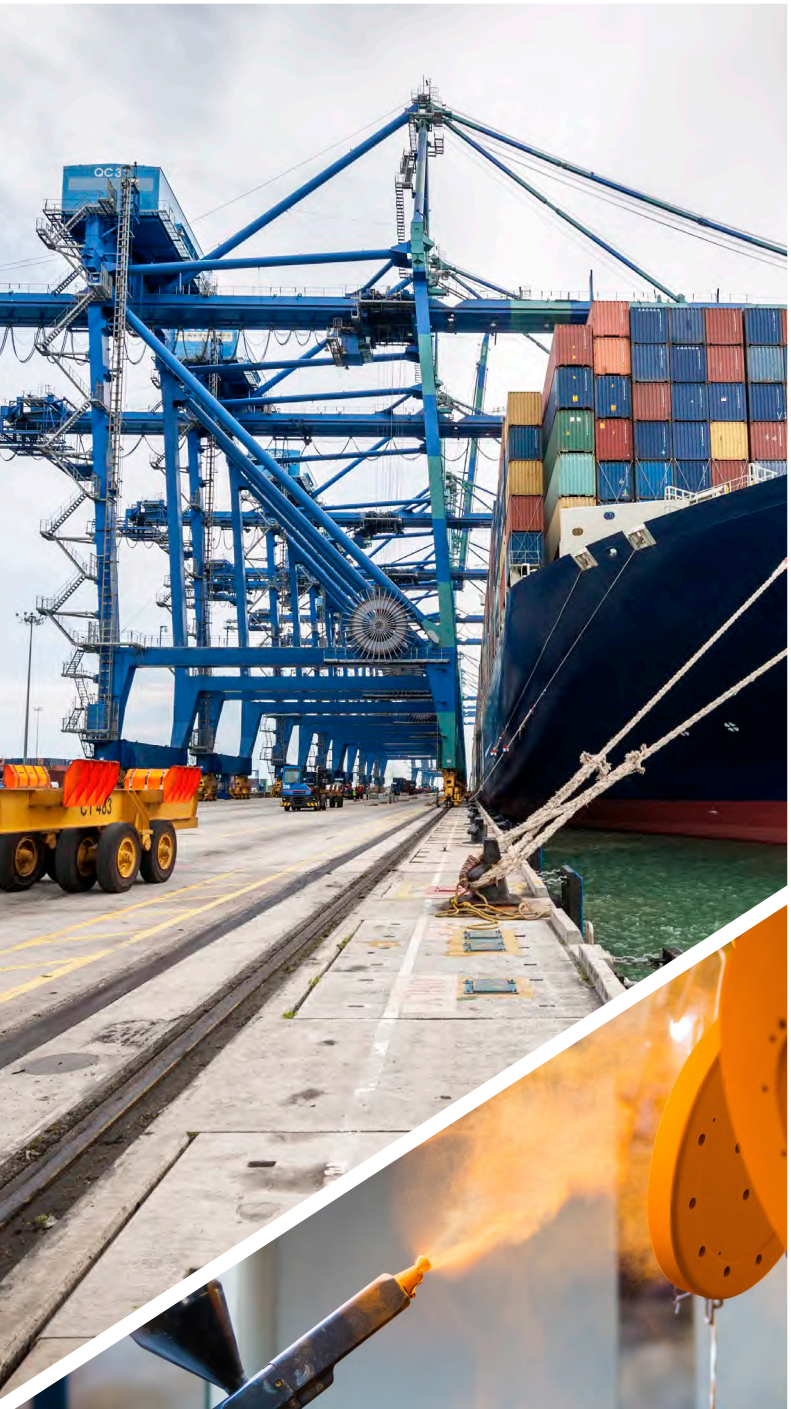
CRAYVALLAC®
BY ARKEMA

# Additives range for coatings, adhesives and sealants



ARKEMA
INNOVATIVE CHEMISTRY

Arkema is the manufacturer and supplier of the **Crayvallac® range of additives,** used in the coating industry since the 1960's. We are very proud of the reputation and trust that we have developed with our **customers around the world** — as a leading and serious provider of rheological, flow and levelling, matting, dispersing, texturing, slip and rub solutions.
Our strategic direction to bring continuous new product development and innovation is led from our central **R&D facility in France**, which is supported by our **regional application laboratories** around the world, including Brazil, China, France, Malaysia, Spain and the USA.
Our **Regulatory Affairs team** ensures our products comply with the ever demanding and growing regulations around the world. **Sustainability**, and being a socially responsible partner with our customers, employees and the communities where we operate, continues to be a focus of our business. Our product range is stocked and sold in over 100 countries, and locally supported by our dedicated team of experts.

For more information please visit our website at
**www.arkemacoatingresins.com**

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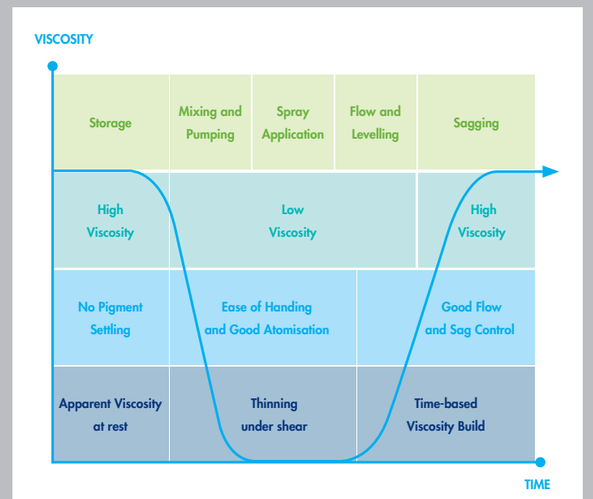
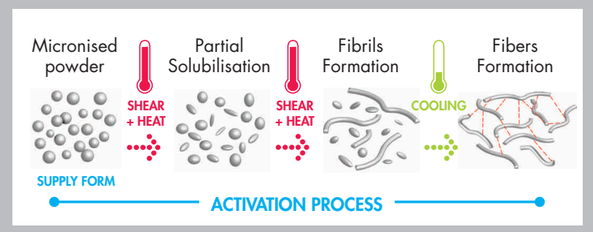
## RHEOLOGICAL PERFORMANCE AND BENEFITS




**CRAYVALLAC® rheology modifiers** provide coatings with a high viscosity under low shear conditions which is typically required for storage stability. It results in excellent anti-sedimentation characteristics in pigmented systems thus maintaining a good dispersion and preventing hard settling.
In addition, the excellent shear thinning behaviour of the CRAYVALLAC® rheological additives ensures that coatings are easily applied under the high shear conditions (brush, roller or spray). The thixotropic nature of the CRAYVALLAC® rheology modifiers, or time dependent viscosity recovery, provides sufficient time for good flow and levelling, yet enables sufficient viscosity build up to prevent sag.

## HOW TO USE CRAYVALLAC RHEOLOGICAL MODIFIERS

### POWDER ACTIVATION




### PASTE INCORPORATION


**CRAYVALLAC® powders** require to be activated by heat and high shear into a rheological fibrous network. It is possible to benefit from the grinding stage to perform this activation.

For manufacturing processes without such a grinding stage then **CRAYVALLAC® Pastes** are a great alternative since the polyamide has already been pre-activated. This means that the paste can be directly incorporated into the paint system under medium shear without requiring either heat or high shear.

**CRAYVALLAC® Liquid additives** are activation-free and can be simply stirred into the formulation.


**« CRAYVALLAC® Polyamide technology ensures robustness and versatility toward processing conditions for a wide range of adhesives & sealants technologies »**

**Combine :**

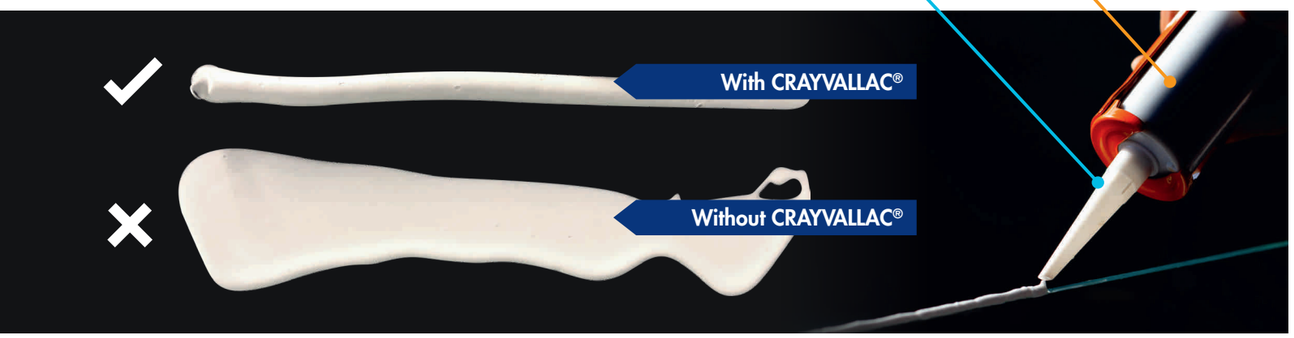
**Rheological performance** + **Storage stability** + **Workability**

**...with our range of rheology modifiers**

**Looking to replace screws & bolts ?**
**Need an extra boost of strength with workability for your system ?**
**CRAYVALLAC® SLW is an additive specifically designed for highly filled systems providing extra efficiency & performance with ease of extrusion. Ideal for demanding applications.**

- Anti-settling
- Long term stability
- Viscosity stability

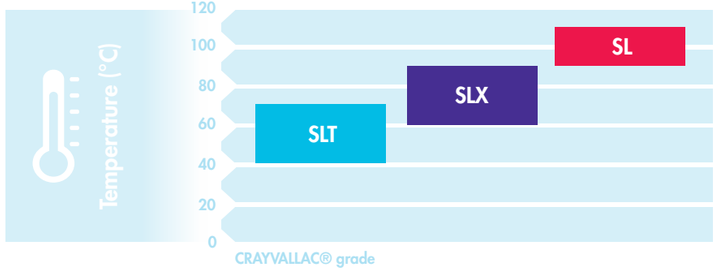
- Easy application
- Extrusion control
- Non-slumping
- Curing & adhesion integrity ensured
- Weatherability




## RHEOLOGY MODIFIERS

| CRAYVALLAC® | Chemistry | Technical data: Supply form | Technical data: Dosage (weight %) | Technical data: Incorporation | Adhesives & Sealants Technologies: STP | 2K PU | 2K Epoxy | Silicones | Acrylates | Butyl Rubber | Polysulphides | Poly-chloroprenes | WB systems |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antisettle CVP | Castor derivative | 100% active powder | 1 - 8% | Activation through heat & high shear | ● | | | ● | | | ● | ● | |
| MT | Castor derivative | | | | ● | ● | ● | ● | ● | | ● | ● | |
| SL | Polyamide | | | | ● | ● | ● | | | ● | | | |
| SLX | Polyamide | | | | ● | ● | ● | | ● | ● | ● | | |
| SLT | Polyamide | | | | ● | ● | ● | ● | ● | ● | | | |
| NEW SLW | Polyamide | 100% active powder | 1 - 5% | | ● | ● | ● | | ● | ● | | | |
| LA-350 | Modified urea | Liquid | 0,1 - 2% | Activation free | | | | | | | | | ● |

● ● ● = Recommendation levels




## RHEOLOGY MODIFIERS

| CRAYVALLAC® | Technical data: Supply form | Technical data: Dosage (weight %) | Technical data: Incorporation | SB regular: Primer | SB regular: Top Coat / Direct-To-Metal | SB High solid: Primer | SB High solid: Top Coat / Direct-To-Metal | Special: Solvent Free Systems | Special: Antifouling | Special: Intumescent | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MT | 100 % active powder | 0,2<br>2,0 | Activation through heat & high shear | ● | ● | ● | ● | ● | | | Amide-modified castor oil derivative: cost effective and easy to activate |
| Super | 100 % active powder | 0,5<br>1,5 | Activation through heat & high shear | | ● | | ● | | | ● | Pure polyamide recommended for top coat and DTM coatings |
| Ultra | 100 % active powder | 0,5<br>1,5 | Activation through heat & high shear | ● | ● | ● | | | ● | | Pure polyamide especially recommended in 2K epoxy primers for its robustness<br>Allows excellent recoatability and sag control |
| Extra | 100 % active powder | 0,5<br>1,5 | Activation through heat & high shear | ● | | ● | | ● | ● | ● | Pure polyamide especially recommended in 2K epoxy primers for its high temperature tolerance |
| NEW Optima | 100 % active powder | 0,5<br>1,5 | Activation through heat & high shear | ● | ● | ● | ● | ● | ● | ● | Pure polyamide recommended for very high solid and solvent free for its ease of activation and smooth viscosity recovery (good levelling) |
| NEW LV | 100 % active powder | 0,5<br>2,0 | Activation through heat & high shear | | ● | ● | ● | ● | ● | ● | Pure polyamide recommended for solvent free systems for its efficiency |
| 60X | Paste | 0,5<br>5,0 | Medium shear | ● | | ● | | | ● | ● | Polyethylene paste recommended to prevent irreversible hard settling |
| PA3 XAF 20 | Paste | 0,5<br>5,0 | Medium shear | ● | ● | ● | ● | | ● | ● | Alcohol free version of pre-activated polyamide paste |
| PA3 X 20 /<br>PA3 BA 20 | Paste | 0,5<br>5,0 | Medium shear | ● | ● | ● | ● | | | | Pre-activated polyamide paste with highest efficiency (optimum sag resistance and viscosity) |
| PA4 X 20 /<br>PA4 BA 20 | Paste | 0,5<br>5,0 | Medium shear | ● | ● | ● | ● | | | | Pre-activated polyamide with enhanced transparency, excellent anti-sagging, anti-settling properties |
| LA-150 | Liquid | 0,1<br>2,0 | Post addition | ● | ● | ● | ● | | ● | ● | Modified urea thixotropic agent especially recommended for antisettling and viscosity adjustment. Simple stir-in incorporation, suitable for post addition |

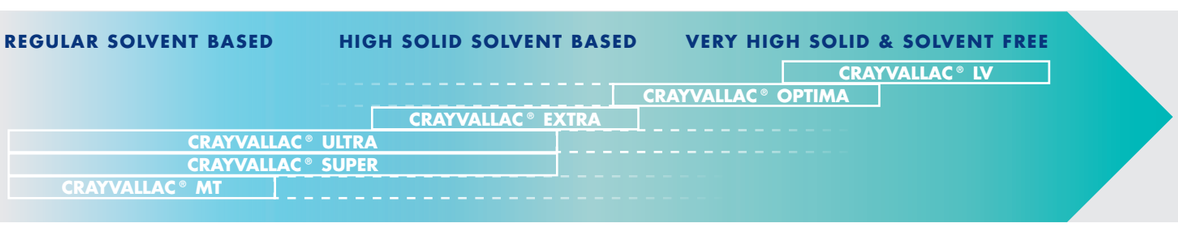
## SURFACE MODIFIERS

| CRAYVALLAC® | Chemistry | Properties: Matting | Properties: Slip | Properties: Abrasion resistance | Properties: Scratch resistance | Characteristics: D50 (µm) | Characteristics: D100 (µm) | Characteristics: Dropping point (°C) | Characteristics: Solid content (%) | Characteristics: Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| WN-1135 | Modified PP | ● | ● | ● | ● | 5,5 | 26 | 151 | 100% | Stronger matting effect |
| WN-1535 | Modified PP | ● | ● | ● | ● | 6 | 26 | 151 | 100% | Easy to disperse in WB system |
| WN-1495 | Polyethylene | ● | ● | ● | ● | 4,5 | 20 | 112 | 100% | Fine particle size distribution |
| WF-3200 | Modified PTFE | ● | ● | ● | ● | 5 | 25 | 112 | 100% | High performance wax |

## FLOW AND LEVELLING AGENTS

| CRAYVALLAC® | Systems: Solvent Based | Systems: UV Cure | Systems: Water Based | Properties: Film aspect enhancement | Properties: Air-release | Properties: Substrate wetting | Characteristics: Active content (%) | Characteristics: Solvent | Characteristics: Remarks |
|---|---|---|---|---|---|---|---|---|---|
| FLOW-200 | ● | ● | | ● | ● | ● | 100% | None | Polyester with balanced compatibility |
| A-620-A2 | ● | ● | | ● | ● | ● | 60% | Xylene | Polyacrylate with medium molecular weight |
| A-2201-M | ● | ● | | ● | ● | ● | 70% | Xylene<br>Butanol | Polyacrylate with synergistic effect when blended with other flow additive |

## CRAYVALLAC® TECHNOLOGIES IN PCM TYPICAL FORMULATIONS




## PCM / GI SUB-APPLICATIONS

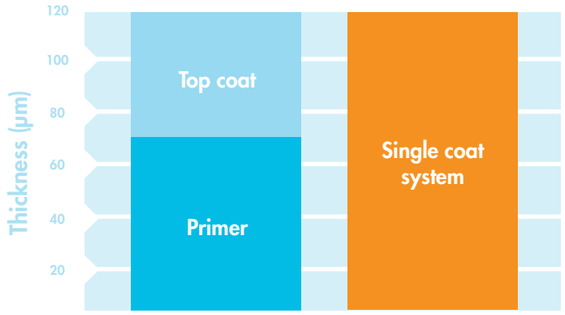
# DIRECT TO METAL

**The development of Direct To Metal (DTM) solutions helps to :**

- **REDUCE THE NUMBER OF LAYERS,**
- **PROVIDE THE BEST BALANCE BETWEEN PRIMER AND TOPCOAT PROPERTIES: good adhesion, corrosion resistance and exterior durability.**

CRAYVALLAC® rheology modifiers, with their strong shear thinning characteristics allow you to apply a higher film thickness without sagging. CRAYVALLAC® flow agents will improve the surface aspect by removing defects and by improving the gloss.

- Weatherability
- Gloss
- Chemical resistance
- Adhesion
- Corrosion resistance
- Barrier properties




| CRAYVALLAC® | Systems | Description | | | Characteristics | | |
|---|---|---|---|---|---|---|---|
| | Direct To Metal | Functionality | Chemistry | Supply form | Active content | Solvent | Remarks |
| **PA3 X 20** | ● | Rheology modifier | Polyamide | Paste | 20% | Xylene | Post-addition for viscosity adjustment (no activation required)<br>Ease of formulation by simple mixing<br>Enhanced thixotropy to get high sag resistance with gloss retention |
| **SUPER** | ● | Rheology modifier | Polyamide | Powder | 100% | - | Controlled flow behavior, with ease of application and excellent sag resistance<br>High film thickness while achieving good levelling |
| **FLOW-200** | ● | Levelling agent | Polyester | Liquid | 100% | - | Polyester with balanced compatibility for an enhanced film aspect without defects |



**Our duty is to protect the environment and to help our customers manufacture coatings with reduced VOC's. We see strong growth in powder coatings and also waterborne coatings are being developed for most challenging conditions. In addition, we see conventional solvented systems becoming increasingly higher in solids and also solvent free.**

| POWDER | WB | VERY HIGH SOLID | SOLVENT FREE |
|---|---|---|---|
| 0 g/L VOC | 120 g/L VOC | 150 g/L VOC | 60 g/L VOC |
| Suitable for some applications | Cost vs performance | Cost vs performance | Specific equipment required |

Liquid additives are the most suitable alternative for waterborne coatings as waterbone resins are very often sensitive to temperature and shear preventing the required activation for polyamide powder. As a non associative rheology modifier, **CRAYVALLAC® LA-350** provides good sag resistance and antisettling properties in a wide range of waterborne systems. When the aspect of the film is essential, **CRAYVALLAC® A-2678-M** helps to prevent surface defect and can also prevent air bubbles. **CRAYVALLAC® WN-1535** can be easily dispersed in WB coatings and results in good scratch resistance. Depending on the dosage it is possible to use the matting effect to obtain a semi gloss finish.

| CRAYVALLAC® | Systems | Description | | | Characteristics | | |
|---|---|---|---|---|---|---|---|
| | Waterborne | Functionality | Chemistry | Supply form | Active content | Solvent | Remarks |
| **LA-350** | ● | Rheology modifier | Modified urea | Liquid | 50% | DMSO | Post addition<br>No activation required |
| **WN-1535** | ● | Surface modifier | Modified PP | Powder | 100% | None | Possibility to use with stronger matting agent for enhanced mechanical properties |
| **A-2678-M** | ● | Levelling agent | Polyacrylate | Liquid | 50% | Water glycol | Grind aid for water-based coatings |

**Arkema's CRAYVALLAC® range of surface modifiers are mainly based on polyethylene, polypropylene and PTFE. These products are available as micronised powders or dispersions of micronised powders in water or solvent. These high performance products enable the formulator to control both the lubricity and appearance of coatings.**
**The following performance enhancements are to be obtained by using these products :**

- Gloss and matt control
- Slip and scratch
- Mar, rub and abrasion
- Sanding aids
- Blocking resistance
- Solvent resistance and water repellency
- Texturing
- Stain resistance.

## Surface Modifiers

| | CRAYVALLAC® | Chemistry | Properties: Matting | Slip | Abrasion resistance | Scratch resistance | Characteristics: D50 (µm) | D100 (µm) | Dropping point (°C) | Dry content (%) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SOLID POLYMERIC WAX | WN-1135 | Modified PP | ● | ● | ● | ● | 5,5 | 26 | 151 | 100% | Matting and anti-scratch |
| | WN-1265 | Modified polyamide | ● | ● | ● | ● | 5,5 | 30 | 146 | 100% | Slip and satin effect |
| | WN-1495 | Polyethylene | ● | ● | ● | ● | 4,5 | 20 | 112 | 100% | Slip and anti-scratch (fine particule size distribution) |
| | WN-1442 | Polyethylene | ● | ● | ● | ● | 6 | 30 | 112 | 100% | Slip and anti-scratch |
| | WN-1535 | Modified PP | ● | ● | ● | ● | 5,5 | 26 | 151 | 100% | Possible combination with fumed sillica for deep mat finishes Easy to disperse in WB system |
| | WN-1875 | Crosslinked polymer | ● | ● | ● | ● | 5,5 | 30 | >200 | 100% | Strong matting effect and anti-scratch |
| | WF-3200 | Modified PTFE | ● | ● | ● | ● | 5 | 25 | 112 | 100% | Slip and high anti-scratch Good gloss retention |
| | WF-6010 | Modified PTFE | ● | ● | ● | ● | 5 | 25 | 112 | 100% | Slip and high anti-scratch without gloss decrease |
| | WF-9200 | Modified PTFE | ● | ● | ● | ● | 6 | 30 | 130 | 100% | Slip, high anti-scratch and chemical resistance without gloss decrease |
| AQUEOUS DISPERSION | WW-1001 | Polyolefin | ● | ● | ● | ● | 4,5 | 20 | 112 | 40% | Improved surface properties |
| | WW-1077 | Modified PTFE | ● | ● | ● | ● | 5 | 25 | 112 | 50% | Improved surface properties |
| | WW-9500 | Modified PP | ● | ● | ● | ● | 5,5 | 25 | 151 | 35% | Matting and anti-scratch |

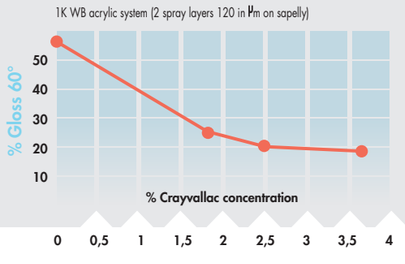
## Rheology Modifiers

| CRAYVALLAC® | Technical data: Supply form | Dosage (weight %) | Incorporation | SB: Regular solid | High solid | Special coatings: UV | Polyester | Waterborne | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| LV | Powder | 0,2 1,5 | Activation through heat & high shear | ● | ● | ● | ● | | Pure polyamide recommended for solvent free for its efficiency |
| PA3 X 20 / PA3 BA 20 | Paste | 0,5 5,0 | Medium shear | ● | ● | ● | ● | | Pre-activated paste with highest efficiency (optimum sag resistance and viscosity) |
| PA3 S 12 | Paste | 0,5 5,0 | Medium shear | ● | ● | ● | ● | | Pre-activated paste with highest efficiency (optimum sag resistance and viscosity) |
| PA4 X 20 / PA4 BA 20 | Paste | 0,5 5,0 | Medium shear | ● | ● | ● | ● | | Pre-activated paste with enhanced transparency, excellent anti-sagging, anti-settling properties |
| LA-150 | Liquid | 0,1 2,0 | Post addition | ● | ● | ● | ● | | Urea-urethane thixotropic agent especially recommended for antisettling and viscosity adjustments |
| LA-350 | Liquid | 0,1 2,0 | Post addition | | | | | ● | Simple stir-in incorporation Suitable for post addition |

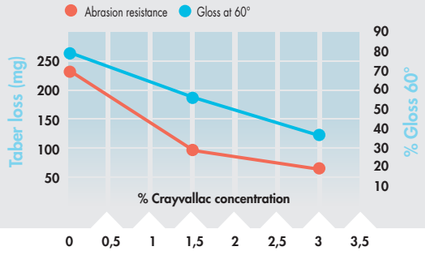
## Flow and Levelling Agents

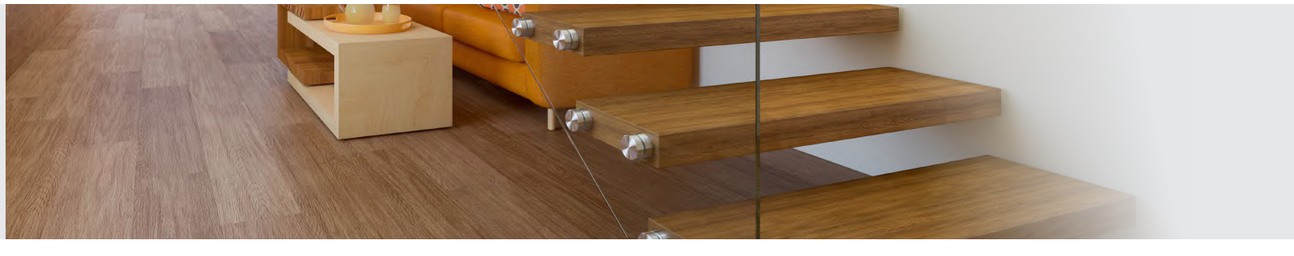
| CRAYVALLAC® | Systems: Solvent Based | UV Cure | Water Based | Properties: Film aspect enhancement | Air-release | Substrate wetting | Characteristics: Active content | Solvent | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| FLOW-200 | ● | ● | | ● | ● | ● | 100% | None | Polyester with balanced compatibility |
| FLOW-100 | ● | ● | | ● | ● | ● | 100% | None | Polyacrylate with high molecular weight |
| A-2678-M | | | ● | ● | ● | ● | 50% | Water Glycol | Polyacrylate providing defoaming improved properties substrate and pigment wetting |

Matting Crayvallac WN 1535 in WB formulation




Matting and Abrasion resistance in SB formulation



## Rheology Modifiers

| CRAYVALLAC® | Technical data: Supply form | Technical data: Dosage (weight %) | Technical data: Incorporation | Solventborne: Top Coat | Solventborne: Base Coat | Solventborne: Primer | Waterborne | Remarks |
|---|---|---|---|---|---|---|---|---|
| Super | 100 % active powder | 0,5<br>1,5 | Activation with heat and high shear | ● | ● | ● | | Pure polyamide featuring excellent sag resistance and edge covering with low thickening |
| Optima | 100 % active powder | 0,5<br>1,5 | Activation with heat and high shear | ● | ● | ● | | Pure polyamide recommended for its ease of activation and smooth viscosity recovery (good levelling) |
| NEW LV | 100 % active powder | 0,5<br>1,5 | Activation with heat and high shear | ● | ● | ● | | Pure polyamide recommended for its high efficiency |
| PA3 X 20 / PA3 BA 20 | Paste | 0,5<br>5,0 | Medium shear | ● | ● | ● | | Pre-activated paste with highest efficiency (optimum sag resistance and viscosity) |
| PA4 X 20 / PA4 BA 20 | Paste | 0,5<br>5,0 | Medium shear | ● | ● | ● | | Pre-activated polyamide with enhanced transparency, excellent anti-sagging, anti-settling properties |
| LA-150 | Liquid | 0,1<br>2,0 | Post addition | ● | ● | ● | | Modified urea thixotropic agent especially recommended for antisettling and viscosity adjustment |
| LA-350 | Liquid | 0,1<br>2,0 | Post addition | | | ● | | Modified urea thixotropic agent especially recommended for antisettling and viscosity adjustment |

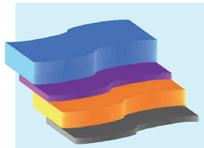
## Flow and Levelling Agents

| CRAYVALLAC® | Systems: Solvent Based | Systems: UV Cure | Systems: Water Based | Properties: Film aspect enhancement | Properties: Air-release | Properties: Substrate wetting | Characteristics: Active content | Characteristics: Solvent | Characteristics: Remarks |
|---|---|---|---|---|---|---|---|---|---|
| FLOW-200 | ● | ● | | ● | ● | ● | 100% | None | Polyester with high efficiency and balanced compatibility Especially recommended in OEM |
| FLOW-100 | ● | ● | | ● | ● | ● | 100% | None | Polyacrylate with balanced compatibility |
| A-620-A2 | ● | ● | | ● | ● | ● | 60% | Xylene | Polyacrylate with medium molecular weight |
| A-2201-M | ● | ● | | ● | ● | ● | 70% | Xylene Butanol | Polyacrylate with enhanced efficiency when blended with other flow additive |
| A-72-A2-60 | ● | ● | | ● | ● | ● | 60% | Xylene | Higher molecular weigh version of CRAYVALLAC® A-620-A2 |
| A-2678-M | | | ● | ● | ● | ● | 50% | Water glycol | Polyacrylate with enhanced efficiency when blended with other flow additive Grinding aid for waterborne coating |

## Surface Modifiers

| CRAYVALLAC® | Chemistry | Properties: Matting | Properties: Slip | Properties: Abrasion resistance | Properties: Scratch resistance | Characteristics: D50 (µm) | Characteristics: D100 (µm) | Characteristics: Dropping point (°C) | Characteristics: Solid content (%) | Characteristics: Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| WN-1875 | Polymeric | ● | ● | ● | ● | 5,5 | 30 | >200 | 100% | Stronger matting effect |
| WN-1535 | Modified PP | ● | ● | ● | ● | 5,5 | 26 | 151 | 100% | Possible combination with fumed sillica for deep mat finishes. Easy to disperse in WB system |
| WN-1495 | Polyethylene | ● | ● | ● | ● | 4,5 | 20 | 112 | 100% | Fine particle size distribution |
| WF-3200 | Modified PTFE | ● | ● | ● | ● | 5 | 25 | 112 | 100% | High performance wax Good gloss retention |

## Rheology Modifiers - Polyester Putties for Vehicle Refinish




USEFUL FOR CAR REPAIR - SPECIFIC RHEOLOGICAL NEED

**CRAYVALLAC® key benefits for Polyester Putties:**

- VERY GOOD IN-CAN STABILITY
- SMOOTH STRUCTURE, EASY TO BREAK
- PRODUCT STAYS ON THE KNIFE, NO SAG
- NO FOAM

| CRAYVALLAC® | Technical data: Supply form | Technical data: Dosage (weight %) | Technical data: Incorporation | Remarks |
|---|---|---|---|---|
| Antisettle CVP | 100 % active powder | 0,2<br>2,0 | Activation through heat & high shear | Castor oil derivative cost effective and easy to activate (40 - 45 °C) |
| NEW PF | 100 % active powder | 0,2<br>2,0 | Activation through heat & high shear | Finest particle size distribution for easier activation conditions and free-flow powder |
| MT | 100 % active powder | 0,2<br>2,0 | Activation through heat & high shear | Amide-modified castor oil derivative with improved stability for butter-like putties |
| SF | 100 % active powder | 0,2<br>2,0 | Activation through heat & high shear | Amide-modified castor oil derivative with improved stability for harder putties and better in-can stability |

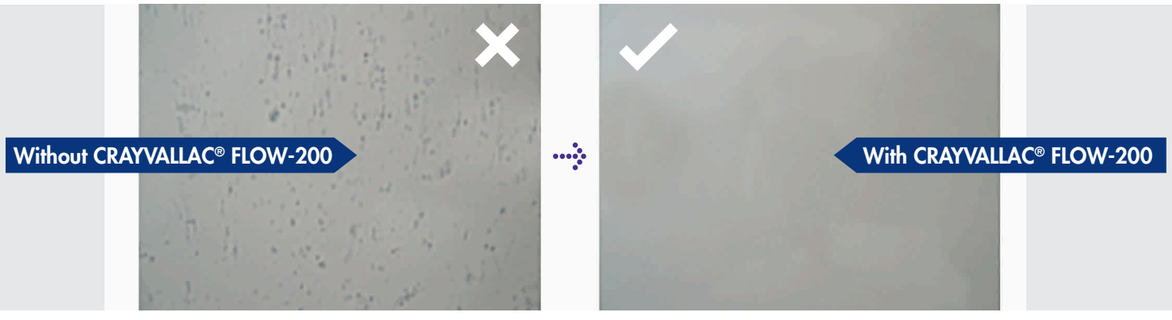
## Rheology Modifiers

| CRAYVALLAC® | Technical data: Supply form | Technical data: Dosage (weight %) | Technical data: Incorporation | Solventborne: Top Coat | Solventborne: Base Coat | Solventborne: Primer | Waterborne | Remarks |
|---|---|---|---|---|---|---|---|---|
| PA3 X 20 / PA3 BA 20 | Paste | 0,5<br>5,0 | Medium shear | ● | ● | ● | | Pre-activated paste with highest efficiency (optimum sag resistance and viscosity) |
| PA4 X 20 / PA4 BA 20 | Paste | 0,5<br>5,0 | Medium shear | ● | ● | ● | | Pre-activated polyamide with enhanced transparency excellent anti-sagging, anti-settling properties |
| LA-150 | Liquid | 0,1<br>2,0 | Post addition | ● | ● | ● | | Urea-urethane thixotropic agent especially recommended for antisetling and viscosity adjustments |

## Flow and Levelling Agents

| CRAYVALLAC® | Systems: Solvent Based | Systems: UV Cure | Systems: Water Based | Properties: Film aspect enhancement | Properties: Air-release | Properties: Substrate wetting | Characteristics: Active content | Characteristics: Solvent | Characteristics: Remarks |
|---|---|---|---|---|---|---|---|---|---|
| FLOW-200 | ● | ● | | ● | ● | ● | 100% | None | Polyester with high efficiency and balanced compatibility Especially recommended in OEM |
| FLOW-100 | ● | ● | | ● | ● | ● | 100% | None | Polyacrylate with balanced compatibility |
| A-620-A2 | ● | ● | | ● | ● | ● | 60% | Xylene | Polyacrylate with medium molecular weight |
| A-2201-M | ● | ● | | ● | ● | ● | 70% | Xylene Butanol | Polyacrylate with enhanced efficiency when blended with other flow additive |
| A-72-A2-60 | ● | ● | | ● | ● | ● | 60% | Xylene | Higher molecular weigh version of CRAYVALLAC® A-620-A2 |

Example of coil coating with and without Crayvallac® FLOW-200





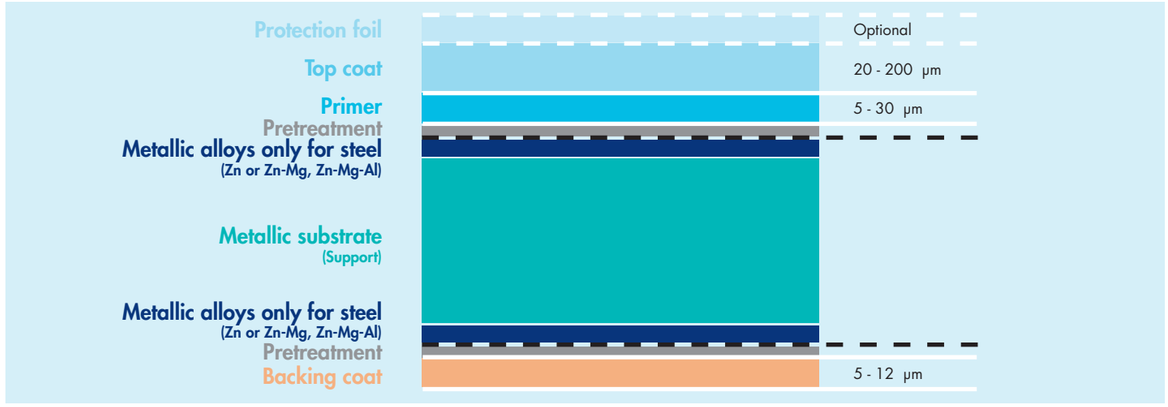

**CRAYVALLAC® levelling additives are high performance agents for the control of coating surface properties. Based on polyester and acrylic chemistries, they have been developed to provide the following benefits:**

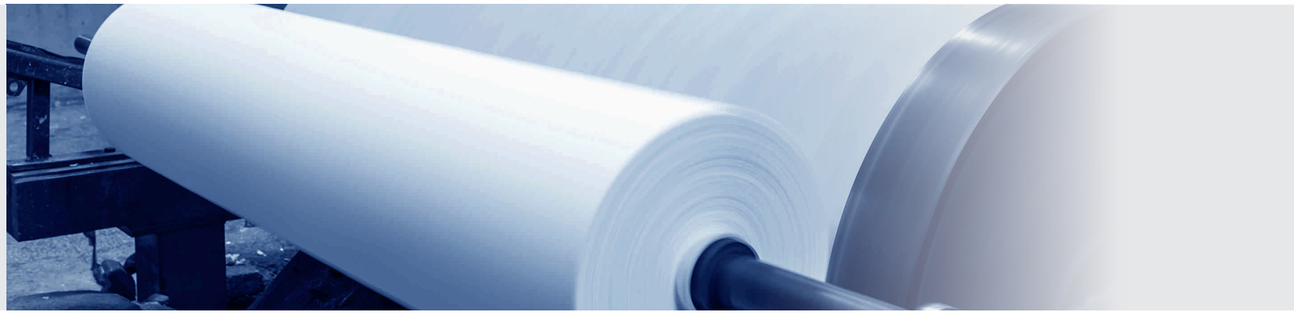
- No film surface defects
- Improved substrate wetting
- Air release properties
- Defoaming properties.

## Surface Modifiers

| CRAYVALLAC® | Chemistry | Properties: Matting | Properties: Slip | Properties: Abrasion resistance | Properties: Scratch resistance | Characteristics: D50 (µm) | Characteristics: D100 (µm) | Characteristics: Dropping point (°C) | Characteristics: Solid content (%) | Characteristics: Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| WN-1135 | Modified PP | ● | ● | ● | ● | 5.5 | 26 | 151 | 100% | Matting agent with excellent hardness and slip resistance reduction |
| WN-1495 | Polyethylene | ● | ● | ● | ● | 4,5 | 20 | 112 | 100% | Shows good hardness, abrasion, heat and solvent resistance. Ideal for general purposes |
| WN-1265 | Modified polyamide | ● | ● | ● | ● | 5,5 | 30 | 146 | 100% | Matting and texturing ('Orange-peel' effect) and slip resistance reduction |
| WF-3200 | Modified PTFE | ● | ● | ● | ● | 5 | 25 | 112 | 100% | Improves anti-blocking, abrasion resistance, surface hardness and slip resistance reduction |
| WN-1875 | Polymeric | ● | ● | ● | ● | 5,5 | 30 | >200 | 100% | High performance wax |

Typical coil coating layers



## Rheology Modifiers

| CRAYVALLAC® | Technical information | | | Application | | Remarks |
|---|---|---|---|---|---|---|
| | Supply form | Dosage (weight %) | Incorporation | Solventborne | Waterborne | |
| MT | 100 % active powder | 0,2<br>2,0 | Activation with heat and high shear | ● | | General purpose thixotrope for solventborne coatings |
| SUPER | | | | ● | | Excellent sag control with low thickening and good levelling balance. Suitable for premium quality, architectural solventborne paints |
| PA3 WDA 20 | Paste | 0,5<br>5,0 | Medium shear | ● | | Paste in mineral oil to provide excellent anti-settling and sag control properties with good levelling properties |
| PA4 WDA 12 | | | | ● | | Softer version of PA3 WDA 20, with much easier incorporation. Suitable for aerosols, wood stains and decorative paints |
| LA-250 | Liquid | 0,1<br>2,0 | Suitable for post addition | ● | | Anti-settling and sag control additive, with excellent levelling properties<br>Also used for viscosity adjustment |
| LA-350 | | | | | ● | Provides anti-settling properties to water-based coating, with excellent levelling properties |

## Surface Modifiers

| CRAYVALLAC® | Technology | Properties | | | | Characteristics | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Matting | Slip | Abrasion resistance | Scratch resistance | D50 (µm) | D100 (µm) | Dropping point (°C) | Solid content (%) | Remarks |
| WN-1135 | Modified PP | ● | ● | ● | ● | 5,5 | 26 | 151 | 100% | For satin finish. Excellent dispersability, hydrophobicity, slip and mar resistance |
| WN-1535 | Modified PP | ● | ● | ● | ● | 5,5 | 26 | 151 | 100% | Easy to disperse in WB system |
| WN-1495 | Polyethylene | ● | ● | ● | ● | 4,5 | 20 | 112 | 100% | Fine particle size distribution |
| WF-3200 | Modified PTFE | ● | ● | ● | ● | 5 | 25 | 112 | 100% | Improves anti-blocking, abrasion, mar resistance and surface hardness |
| WW-1001 | WB Dispersion | ● | ● | ● | ● | 4,5 | 20 | 112 | 40% | Good compatibility and rapid dispersion |
| WW-1077 | WB Dispersion | ● | ● | ● | ● | 5 | 25 | 112 | 50% | Wide compatibility and excellent stability in water-based systems |





## Flow and Levelling Agents

| CRAYVALLAC® | Technical information | | Characteristics | | |
|---|---|---|---|---|---|
| | Supply form | Chemistry | Melting point (°C) | Molecular weight (g/mol) | Remarks |
| PC | Powder | Modified Castor Derivative | 83<br>88 | - | High efficient flow, levelling and degassing additive without gloss reduction. Adhesion of sealants is preserved |
| MT | Powder | Modified Castor Derivative | 130<br>140 | - | High efficient flow, levelling and degassing additive without gloss reduction, with improved storage stability |
| WN-1265 | Powder | Amide | 146 | - | Improved degassing, flow and levelling<br>Also provides some slip and matt |
| REAFREE F3300-A15 | Masterbatch | Acrylic | - | High (>50.000) | Masterbatch with 15% active content in hydroxylated polyester. Recommended to improve levelling of pigmented powder coatings |
| REAFREE F8585-R10 | Masterbatch | Acrylic | - | Low (<15.000) | Masterbatch with 10% active content in carboxylated polyester. Recommended to improve levelling of pigmented powder coatings |
| REAFREE F3300-R10 | Masterbatch | Acrylic | - | Low (<15.000) | Masterbatch with 10% active content in hydroxylated polyester. Recommended to improve levelling of pigmented powder coatings |

## Matting & Texturing & Surface Protection

| CRAYVALLAC® | Chemistry | Properties | | | | | | | Characteristics | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Levelling | Degassing | Matting | Texturing | Slip | Abrasion resistance | Scratch resistance | D50 (µm) | Dropping point (°C) | Remarks |
| WN-1150 | Modified PE | | ● | ● | | ● | | | 6,5 | 113 | Matting agent for TGIC, Hybrid and PRIMID® based powder coatings<br>Ultra low gloss can be achieved in dry blend systems. Does not affect weatherability or mechanical properties |
| WN-1442 | PE | ● | ● | ● | | ● | | | 5,5 | 112 | Matting agent with improved surface properties. Provides degasing and improves flow and throughput during extrusion |
| EF-30P | Polymeric | | | ● | | | | | - | 125 (Tg) | Strong reactive matting agent specifically for pure epoxy and polyester-epoxy systems. Smooth surface appearance with very good color stability and nonyellowing. Ultra low gloss can be achieved in one shot |
| WF-1039 | PTFE/PE | | | ● | ● | | ● | ● | 5 | 112 | Fine textured finish effect with good temperature, solvent and abrasion resistance. Addition level: 0.5 - 3% |
| WN-1135 | Modified PP | ● | ● | | | | ● | ● | 5,5 | 151 | Matting agent with excellent hardness and slip resistance reduction |
| WF-3200 | PTFE/PE | | | ● | | ● | ● | ● | 6 | 112 | Versatile max prodividing high slip and anti-blocking. Improves abrasion, mar resistance and surface hardness |
| WF-6010 | PTFE/PE | | | ● | | ● | ● | ● | 6 | 112 | Versatile max prodividing high slip and anti-blocking. Improves abrasion, mar resistance and surface hardness |
| WN-1875 | Polymeric | | | | | | ● | ● | 5,5 | >200 | Increases surface hardness and scratch resistance. Advised for UV powder coatings. Reduces pill flow |

# RHEOLOGY MODIFIERS

## MICRONIZED POWDERS

| CRAYVALLAC® | Systems | | | | | Applications | | | | | | | | Processing Conditions | | | Properties | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Aliphatic | Aromatic | Aromatic / polar | Solvent-Free | Water-Based | PCM | GI | Architectural | IWF | Automotive | UPR | Adhesives & Sealants | Powder coatings | Activation (High shear) | High temperature | Low temperature | Shear-thinning | Sag control | Anti-settling | Levelling |
| Antisettle CVP | ● | | | ● | | | ● | ● | ● | | ● | ● | | ● | ● | ● | ● | ● | ● | ● |
| PC | | | | ● | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| PF | ● | | | ● | | | | | | | ● | ● | | ● | ● | ● | ● | ● | ● | ● |
| MT | ● | ● | ● | | | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| SF | ● | ● | ● | | | ● | ● | | | | ● | | | ● | ● | ● | ● | ● | ● | ● |
| Super | ● | ● | ● | | | ● | ● | ● | ● | ● | | ● | | ● | ● | ● | ● | ● | ● | ● |
| Ultra | | ● | ● | | | ● | ● | | | | | | | ● | ● | ● | ● | ● | ● | ● |
| Extra | | ● | ● | ● | | ● | ● | | | | | | | ● | ● | ● | ● | ● | ● | ● |
| Optima | ● | ● | ● | ● | | ● | ● | | ● | ● | | | | ● | ● | ● | ● | ● | ● | ● |
| LV | | | | ● | | ● | ● | | ● | | | | | ● | ● | ● | ● | ● | ● | ● |
| SLW | | | | ● | | | | | | | | ● | | ● | ● | ● | ● | ● | ● | ● |
| SLT | | | | ● | | | | | | | | ● | | ● | ● | ● | ● | ● | ● | ● |
| SLX | | | | ● | | | | | | | | ● | | ● | ● | ● | ● | ● | ● | ● |
| SL | | | | ● | | | | | | | | ● | | ● | ● | ● | ● | ● | ● | ● |

## PASTES

| CRAYVALLAC® | Systems | | | | | Applications | | | | | | | Processing Conditions | | | Properties | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Aliphatic | Aromatic | Aromatic / polar | Solvent-Free | Water-Based | PCM | GI | Architectural | IWF | Automotive | UPR | Adhesives & Sealants | Activation | Medium shear | Post-addition | Shear-thinning | Sag control | Anti-settling | Levelling |
| 60X | ● | ● | ● | | | ● | ● | | ● | | | | | ● | | ● | ● | ● | |
| PA3 XAF 20 | ● | ● | ● | | | ● | ● | | | | | | | ● | | ● | ● | ● | ● |
| PA3 X 20 | | ● | ● | | | ● | ● | | ● | ● | | ● | | ● | | ● | ● | ● | ● |
| PA4 X 20 | | ● | ● | | | ● | ● | | ● | ● | | | | ● | | ● | ● | ● | ● |
| PA3 BA 20 | | ● | ● | | | ● | ● | | ● | ● | | | | ● | | ● | ● | ● | ● |
| PA4 BA 20 | | ● | ● | | | ● | ● | | ● | ● | | | | ● | | ● | ● | ● | ● |
| PA3 S 12 | | | | | | | | ● | | ● | | | | ● | | ● | ● | ● | ● |
| PA3 WDA 20 | ● | | | | | ● | ● | ● | ● | | | | | ● | | ● | ● | ● | ● |
| PA4 WDA 12 | ● | | | | | | | | | | | | | ● | | ● | ● | ● | ● |

## LIQUIDS

| CRAYVALLAC® | Systems | | | | | Applications | | | | | | | Processing Conditions | | | Properties | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Aliphatic | Aromatic | Aromatic / polar | Solvent-Free | Water-Based | PCM | GI | Architectural | IWF | Automotive | UPR | Adhesives & Sealants | Activation | Medium shear | Post-addition | Shear-thinning | Sag control | Anti-settling | Levelling |
| LA-150 | | ● | ● | | | ● | ● | | ● | ● | | ● | | ● | ● | ● | ● | ● | ● |
| LA-250 | ● | ● | ● | | | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● | ● | ● |
| LA-350 | | | | | ● | ● | ● | ● | ● | ● | | ● | | ● | ● | ● | ● | ● | ● |

## SURFACE MODIFIERS

| | CRAYVALLAC® | Chemistry | Applications | | | | | | Properties | | | | Characteristics | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PCM | GI | Architectural | IWF | Automotive | Powder coatings | Matting | Slip | Abrasion resistance | Scratch resistance | D50 (µm) | D100 (µm) | Dropping point (°C) | Solid content (%) |
| MICRONIZED POWDERS | EF-30P | Polymer | | | | | | ● | ● | ● | ● | ● | | | 125 | 100% |
| | WN-1875 | Polymer | | ● | ● | ● | ● | ● | ● | | ● | ● | 5,5 | 30 | 200 | 100% |
| | WN-1135 | Polypropylene | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 5,5 | 26 | 151 | 100% |
| | WN-1535 | Polypropylene | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 5,5 | 26 | 151 | 100% |
| | WN-1265 | Polyamide | | ● | ● | ● | ● | ● | ● | ● | | | 5,5 | 30 | 146 | 100% |
| | WN-1150 | Modified Polyethylene | | | | | | ● | ● | ● | ● | ● | 6,5 | 30 | 113 | 100% |
| | WN-1442 | Polyethylene | | ● | ● | ● | ● | ● | ● | ● | ● | ● | 6 | 20 | 112 | 100% |
| | WN-1495 | Polyethylene | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 4,5 | 20 | 112 | 100% |
| | WN-2950 | Polyethylene | | ● | ● | ● | ● | | ● | ● | ● | ● | 6 | 30 | 130 | 100% |
| | WF-3200 | Modified PTFE | ● | ● | ● | ● | ● | ● | | ● | ● | ● | 5 | 25 | 112 | 100% |
| | WF-6010 | Modified PTFE | | ● | ● | ● | ● | | | ● | ● | ● | 5 | 25 | 112 | 100% |
| | WF-9200 | Modified PTFE | | | ● | ● | ● | | | ● | ● | ● | 6 | 30 | 130 | 100% |
| | WF-1039 | Modified PTFE | | | | | | ● | ● | ● | ● | ● | 5 | 80 | 112 | 100% |
| | WF-1000 | Modified PTFE | | ● | ● | ● | ● | ● | | ● | ● | ● | 7,5 | 30 | 325 | 100% |
| DISPERSIONS | WW-1001 | PE in WB | | | ● | ● | ● | | | ● | ● | ● | 4,5 | 20 | 112 | 40% |
| | WW-9500 | PP in WB | | ● | ● | ● | ● | | | ● | ● | ● | 5,5 | 26 | 151 | 35% |
| | WW-1077 | PE-PTFE in WB | | ● | ● | ● | ● | | | ● | ● | ● | 5 | 25 | 112 | 50% |
| | WS-4700 | PE in SB | | | ● | ● | ● | | | ● | ● | ● | 4,5 | 20 | 112 | 40% |

## FLOW AND LEVELLING AGENTS

| CRAYVALLAC® | Systems | | | Applications | | | | Properties | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Solvent Based | UV Cure | Water Based | GI / PCM | IWF | Automotive | Coil & can | Film aspect enhancement | Air release | Substrate wetting |
| FLOW-200 | ● | ● | | ● | ● | ● | ● | ● | ● | ● |
| FLOW-100 | ● | ● | | | ● | ● | ● | ● | ● | ● |
| A-620-A2 | ● | ● | | ● | | ● | ● | ● | ● | ● |
| A-2201-M | ● | ● | | ● | | ● | ● | ● | ● | ● |
| A-72-A2-60 | ● | ● | | | | ● | ● | ● | ● | ● |
| A-2678-M | | | ● | ● | ● | ● | ● | ● | ● | ● |

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- Rheology additives for waterborne coatings from Coatex.
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- Enhanced waterborne polymer emulsions using KYNAR® and KYNAR® Aquatic fluoropolymers.
- High performance texturing additives, namely ORGASOL® and RILSAN® fine powders.
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