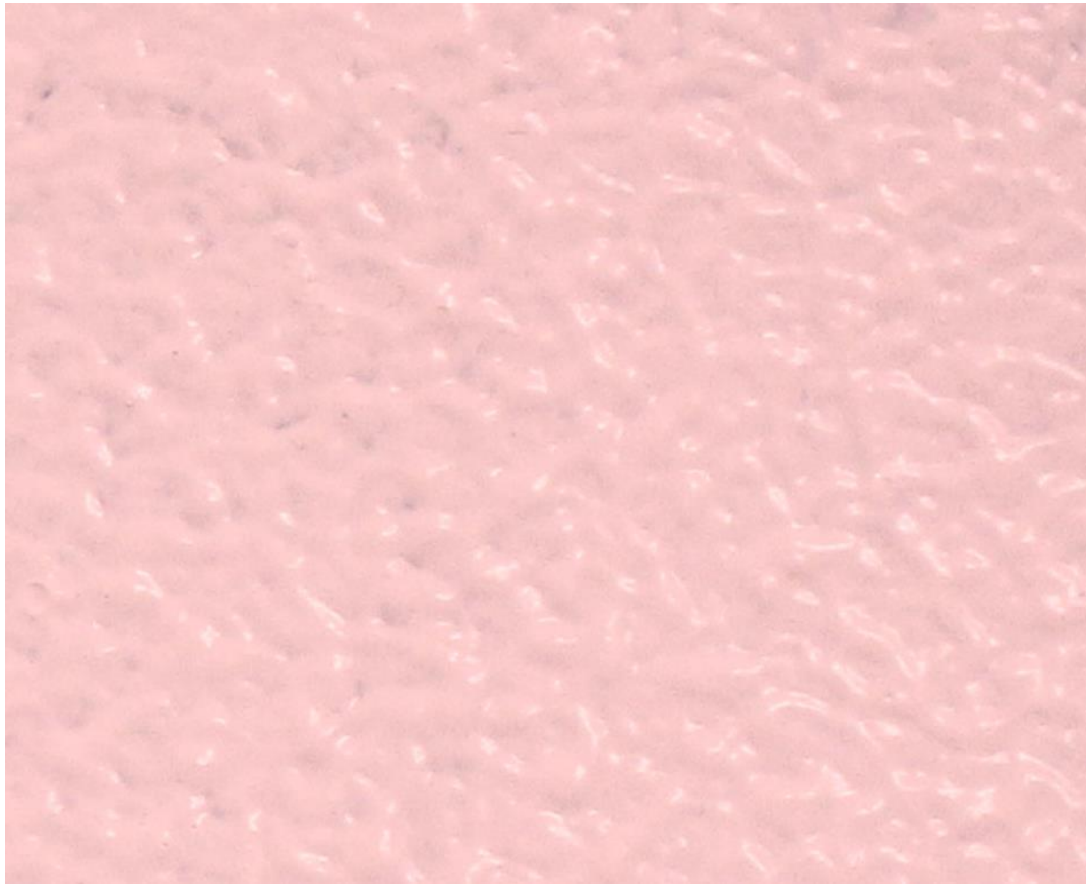
Pat-Add AF 43

- Silicone and Oil free defoamer
- Excellent alkali and acid resistance
- Contributes to substrate wetting making it more suitable for coating low surface energy substrates
- Dispersible in aqueous systems and can be incorporated by applying mild dispersion forces
- Suitable for RFPC and industrial WB paints and inks

Pat-Add AF 43

Roller Application- Low PVC Acrylic Emulsion Paint

Blank



Pat-Add AF 43

Pat-Add AF 62

- Silicone free polymeric defoamer and air releasing agent
- Requires only low dosages
- No side effects like gloss reduction, haze, intercoat adhesion, craters and cissing
- Provides clear and transparent films; it is highly recommended for clear coats and varnishes
- Strong defoaming and deaerating agent for solvent-borne coatings; especially for wood coatings, coil coatings, automotive coatings, industrial coatings and inks

Pat-Add AF 62

PU White

Mixing at low shear- 500 RPM

Blank Pat-Add AF 62

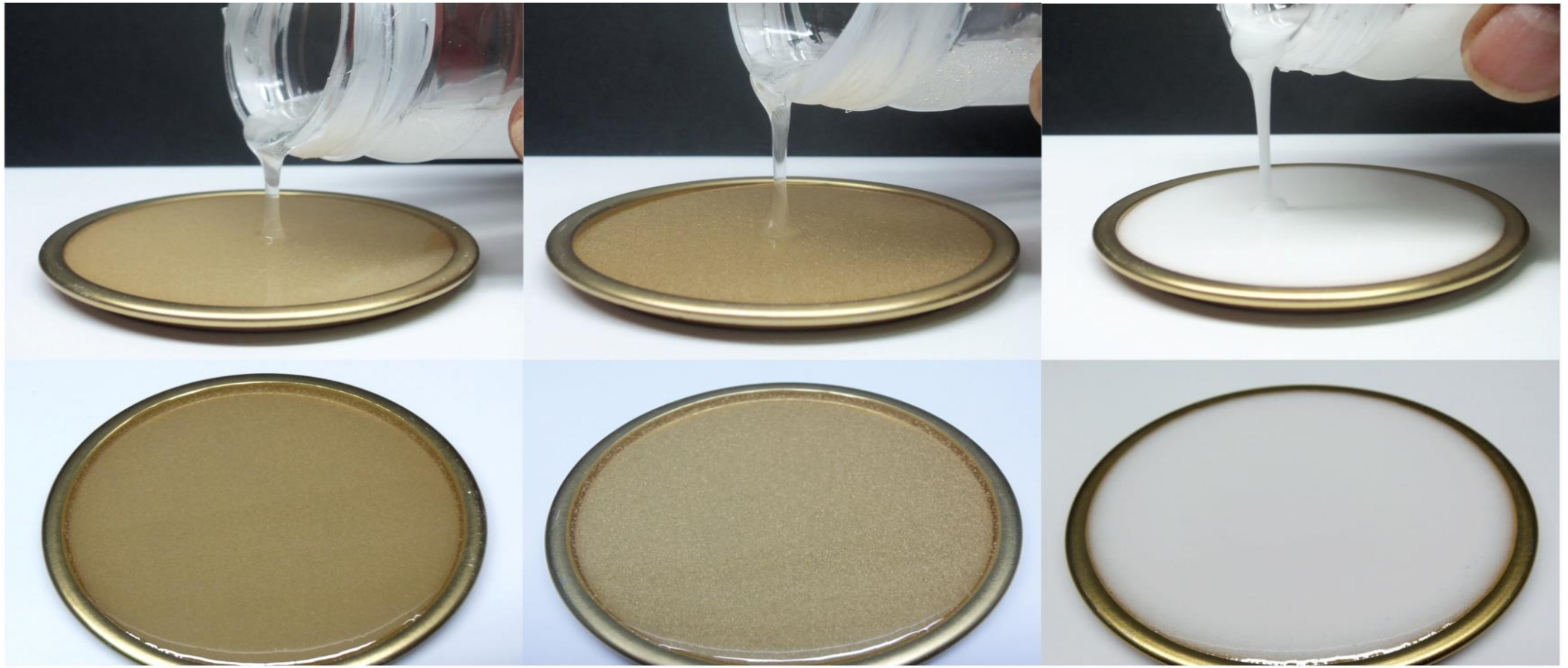
	Blank	Pat-Add AF 61
Gloss at 20˚	96	96
Gloss at 60˚	97	97
DOI	74	92
Haze	4.5	4.2
RIQ	54	70

Pat-Add AF 70

- Polysiloxane and organic polymer defoamer and air release agent
- Low risk of gloss reduction, haze, craters and cissing
- Strong defoaming and air releasing
- Can be used in the grinding stage as well as post addition stage
- Strong defoaming and air releasing action for foam generated in mixing, application by roller, brushing, airless or air assisted spray applications

Pat-Add AF 70

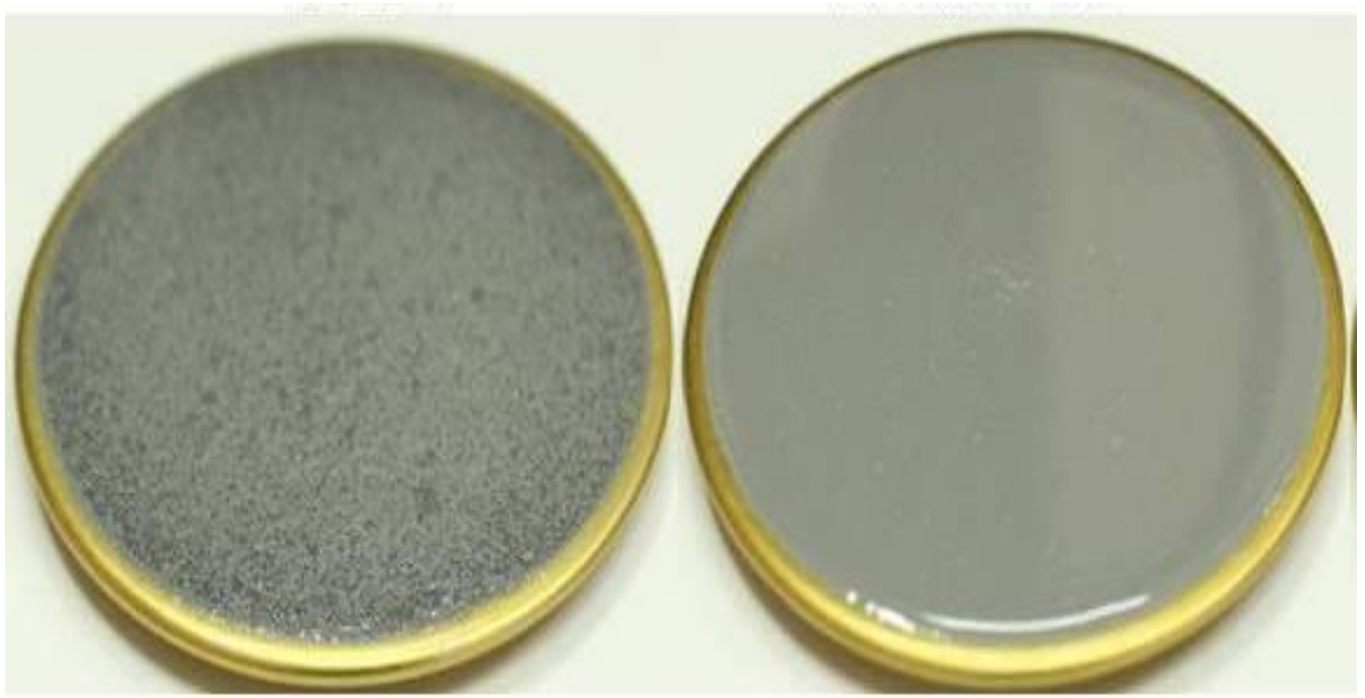
Epoxy Clear Foaming and Clarity



Pat-Add AF 70 **Reference** **Blank**

Pat-Add AF 70

Performance- Epoxy Floor Coating



Blank **0.1% of Pat-Add AF 70**

Pat-Add AF 72

- Low solid polysiloxane based defoamer for solvent-borne coatings.
- Effective defoaming and deaeration
- Enables a bubble-free paint mixture without adverse effect on application
- Excellent performances in application of systems with high risk for air inclusion, such as roller, airless and conventional spray application
- Rapid defoaming action especially for fast cure systems
- Highly recommended for the prevention of formation of foam during production, filling and application

Pat-Add AF 72

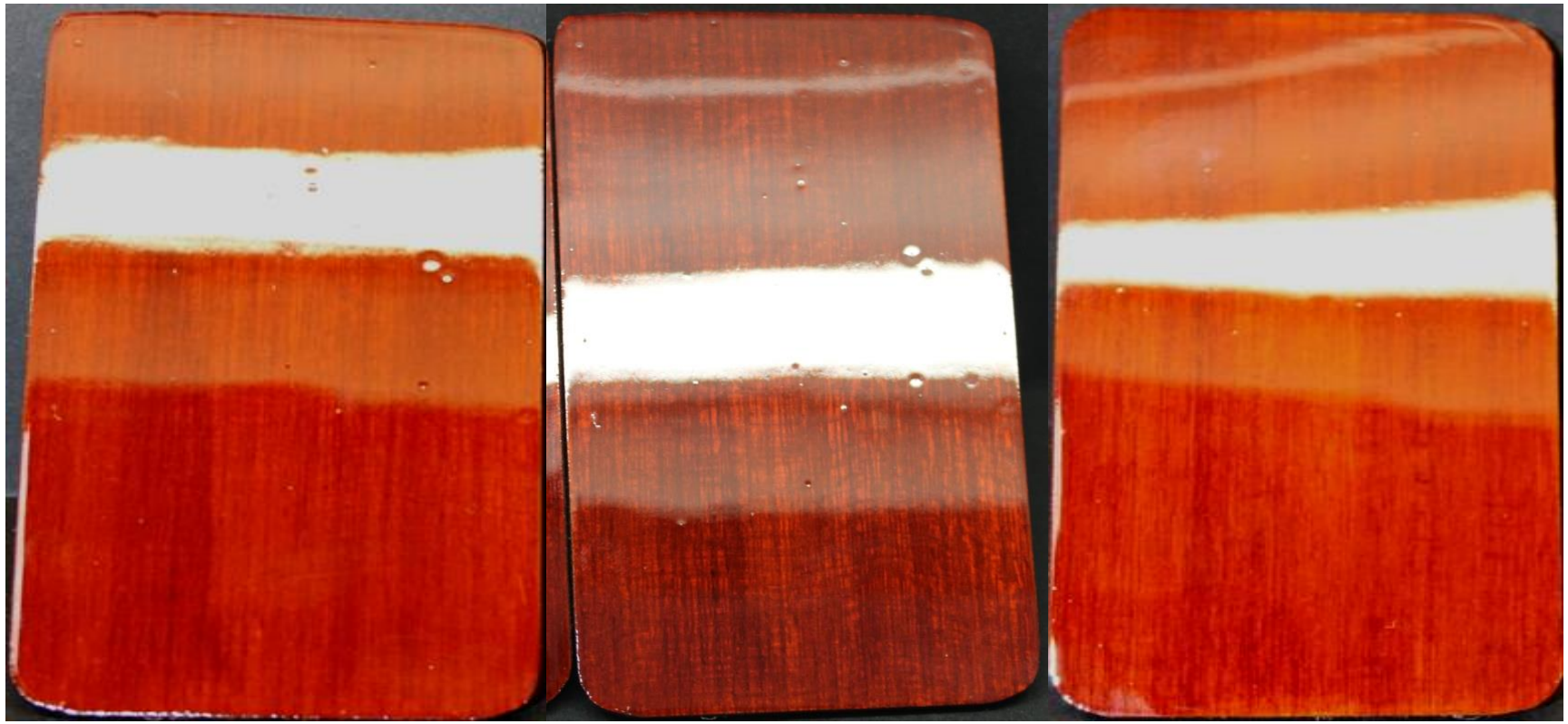
PU White

Reference 1

Pat-Add AF 72

Pat-Add AF 72

Blank | Reference | Pat-Add AF 72



Like these pictures

Conclusion

Patcham basket of defoamers;

- Offer solutions for solving your defoaming problems
- Can enhance the appearance, performance and protection capabilities of coatings
- Allows coating formulators to create clear, beautiful and durable finishes that meets global requirements

Thank you!

Disclaimer

While every effort is made to provide accurate and complete information on The **PATCHAM ADDITIVES,** various data may vary depending upon different raw materials, formulations, test procedures and test conditions.

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