The coating resins and additives portfolio is on the leading edge of performance. This broad package of products enables our customers to bring coatings faster to the market, solve problems and enhance properties.

We offer a broad range of additives for the formulation of coatings. Our portfolio includes low VOC, and hazardous air pollutant substance-free (HAPS free) technologies for solvent-borne, water-borne, high solids, powder coatings, and energy curable systems in both existing and emerging markets:

- **Architectural-decorative Wall and Trim Coatings, Stains, Concrete**
- **Automotive and Transportation – OEM, Aerospace, Refinish, Parts and Accessories**
- **General Industry, Wood, Packaging, Coil, Metal Protection**

Additives enhance performance by modifying rheological properties, improving flow and leveling, reducing foam, improving pigment dispersability, accelerating cure and crosslinking, improving adhesion and reducing defects.

Our high performance dispersants and grinding resins are at the forefront of technology for the preparation of binder free pigment concentrates and pastes. The highest level of pigment, at the lowest VOC, without effects on corrosion resistance and other properties are achieved in systems using wetting and dispersing additives from Allnex.

ADDITOL®, CYCAT® and MODAFLOW® additive families serve the following applications:
- Wetting and Dispersing Additives
- Flow and Leveling Additives
- Defoamer and Deaerater
- Rheology Modifier
- Catalysts and Drier

### About Additives

- **Global company with nearly $1.5 billion in sales**
- **Resin portfolio that comprises more than 80% of solvent-free and water-based products**
- **Broad Technology portfolio: liquid coating resins, energy curable resins, powder coating resins, cross linkers, and additives.**
- **Approx. 2000 employees**
- **More than 2500 customers**
- **16 manufacturing facilities**
- **13 research and technology centers**
- **2 joint ventures**
- **A myriad of solutions for key coating segments: automotive, industrial, packaging coating and inks, protective, industrial plastics and specialty architectural.**

With manufacturing, R&D and technical facilities located throughout Europe, North America, Asia Pacific, and Latin America, Allnex offers global and reliable supply of resins and additives combined with local, responsive customer support.
Wetting and Dispersing Additives

Additives for pigmented systems – Pigments and extenders are dry solid particles, which have to be incorporated into the liquid phase, consisting of binders and solvents. Protective and decorative properties are influenced by this step in paint production. To reach a high level of performance it is important to disperse the solid components very well and to stabilize the distribution as homogeneously as possible.

Wetting agents are responsible for the first step in this process. They replace air from the surface of particles and support the liquid phase to cover pigments and extenders. Good wetting of pigments and fillers results in high gloss of coating systems. This kind of additive possesses surface activity character.

Dispersing agents are responsible for the stabilization of the homogeneous distribution of particles. These additives prevent re-agglomeration of pigments and fillers and the formation of flocculates. There are different kinds of stabilization, which have to be optimized in order to reach required properties of gloss, color strength, hiding power, corrosion protection and viscosity of the formulation.

Often combinations of different types of pigments are used to obtain the desired color and hiding properties. However, combinations of organic and inorganic pigments which have different polarity and surface tensions have a tendency to separate. This separation can be horizontal, forming cell like structures (Benard cells), or vertical, which results in a color change. These effects can be evaluated by the rub out test. Multifunctional wetting agents with higher surface activity are useful to reduce these defects. These additives work as anti-floating agents.

Good to know ...

... about usage of dispersants in epoxy systems

- Ionic dispersants are not used in Epoxy coatings because of activating oxirane ring. This results in either immediate reaction or slow destruction and loss of final paint performance.

- To ensure best Epoxy resin stability and performance use special developed ADDITOL® XW 6208 or ADDITOL XW 6208/60.

- To achieve extreme high pigment loading in direct grinding processes or for pigment concentrates use ADDITOL VXW 6394. Additionally this additive allows sufficient stabilization of inorganic fillers and pigments.
### Requirements for modern pigment pastes

The preparation of modern tinting systems has become very important since cycle times, high quality standards and cost efficient production each plays a large role in overall profitability.

Formulators have been able to use “pigment slurry” or “pigment paste” technology to generate high quality coating systems. But what if there is a new system which allows the combination of both of these high performance technologies. These new systems provide: very high loading, wide pigment compatibility, excellent stability and excellent color properties. In addition the new resin systems support effective film formation while meeting VOC targets. All of this can be accomplished while generally reducing the overall system cost.

### New technologies and trends for pigment pastes

To accomplish these objectives, we cannot use simply a grinding resin or a dispersing agent. Newly designed polymers are modified with strong anchoring groups. These “grinding media” combine the advantages of selective drying capacity, crosslinking into the film, anti-settling and anti-floating effect and compatibility to both solvent-borne and water-borne systems.

Such novel “grinding media” can be used to produce highest quality pigment pastes for Automotive OEM and Refinish paints, Industrial Coatings applications and Decorative paints.

In stoving and 2 pack systems they can improve chemical resistances and contribute to film hardness.

In anti-corrosive formulations the new grinding media maintain the high corrosion protection designed into the base coating.

In Decorative paints the pigment loading is significantly improved compared to conventional paste and slurry technologies. Furthermore a special modification provides compatibility in both solvent-borne and water-borne paints.

### About colorants

<table>
<thead>
<tr>
<th>COLORANT</th>
<th>Traditional pigment slurry</th>
<th>Traditional pigment pastes</th>
<th>Innovative pigment pastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• high loading</td>
<td>• negative influence on quality</td>
<td>• improved floating control</td>
<td>• high pigment loading</td>
</tr>
<tr>
<td>• pigment stabilization</td>
<td>• compatibility</td>
<td>• reactivity</td>
<td>• suited for tinting machines</td>
</tr>
<tr>
<td>• color development</td>
<td>• resistance</td>
<td>• improved paint quality</td>
<td>• low pigment loading</td>
</tr>
<tr>
<td>• improved stability</td>
<td>• outdoor stability</td>
<td>• cost efficient</td>
<td>• medium quality</td>
</tr>
<tr>
<td>• settling</td>
<td>• rheology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PRODUCT** | **CHARACTERISTICS** | **General Industry** | **Auto-motive** | **Architecture**
--- | --- | --- | --- | ---
ADDITOL® XW 6528 | Cross linkable in stoving / 2K PUR systems, improves corrosion protection and water resistance | ● | ● | ●
ADDITOL XW 6539 | Cross linkable in stoving / 2K PUR systems, improves corrosion protection and water resistance. Ultra low VOC | ● | ● | ●
ADDITOL XW 6535 | Air drying polymer, very high pigment loading. Improved floating control and exterior stability. Ultra low VOC. | ● | ● | ●
ADDITOL XW 6540 | Cross linkable in 2K PUR systems. Improved chemical resistance. | ● | ● | ●
ADDITOL XW 6565 | Universal high polymeric, auto-emulsifying with improved compatibility in non aqueous paints. Ultra low VOC. | ● | ● | ●

* ADDITOL additives
### Wetting and Dispersing Additives

#### Additive name | Dosage | w/w | Industry | Architecture | Description | % Active Matter
--- | --- | --- | --- | --- | --- | ---
**Anti-floating**
**ADDITOL® XL 208** | 0.5 – 5.0 % pigment | s w |  |  |  | 40%**
**ADDITOL XL 204** | 0.5 – 6.0 % pigment | s w |  |  |  | 55%**

#### Pigment wetting
**ADDITOL XL 256** | 0.5 – 5.0 % pigment / extender | s w |  |  |  | 55%**
**ADDITOL XL 251** | 0.5 – 6.0 % pigment / extender | s w |  |  |  | 80%**
**ADDITOL XL 255N** | 0.2 – 2.0 % inorg. pigment / extender | s w |  |  |  | 55%**

#### Special Pigment wetting
**ADDITOL® XL 4992** | 0.5 – 2.0 % pigment / extender | s |  |  |  | 50%**

#### Dispersing Pigment slurries
**ADDITOL XL 6237N** | 3.0 – 10 % inorg. pigment / extender | s w |  |  |  | 30%**
**ADDITOL XL 260N** | 3.0 – 15 % inorg. pigment / extender | s w |  |  |  | 30%**
**ADDITOL XL 6212N** | 3.0 – 10 % inorg. pigment / extender | s w |  |  |  | 30%**
**ADDITOL UVX 7301/65** | 0.5 – 5.0 % inorg. pigment / extender | s w |  |  |  | 65%**
**ADDITOL VXW 339** | 0.1 – 0.4 % pigment / extender | w |  |  |  | 30%**
**ADDITOL VXW 6200** | 0.5 – 4.0 % inorg. pigment / extender | w |  |  |  | 40%**
**ADDITOL VXW 6205** | 0.5 – 4.0 % inorg. pigment / extender | w |  |  |  | 40%**
**ADDITOL VXW 6394** | 10 – 30 % inorg. pigment / extender | w |  |  |  | 40%**
**ADDITOL VXW 6208** | 3.0 – 10 % inorg. pigment / extender | w |  |  |  | 50%**
**ADDITOL VXW 6208/60** | 3.0 – 10 % inorg. pigment / extender | s w |  |  |  | 60%**
**ADDITOL VXW 6374** | 3.0 – 10 % inorg. pigment / extender | w |  |  |  | 50%**

* ADDITOL additives
* In TPGDA

---

**Characteristics**
- Silicone containing polymer; cationic; high molecular
- Phosphoric acid ester, neutralized by amine; anionic; low molecular
- Polyadduct containing acid groups
- Modified alkyl resin; neutralized
- Modified polyester
- Urethane modified acrylic copolymer; nonionic; high molecular
- Low molecular wetting additive with phosphoric acid modification
- Polyacrylic acid-ammonia salt; anionic; low molecular
- Acrylic copolymer-ammonia salt; anionic; medium molecular
- Acrylic copolymer-sodium salt; anionic; medium molecular; VOC-free
- High molecular weight polymer; nonionic
- Nonionically stabilized polymer; diluted in water
- Nonionically stabilized polymer; diluted in methoxy propane
- Wetting and dispersing agent; free of alkylphenol ethoxylates; no VOC

---

**Description**
- Anti-floating additive to improve significantly floating of inorganic and organic pigments.
- Anti-floating additive to improve significantly floating of inorganic and organic pigments and prevents the formation of Bénard cells. It has a strong pigment wetting character and helps to reduce dispersing time.
- Pigment wetting additive with very strong pigment affinity especially to inorganic and metallic pigments. Besides reduced dispersing time it improves gloss and color strength as well as material flow.
- Low molecular pigment wetting additive to improve gloss and color strength. It allows the reduction of dispersing time and mill base viscosity.
- Pigment wetting additive to improve gloss and color strength; for all types of pigment recommended. It may be used for direct grinding or pigment paste process.
- Multi purpose additive for UP - putties with strong wetting power for inorganic pigments and extenders. It reduces dispersing time and improves deaerating and rheology.
- High efficient, high molecular weight dispersing additive for all types of pigment. Recommended for direct grinding as well as for binder free pigment concentrates.
- High molecular weight dispersing additive for difficult wettable pigments. Recommended for direct grinding processes.
- High molecular weight dispersing additive for difficult wettable pigments. Recommended for direct grinding processes. Improved compatibility in acrylic systems.
- Special pigment wetting additive for non 100% UV formulations. It improves color development and pigment stabilization through electrical charging. Recommended for high gloss formulations.
- Low molecular weight wetting and dispersing additive especially for inorganic pigments and extenders. Strongly recommended for titanium dioxide white.
- Powerful dispersing additive especially for inorganic pigments. It reduces dispersing time and offers very good pigment stabilization. Especially recommended for glossy paints.
- Powerful dispersing additive especially for inorganic pigments. It reduces dispersing time and offers very good pigment stabilization. Especially recommended for glossy paints. VOC - free.
- Very sufficient, high molecular weight dispersing additive for all types of pigment. Due to its non ionic polymer structure it is highly recommended in formulations containing sensitive resins. Further it can be used for the production of highly loaded, binder free pigment concentrates.
- High molecular weight dispersing additive for all types of pigment. Due to its non ionic polymer structure it is highly recommended in formulations containing sensitive resins. It is recommended for both, direct grinding and pigment concentrate processes. Highly recommended in 2K Epoxy formulations.
- High molecular weight dispersing additive for all types of pigment. Due to its non ionic polymer structure it is highly recommended in formulations containing sensitive resins. It is recommended for both, direct grinding and pigment concentrate processes. Highly recommended in 2K Epoxy formulations.
- Wetting additive to improve gloss and color strength of difficult wettable pigments. It allows an improved material flow.
### Wetting and Dispersing Additives

#### Grinding media

<table>
<thead>
<tr>
<th>Additive name</th>
<th>Dosage</th>
<th>W/w</th>
<th>s/b</th>
<th>Industry</th>
<th>Architecture</th>
<th>Characteristics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADDITOL</strong> XL 6521</td>
<td>3.0 – 10 % inorg. 15 – 60 % org. pigment</td>
<td>s</td>
<td>●</td>
<td>Auto</td>
<td>Industry</td>
<td>Modified block copolymer; high molecular; cationic</td>
<td>Powerful, high molecular weight dispersing additives for very difficult wettable pigments. Especially recommended for all carbon black pigments in order to achieve perfect color properties and extreme high gloss. 60%</td>
</tr>
<tr>
<td>ADDITOL XW 6532</td>
<td>15 – 50 % org. pigment 30–100 % carbon black</td>
<td>w</td>
<td>●</td>
<td>Industry</td>
<td>Architecture</td>
<td>Ionic polymeric dispersing additive</td>
<td>Highly efficient dispersant for organic pigments and carbon black. It can improve color acceptance of colorants in solventborne paints. It is recommended for the production of waterborne pigment slurries. 40%</td>
</tr>
<tr>
<td>ADDITOL XW 6545</td>
<td>3.0 – 10 % inorg. 15 – 50 % org. pigment</td>
<td>w</td>
<td>●</td>
<td>Industry</td>
<td>Architecture</td>
<td>High molecular weight polymer; reduces surface tension; nonionic</td>
<td>Multi purpose dispersing and substrate wetting additive for all types of pigment. Non ionic, high molecular weight polymer for formulations containing sensitive resins. Especially recommended in 1K and 2K Epoxy formulations. 50%</td>
</tr>
<tr>
<td><strong>ADDITOL</strong> XL 6557</td>
<td>Grinding medium</td>
<td>s</td>
<td>●</td>
<td>Auto</td>
<td>Industry</td>
<td>Air drying alkyd polymer</td>
<td>Pigment grinding medium for solventborne (SB) industrial pigment pastes. High pigment concentration. Supports air-drying, physical drying and isocyanate and amino crosslinking systems. Compatible in broadest range of SB resins. 70%</td>
</tr>
<tr>
<td>ADDITOL XW 6528</td>
<td>Grinding medium</td>
<td>w</td>
<td>●</td>
<td>Industry</td>
<td>Architecture</td>
<td>Polyester modified acrylic polymer; co-crosslinkable</td>
<td>Co - crosslinkable grinding medium with high pigment loading capacity. Due to its special composition and reactivity it can improve chemical resistance and corrosion protection. Broad compatibility. 35%</td>
</tr>
<tr>
<td>ADDITOL XW 6539</td>
<td>Grinding medium</td>
<td>w</td>
<td>●</td>
<td>Industry</td>
<td>Architecture</td>
<td>Polyester modified acrylic polymer; co-crosslinkable</td>
<td>Co - crosslinkable grinding medium with high pigment loading capacity. Due to its special composition and reactivity it can improve chemical resistance and corrosion protection. Broad compatibility. Ultra low VDC. 35%</td>
</tr>
<tr>
<td>ADDITOL XW 6535</td>
<td>Grinding medium</td>
<td>s</td>
<td>w</td>
<td>Industry</td>
<td>Architecture</td>
<td>High polymeric; auto-emulsifying pigment grinding medium</td>
<td>Universal grinding medium for the production of pigment pastes used in all types of tinting machines. For improved color properties and better exterior performance. Recommended for all architectural, decorative and many industrial pigment pastes. 45%</td>
</tr>
<tr>
<td>ADDITOL XL 6515</td>
<td>Grinding medium</td>
<td>s</td>
<td>w</td>
<td>Industry</td>
<td>Architecture</td>
<td>Modified alkyd polymer; universal use in DECO and Industrial systems</td>
<td>Special, air drying grinding medium for the production of architectural, decorative and many industrial pigment pastes. 100%</td>
</tr>
<tr>
<td><strong>ADDITOL</strong> XL 6509</td>
<td>5.0 – 10 % inorg. pigment 30 – 60 % matting agent</td>
<td>s</td>
<td>●</td>
<td>Auto</td>
<td>Industry</td>
<td>Copolymer with acidic groups</td>
<td>Very efficient pigment wetting additive for inorganic pigments, extenders and matting agents. 65%</td>
</tr>
<tr>
<td>ADDITOL XL 6509/180</td>
<td>1.0 – 5.0 % org. pigment 20 – 60 % matting agent</td>
<td>s</td>
<td>●</td>
<td>Auto</td>
<td>Industry</td>
<td>Copolymer with acidic groups</td>
<td>Very efficient pigment wetting additive for inorganic pigments, extenders and matting agents. Especially recommended in HS and solvent-free systems as well as for colorants in plastic production. 100%</td>
</tr>
<tr>
<td><strong>ADDITOL</strong> XL 6514/80</td>
<td>0.2 – 1.0 % inorg. pigment 1.0 – 5.0 % org. pigment</td>
<td>s</td>
<td>●</td>
<td>Auto</td>
<td>Industry</td>
<td>Salt of a basic aminoamide with an acidic polyester</td>
<td>Wetting and anti-settling additive to improve gloss and pigment stabilisation and flow. Especially recommended in low VDC and high solid systems. 80%</td>
</tr>
<tr>
<td>ADDITOL XL 6514/50</td>
<td>0.2 – 1.0 % inorg. pigment 1.0 – 5.0 % org. pigment</td>
<td>s</td>
<td>●</td>
<td>Auto</td>
<td>Industry</td>
<td>Salt of a basic aminoamide with an acidic polyester</td>
<td>Wetting and anti-settling additive to improve gloss and pigment stabilisation and flow. Recommend for all solvent-borne paints and lacquers. 80%</td>
</tr>
</tbody>
</table>

* ADDITOL additives
Flow and Leveling Additives

Surface additives – Demands on optical performance are very high in most coating application areas. Defects in paint film are divergences from surface evenness and are proof of an imperfect coating process. Flow and Leveling agents are used to prevent or reduce surface defects like poor leveling, orange peel or cratering. These additives are surface active materials with a tendency to concentrate at the air coating interface. Poly (methyl) acrylates, modified silicones and surfactants based on fluorine-containing compounds are used for this application.

**Good to know ...**

**... that some additives bring extra value**

- High molecular weight flow promoters can bring added value in systems with entrapped micro foam. They allow for easy degassing even in high viscous formulations.

- Use MODAFLOW® Resin or MODAFLOW EPSILON

**... that standard silicones destroy adhesion**

- Standard silicone additives are not heat stable and may create condensation products when heated over 150°C. The resultant silicone aggregates lead to crater formation or loss of intercoat adhesion.

- Use ADDITOL® XL 123N or ADDITOL XL 6524.

**Trouble shooting guide**

- Co- existence of short and long waves in black top coat

- Micro foam bubbles in a solvent-borne clear coat

- Micro foam disappears from liquid phase

- Strong improved sharpness by elimination of short and long waves

- Loss of interlayer adhesion

- Excellent adhesion on primer

**How to select leveling additives**

<table>
<thead>
<tr>
<th>Long wave (w d, e) 1,2 - 12mm</th>
<th>Modaflow 9200, Additol VXL 4930</th>
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</thead>
<tbody>
<tr>
<td>Short wave (w b, c) 0,3 – 1,2mm</td>
<td>Modaflow 2100, Additol VXL 4930</td>
</tr>
<tr>
<td>Ultra short wave (w a) 0,1 – 0,3mm</td>
<td>Additol XL 123N, Additol XL 121</td>
</tr>
</tbody>
</table>

**Anti crater / substrate wetting**

**Improved DOI / brillancy / shape**

**Slip / scratch**

**Improved orange peel**

**Only silicones**

(ADDITOL XL123N, ADDITOL XL 121)

**Medium Mw polymers**

(MODAFLOW 2100)

**Low Mw polymers**

(MODAFLOW 9200, ADDITOL XL 6526)
## Flow and Leveling Additives

### Additive name | Dosage | w/b | s/b | Industry | Architecture | Characteristics | Description | % Active matter
---|---|---|---|---|---|---|---|---
**Acrylic flow promoters and leveling additives**

ADDITOL® XW 395 | 0.2 – 1.0 % binder | w | ● | ● | Acrylic copolymer; neutralized by amine; silicone-free; FDA-approved | Multi purpose leveling additive to improve surface conditions and prevent pin holes and crater formation. Also efficient against oil contaminations. | 58 %
ADDITOL XL 480 | 0.1 – 0.5 % total | s | ● | ● | Modified acrylic copolymer; low molecular weight; FDA-approved | Low molecular weight leveling additive for improved surface and anti crater effect. Very good compatibility in all major solventborne systems. Especially recommended for car refinsh and coil coating applications. | 70 %
ADDITOL XL 490 | 0.1 – 2.0 % binder | s | ● | ● | Modified acrylic copolymer | Medium molecular weight acrylic leveling additive to improve flow and surface quality. Effective against film defects. | 100 %
ADDITOL XL 49H/50BAC | 0.1 – 0.5 % total | s | ● | ● | Modified acrylic copolymer | Medium molecular weight acrylic leveling additive to improve flow and surface quality. Effective against film defects. | 50 %
ADDITOL VXW 4971 | 0.2 – 1.0 % binder | w | ● | ● | Acrylic copolymer; neutralized by amine | Crosslinkable leveling additive to improve flow and surface quality. It prevents surface defects. | 50 %
MODAFLOW® EPSILON | 0.1 – 2.0 % total | s | ● | ● | Acrylic polymer; high molecular weight | Highly efficient flow promoter with excellent degassing properties. Recommended for all solventborne systems, especially for pigmented top coats. Easy handling and incorporation. | 80 %
MODAFLOW RESIN | 0.1 – 1.0 % total | s | ● | ● | Acrylic copolymer; high molecular weight; FDA-approved | Medium molecular weight, highly efficient flow modifier. Good compatibility and easy incorporation, fast mode of action. Recommended also in clear coat applications. | 100 %
MODAFLOW 9200 | 0.1 – 0.5 % total | s | ● | ● | Modified acrylic copolymer; low molecular weight; crosslinkable | Low molecular weight, highly efficient and crosslinkable flow modifier. It reduces film defects and strongly increases gloss levels. Recommended for all solventborne high end applications. | 100 %
MULTIFLOW® RESIN | 0.5 – 3.0 % binder | s | ● | ● | Acrylic copolymer diluted in xylene | Highly efficient flow promoter with excellent degassing properties. Recommended for all solventborne systems, especially for pigmented top coats. | 50 %
MODAFLOW AQ 3025 | 1.0 – 2.0 % total | w | ● | ● | Acrylic copolymer; neutralized by amine; silicone-free | Medium molecular weight flow and leveling additive. It supports pigment wetting and allows a fast degassing process. | 25 %
ADDITOL WX 6552 | 0.1 – 1.0 % total | w | ● | ● | Neutraлизed acrylic copolymer | Special flow and leveling additive. | 65 %
ADDITOL WX 6558 | 0.1 – 1.0 % total | w | ● | ● | Acrylic copolymer; neutralized by amine | Low molecular weight, high efficient and crosslinkable flow modifier. It reduces film defects and strongly increases gloss levels. Recommended for all waterborne paints and lacquers. | 44 %

### Substrate wetting additives (anti-crater effect)

ADDITOL WX 390 | 0.1 – 1.0 % binder | w | ● | ● | Fluoro-modified acrylic copolymer; neutralized by amine | Silicone free, substrate wetting and leveling additive with improvement of intercoat adhesion. It is crosslinkable and does not stabilize foam. | 50 %
ADDITOL VXW 6214 | 0.2 – 1.0 % binder | w | ● | ● | Fluoro-modified acrylic copolymer; neutralized by amine | Silicone free, substrate wetting and leveling additive for difficult wettable substrates or not perfectly cleaned surfaces. It is not foam stabilizing and does not harm intercoat adhesion. | 57 %
ADDITOL VXL 6230 | 0.1 – 1.0 % binder | s | ● | ● | Fluoro-modified acrylic copolymer | Silicone free, substrate wetting and leveling additive for difficult wettable substrates or not perfectly cleaned surfaces. It is recommended especially in solventborne systems. | 70 %
ADDITOL VXW 6386 | 0.1 – 1.0 % total | w | ● | ● | Highly fluoro-modified acrylic copolymer; neutralized by amine; low molecular weight | Silicone free, substrate wetting and leveling additive for difficult wettable substrates or not perfect cleaned surfaces. Very low molecular weight allows fast mode of action. It is not foam stabilizing and does not harm intercoat adhesion. | 55 %
ADDITOL VXW 6503 N | 0.1 – 1.0 % total | s | w | ● | Silicone tenside | Special silicone tenside with very strong influence on surface tension and excellent substrate wetting performance. It is not foam stabilizing and does not show problems in recoatability. | 50 %

* ADDITOL additives
  * MODAFLOW additives
  * MULTIFLOW additives
## Flow and Leveling Additives

<table>
<thead>
<tr>
<th>Additive name</th>
<th>Dosage</th>
<th>w/b</th>
<th>s/b</th>
<th>Auto</th>
<th>Industry</th>
<th>Architecture</th>
<th>Description</th>
<th>% Active matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDITOL®* XL 121</td>
<td>0,1 – 0,5 % total</td>
<td>s</td>
<td></td>
<td>●</td>
<td>●</td>
<td>Modified silicone</td>
<td>Silicone leveling additive that strongly increases slip and scratch resistance. Further it improves material flow.</td>
<td>14%</td>
</tr>
<tr>
<td>ADDITOL® XL 122N</td>
<td>0,05 – 0,3 % total</td>
<td>s</td>
<td></td>
<td>●</td>
<td></td>
<td>Modified silicone</td>
<td>Silicone leveling additive to improve surface quality, slip and substrate wetting. Very good compatibility.</td>
<td>45%</td>
</tr>
<tr>
<td>ADDITOL® XL 123N</td>
<td>0,05 – 0,5 % total</td>
<td>s, w</td>
<td></td>
<td>●</td>
<td>●</td>
<td>Modified silicone</td>
<td>Silicone leveling additive to improve slip and scratch resistance. It has degassing properties and is thermostable up to 400°C.</td>
<td>50%</td>
</tr>
<tr>
<td>ADDITOL® XL 125N</td>
<td>0,1 – 0,3 % total</td>
<td>s, w</td>
<td></td>
<td>●</td>
<td></td>
<td>Modified silicone</td>
<td>Troubleshooting additive with very strong anti-crater and anti-orange peel effect. It reduces Bénard cells formation and is recommended as post additive.</td>
<td>50%</td>
</tr>
<tr>
<td>ADDITOL® XL 132</td>
<td>0,1 – 5,0 % total</td>
<td>s</td>
<td></td>
<td>●</td>
<td></td>
<td>Silicone-modified acrylic copolymer</td>
<td>Special silicone leveling additive to enhance flow and reduce pin holes. Very good degassing effect. Especially recommended for Epoxy systems.</td>
<td>30%</td>
</tr>
<tr>
<td>ADDITOL® XW 329</td>
<td>0,1 – 0,3 % total</td>
<td>w</td>
<td></td>
<td>●</td>
<td></td>
<td>Modified silicone</td>
<td>Silicone additive to improve flow and scratch resistance.</td>
<td>50%</td>
</tr>
<tr>
<td>ADDITOL® XVL 4930</td>
<td>0,05 – 0,3 % total</td>
<td>s, w</td>
<td></td>
<td>●</td>
<td></td>
<td>Polyether-modified silicone</td>
<td>Universal, silicone leveling additive with very good compatibility. It is very well balanced in order to improve spray mist absorption, orange peel, cratering and leveling. Highly efficient and not foam stabilizing.</td>
<td>40%</td>
</tr>
<tr>
<td>ADDITOL® XL 6524</td>
<td>0,05 – 0,5 % total</td>
<td>s, w</td>
<td></td>
<td>●</td>
<td></td>
<td>Modified silicone</td>
<td>Silicone leveling additive to improve slip and scratch resistance. It has degassing properties and is thermostable up to 400°C. Highly efficient.</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Hybrid polymer leveling

<table>
<thead>
<tr>
<th>Additive name</th>
<th>Dosage</th>
<th>w/b</th>
<th>s/b</th>
<th>Auto</th>
<th>Industry</th>
<th>Architecture</th>
<th>Description</th>
<th>% Active matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDITOL® XL 6526</td>
<td>0,1 – 0,5 % total</td>
<td>s</td>
<td></td>
<td>●</td>
<td></td>
<td>Modified acrylic polymer</td>
<td>Very strong, crosslinkable flow and leveling additive with strong anti-crater and substrate wetting performance. It does not contain free silicone.</td>
<td>100%</td>
</tr>
</tbody>
</table>

* ADDITOL additives
Defoamer and Deaerater

Surface Additives – In many stages of production, handling and application, air is incorporated and finally dispersed into resins, lacquers and paints. During production and handling, the increase of volume by foam and the incorporated air will cause handling and filling problems. After application of coatings, air inside the system should leave the film while the viscosity is low enough to allow bubble marks to reflow. These larger bubbles are macro foam, which is eliminated by Defoamers. The dispersed air in the system which remains is called micro foam. Deaeraters or air release agents are used to carry these very small bubbles to the surface of the liquid phase. The technique of defoaming is based on controlled incompatibility in the system and it is important to calculate the right balance between activity and compatibility to avoid defects.

Good to know ...

... that some defoamers even enhance the system further

- Highly viscous and strong pseudo plastic paints applied with high wet film thicknesses e.g. by airless spray gun are very susceptible to entrapped foam. The foam within the coating may lead to pinhole formation and can weaken anti-corrosion performance of paints.

- Use ADDITOL® XW 6544 for:
  - All high viscous and high film thickness coatings
  - All airless / mix applied paints
  - All water-based pigment pastes
  - High molecular weight flow promoters can bring added value in systems with entrapped foam

- Use MODAFLOW® Resin or MODAFLOW EPSILON.

Trouble shooting guide

- Presence of macro foam in wet clear coat
- Pinholes in thick layer epoxy primer
- Closed surface obtained with ADDITOL XW 6544
- Efficient destruction of macro foam

Defoamer and Deaerater

How to select defoamers

General Industry / Automotive

- Compatible
  - ADDITOL® XW 6500
  - ADDITOL VXW 4973
  - ADDITOL XW 6544

- Efficient
  - Start

Architectural / Decorative

- Compatible
  - ADDITOL XW 376
  - ADDITOL VXW 6393
  - ADDITOL XW 6544

- Efficient
  - Start

Optimum defoaming capacity
Too high / long Shear stress / time
Insufficient incorporation
Crater tendency*
Defoamer droplet diameter

ADDITOL VXW 4973
ADDITOL XW 6544
ADDITOL VXW 6386
ADDITOL VXW 6393
ADDITOL VXL 4951
ADDITOL VXW 4926
ADDITOL VXW 6500
ADDITOL VXW 6501

* Standard silicone defoamer
<table>
<thead>
<tr>
<th>Additive name</th>
<th>Dosage</th>
<th>w/b</th>
<th>s/b</th>
<th>Auto</th>
<th>Industry</th>
<th>Architecture</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Defoamers (silicone free)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADDITOL® XW 375</td>
<td>0.1 – 0.6 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Mineral oil, waxes                                                                                                                                         High efficient defoamer for architectural and decorative paint mainly.</td>
</tr>
<tr>
<td>ADDITOL XW 376</td>
<td>0.05 – 0.5 % paint</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Mineral oil / wax emulsion                                                                             High efficient, easy to incorporate defoamer emulsion for architectural and decorative paints mainly.</td>
</tr>
<tr>
<td>ADDITOL VXW 4973</td>
<td>0.1 – 0.6 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Mineral oil, waxes                                                                                                                                         Highly efficient defoamer with good compatibility and easy incorporation. Broad field of application.</td>
</tr>
<tr>
<td>ADDITOL VXW 6211</td>
<td>0.05 – 0.5 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Hydrocarbons; hydrophobic solid particles                                                                                                                   Very strong defoamer for highly pigmented paints or pigment pastes.</td>
</tr>
<tr>
<td>ADDITOL VXW 6235</td>
<td>0.2 – 1.0 % powder</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Defoaming compounds applied on silica; dry powder                                                                                                           Powder defoamer for flooring systems or epoxy cement applications.</td>
</tr>
<tr>
<td>ADDITOL VXW 6381</td>
<td>0.1 – 0.5 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Mineral oil, waxes                                                                                                                                         FDA-approved defoamer for waterborne systems. Strongly recommended in all waterborne can and coils systems.</td>
</tr>
<tr>
<td>ADDITOL VXW 6386</td>
<td>0.5 – 1.5 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Hydrocarbons, waxes                                                                                                                                         Defoamer for high quality lacquers with good compatibility. Homogenize prior use!</td>
</tr>
<tr>
<td>ADDITOL VXW 6392</td>
<td>0.1 – 0.5 % total</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Special mineral oil, waxes; low odor                                                                                                                        Defoamer for wall paints! Homogenize prior use!</td>
</tr>
<tr>
<td>ADDITOL VXW 6393</td>
<td>0.1 – 0.5 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Special mineral oil, waxes; low odor                                                                                                                      Highly efficient defoamer for architectural and decorative coatings. Low odor, especially for interior applications.</td>
</tr>
<tr>
<td>ADDITOL VXW 6399</td>
<td>0.5 – 1.0 % total</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hydrocarbons; hydrophobic solid particles                                                                                                                   Defoamer for high quality pigmented systems with very good compatibility in many paint systems.</td>
</tr>
<tr>
<td>ADDITOL VXW 6544</td>
<td>0.05 – 0.5 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Polymer defoamer, VOC free                                                                                                                                   Very efficient defoamer and deaerator for high viscous systems with strong gas incorporations. Excellent re-flow effect improves surface quality.</td>
</tr>
<tr>
<td><strong>Defoamers (silicone)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADDITOL XW 372N</td>
<td>0.1 – 0.5 % total</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mineral oil, waxes; silicone containing                                                                                                                    Defoamer with excellent long term stability, enhances flow and leveling.</td>
</tr>
<tr>
<td>ADDITOL VX 4951</td>
<td>0.05 – 1.0 % total</td>
<td>s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fluoro-modified silicone                                                                                                                                  Very efficient defoamer for solventborne paints and lacquers. Strong anti blistering effect during processing and application.</td>
</tr>
<tr>
<td>ADDITOL VXW 6210N</td>
<td>0.05 – 0.5 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Modified silicone; blend of hydrocarbons                                                                                                                     Heavy duty defoamer recommended for preparation of pigment concentrates and strong foaming systems.</td>
</tr>
<tr>
<td>ADDITOL VXW 6356</td>
<td>0.05 – 0.2 % total</td>
<td>w</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>Emulsion of special silicones                                                                                                                                Defoamer for clear and top coats, easy to incorporate.</td>
</tr>
</tbody>
</table>

* ADDITOL additives
<table>
<thead>
<tr>
<th>Additive name</th>
<th>Dosage</th>
<th>w/b/s/b</th>
<th>Auto</th>
<th>Industry</th>
<th>Architecture</th>
<th>Description</th>
<th>% Active matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDITOL® XW 393</td>
<td>0,5 – 3,0 % binder</td>
<td>w</td>
<td>●</td>
<td></td>
<td></td>
<td>Foam reducing compounds; Defoamer to prevent pin hole formation and improves flow.</td>
<td>35 %</td>
</tr>
<tr>
<td>ADDITOL VXW 4909</td>
<td>2,0 – 10,0 % binder</td>
<td>w</td>
<td>●</td>
<td></td>
<td></td>
<td>Special fatty acid ester; Defoamer and deaerater with broad compatibility and easy incorporation, crosslinkable.</td>
<td>79 %</td>
</tr>
<tr>
<td>ADDITOL VXW 4926</td>
<td>2,0 – 15,0 % binder</td>
<td>w</td>
<td>●</td>
<td></td>
<td></td>
<td>Special fatty acid ester; Defoamer and deaerater with rheology improvement in order to allow better film build-up. Very fast mode of action, crosslinkable.</td>
<td>100 %</td>
</tr>
<tr>
<td>ADDITOL VXW 5907</td>
<td>2,0 – 3,0 % binder</td>
<td>w</td>
<td>●</td>
<td></td>
<td></td>
<td>Degassing / defoaming polymer; surface active; Deaerater with strong efficiency in forced drying and stoving systems. Easy to incorporate and very good in clear coat formulations.</td>
<td>100 %</td>
</tr>
<tr>
<td>ADDITOL VXW 6397</td>
<td>0,1 – 1,0 % total</td>
<td>w</td>
<td>●</td>
<td></td>
<td></td>
<td>Solution of defoaming polymers in special hydrocarbons; silicone-free; Defoamer and deaerater for all industrial paints and lacquers, high efficient, silicone containing.</td>
<td>10 %</td>
</tr>
<tr>
<td>ADDITOL VXW 6500</td>
<td>0,3 – 3,0 % total</td>
<td>w</td>
<td>●</td>
<td></td>
<td></td>
<td>Degassing polymers; hydrocarbons; silicone-free; Defoamer and deaerater for all industrial paints and lacquers, high efficient.</td>
<td>100 %</td>
</tr>
<tr>
<td>ADDITOL XL 6507</td>
<td>0,1 – 1,5 % total</td>
<td>s</td>
<td>●</td>
<td></td>
<td></td>
<td>Degassing / defoaming polymers; silicone-free; Defoamer and deaerater for all industrial paints and lacquers, high efficient.</td>
<td>10 %</td>
</tr>
<tr>
<td>ADDITOL XL 6531</td>
<td>0,1 - 0,5 % total</td>
<td>s</td>
<td>●</td>
<td></td>
<td></td>
<td>Polymer defoamer; Special polymer defoamer/deaerator, recommended for pigmented systems.</td>
<td>40 %</td>
</tr>
<tr>
<td>ADDITOL VXL 6501</td>
<td>0,1 – 1,5 % total</td>
<td>s</td>
<td>●</td>
<td></td>
<td></td>
<td>Degassing / defoaming polymers; silicone containing; Defoamer and deaerater for all industrial paints and lacquers, high efficient, silicone containing.</td>
<td>7,5 %</td>
</tr>
</tbody>
</table>

* ADDITOL additives
The rheological properties of coating systems primarily are designed to improve paint handling, application and leveling properties. Rheology modifiers are compounds which interact with formulation components, building up a three dimensional network or modifying the fluid phase only. These additives optimize the viscosity profile of coating systems.

However viscosity control is also very important to shelf storage stability, to reduce the tendency of pigment and extender sedimentation in the container. During storage, pigments and extenders may show a tendency to settle into a soft or hard layer in the container. This is caused by the higher density of these components in relation to the liquid phase. Sedimentation can be overcome by using additives which form three dimensional networks. Anti-settling agents modify the viscosity at extremely low shear rates which governs sedimentation.

**Good to know …**

... that there is a way to increase wet film thickness without sagging

- In case of high wet film thicknesses applied e.g. by airless spray gun or in case of overlap areas, PUR thickeners have their limits. The paint will start sagging on vertical substrates.

- Use ADDITOL® XW 6536 to achieve extreme high film thickness without sagging.

**Trouble shooting guide**

Sagging of paint on vertical substrate

| Strong sagging of paint | Improved sagging control |

**ADDITOL VXW 6388**  
**ADDITOL VXW 6360**  
**ADDITOL XW 6536**  
**ADDITOL VXW 6387**

Paint stays on vertical substrate without sagging
<table>
<thead>
<tr>
<th>Additive name</th>
<th>Dosage</th>
<th>w/b</th>
<th>s/b</th>
<th>Industry</th>
<th>Architecture</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDITOL®* XL 270</td>
<td>0.1 – 2.0 % pigment</td>
<td>s</td>
<td>w</td>
<td>● ● ●</td>
<td></td>
<td>Special fatty acid modified silicone; amine neutralized</td>
</tr>
<tr>
<td>ADDITOL XL 280</td>
<td>5.0 – 10.0 % pigment</td>
<td>s</td>
<td>● ● ●</td>
<td></td>
<td></td>
<td>Special modified montmorillonite clay</td>
</tr>
<tr>
<td>ADDITOL VXW 4934</td>
<td>1.0 – 10.0 % binder</td>
<td>w</td>
<td>● ● ●</td>
<td></td>
<td></td>
<td>Modified wax emulsion</td>
</tr>
<tr>
<td>ADDITOL VXW 6397</td>
<td>0.1 – 5.0 % pigment</td>
<td>s</td>
<td>w</td>
<td>● ● ●</td>
<td></td>
<td>Special fatty acids; amine neutralized; silicone-free</td>
</tr>
<tr>
<td>ADDITOL VXW 6536</td>
<td>0.2 – 0.8 % total</td>
<td>w</td>
<td>● ● ●</td>
<td></td>
<td></td>
<td>Special organic activated clay</td>
</tr>
<tr>
<td>ADDITOL VXW 6360</td>
<td>0.1 – 3.0 % total</td>
<td>w</td>
<td>● ● ●</td>
<td></td>
<td></td>
<td>Polyurethane thickener</td>
</tr>
<tr>
<td>ADDITOL VXW 6388</td>
<td>0.1 – 3.0 % total</td>
<td>w</td>
<td>● ● ●</td>
<td></td>
<td></td>
<td>Polyurethane thickener</td>
</tr>
</tbody>
</table>
Catalysts and Diers

Diers and Catalyst selection are very important elements to ensure the desired performance in reactive and crosslinked coatings.

The cross linking reaction of air drying alkyd systems is based on a radical mechanism, starting with the incorporation of oxygen from air. The absorption step is accelerated by Diers, which are carboxylic salts of metals. Cobalt, manganese and iron are the most important active drying metals whereas barium, zirconium or calcium belong to the group of secondary drying metals. Pre-emulsified combination diers allow efficient set and through drying with easy incorporation in water-borne paint formulations.

Catalysts are used to speed up cross linking reactions of two-component polyurethane systems or improve curing conditions in stoving enamels. The reaction of melamine resins and polyols is complex and require acidic catalysts. The relative efficiency of catalysts correlates to the acidity and the overall reaction rate is direct proportional to the concentration of the catalyst. Frequently used catalysts are p-toluene sulfonic acid (PTSA), dodecyl benzene sulfonic acid (DDBSA), dinonyl naphthalene di sulfonic acid (DNNDSA), phosphoric acid derivatives or organic acids.

Ionic or covalently blocked sulfonic acid catalysts are used in amino resin based stoving systems. The heat sensitive deactivation of the sulfonic acid is a very important tool to achieve the desired balance of storage stability of a catalyzed system and then rapid cure when the coating reaches the desired cure temperature.

Trouble shooting guide

... that we have a fast reactivity cobalt-free dier

- Use ADDITOL® XW 6533 as a real alternative to Cobalt - containing diers. It allows fast set and through drying and can be used in water-borne as well as in solvent-borne paints.

- Some diers have compatibility problems when incorporated in water-based paints. In these cases pre-mixing amine with the dier immediately prior to incorporation may solve the problem.

How to select catalysts

Catalysts are used to speed up cross linking reactions of two-component polyurethane systems or improve curing conditions in stoving enamels. The reaction of melamine resins and polyols is complex and require acidic catalysts. The relative efficiency of catalysts correlates to the acidity and the overall reaction rate is direct proportional to the concentration of the catalyst. Frequently used catalysts are p-toluene sulfonic acid (PTSA), dodecyl benzene sulfonic acid (DDBSA), dinonyl naphthalene di sulfonic acid (DNNDSA), phosphoric acid derivatives or organic acids.

Ionic or covalently blocked sulfonic acid catalysts are used in amino resin based stoving systems. The heat sensitive deactivation of the sulfonic acid is a very important tool to achieve the desired balance of storage stability of a catalyzed system and then rapid cure when the coating reaches the desired cure temperature.
<table>
<thead>
<tr>
<th>Additive name</th>
<th>Dosage</th>
<th>w/b</th>
<th>s/b</th>
<th>Characteristics</th>
<th>Description</th>
<th>% Active Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catalysts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CYCAT®® XK 406N</td>
<td>2.0 – 5.0 % binder</td>
<td>s</td>
<td></td>
<td>Phosphoric acid based catalyst</td>
<td>Accelerates curing of phenolic and phenolic / epoxy systems</td>
<td>9%</td>
</tr>
<tr>
<td>CYCAT VXK 6395</td>
<td>0.4 – 8.0 % total</td>
<td>s, w</td>
<td></td>
<td>Amine blocked sulfonic acid</td>
<td>Especially for low temperature stoving applications in general industry and OEM</td>
<td>25%</td>
</tr>
<tr>
<td>CYCAT VXK 6319</td>
<td>10 – 20 % total</td>
<td>s</td>
<td></td>
<td>Organic phosphoric acid compound in solvent</td>
<td>Catalyst for 1K-systems</td>
<td>21%</td>
</tr>
<tr>
<td>CYCAT VXK 6357</td>
<td>5.0 – 15 % melamine resin</td>
<td>s, w</td>
<td></td>
<td>pTSA ester</td>
<td>Reduces stoving temperature/time</td>
<td>90%</td>
</tr>
<tr>
<td>CYCAT VXK 6364</td>
<td>1.0 – 7.0 % melamine resin</td>
<td>s, w</td>
<td></td>
<td>pTSA neutralized by amine</td>
<td>Reduces stoving temperature/time</td>
<td>50%</td>
</tr>
<tr>
<td>CYCAT VXK 6365</td>
<td>5.0 – 15 % binder</td>
<td>w</td>
<td></td>
<td>Resinous, tin containing catalyst</td>
<td>Catalyst for waterborne PU-systems</td>
<td>1%</td>
</tr>
<tr>
<td>CYCAT VXK 6378N</td>
<td>6.0 – 8.0 % binder</td>
<td>s, w</td>
<td></td>
<td>Organic phosphoric acid compound in solvent</td>
<td>Catalyst for 1K-systems</td>
<td>30%</td>
</tr>
<tr>
<td>CYCAT 296-9</td>
<td>0.5 – 5.0 %</td>
<td>s, w</td>
<td></td>
<td>Weak phosphoric acid catalyst</td>
<td>To accelerate the cure reactions of high imino and partially alkylated resins</td>
<td>50%</td>
</tr>
<tr>
<td>CYCAT 500</td>
<td>0.5 – 5.0 %</td>
<td>s, w</td>
<td></td>
<td>Strong naphthalene sulfonic acid catalyst</td>
<td>Especially recommended for electrocoating and electrostatic spray systems with improved water resistance</td>
<td>40%</td>
</tr>
<tr>
<td>CYCAT 600</td>
<td>0.5 – 5.0 %</td>
<td>s, w</td>
<td></td>
<td>Strong dodecyl benzene sulfonic acid catalyst</td>
<td>Especially recommended for high solids formulations with hydrocarbon solubility</td>
<td>70%</td>
</tr>
<tr>
<td>CYCAT 4040</td>
<td>0.5 – 5.0 %</td>
<td>s, w</td>
<td></td>
<td>Strong alkyl benzene sulfonic acid</td>
<td>Strong acid catalyst for highly alkylated melamine, benzoguanamine, glycoluril and urea resins</td>
<td>40%</td>
</tr>
<tr>
<td>CYCAT 4045</td>
<td>0.5 – 5.0 %</td>
<td>s, w</td>
<td></td>
<td>Amine blocked alkyl benzene sulfonic acid catalyst</td>
<td>For highly alkylated melamine, benzoguanamine, glycoluril and urea resins. Provides excellent stability in wb and high solid systems</td>
<td>35%</td>
</tr>
<tr>
<td><strong>Driers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADDITOL®® VXW 4940N</td>
<td>2.0 – 3.0 % binder</td>
<td>w, s</td>
<td></td>
<td>Combination drier; 3 % Co / 3 %Ba / 5 %Zr in form of emulsion; NPE-free</td>
<td>Easy to incorporate; enhances surface and through drying</td>
<td>-</td>
</tr>
<tr>
<td>ADDITOL VXW 4952</td>
<td>2.0 – 3.0 % binder</td>
<td>w, s</td>
<td></td>
<td>Combination drier; 3 % Co / 2 % Mn / 4 % Zr in form of emulsion</td>
<td>Easy to incorporate; enhances surface and through drying</td>
<td>-</td>
</tr>
<tr>
<td>ADDITOL VXW 6205</td>
<td>1.0 – 3.0 % binder</td>
<td>w, s</td>
<td></td>
<td>Combination drier; 5 % Co / 0.22 %Li / 7.5 %Zr; NPE-free</td>
<td>Enhances surface and through drying</td>
<td>-</td>
</tr>
<tr>
<td>ADDITOL VXW 6240</td>
<td>0.5 – 2.5 % binder</td>
<td>w, s</td>
<td></td>
<td>Combination drier; 4 % Co / 3.7 % Ba / 6.5 % Zr; water-free form of delivery</td>
<td>Enhances surface and through drying</td>
<td>-</td>
</tr>
<tr>
<td>ADDITOL VXW 6560</td>
<td>1.4 – 4.3 % binder</td>
<td>w, s</td>
<td></td>
<td>Ultra low VOC combination drier; 3.5 % Co / 0.16 % Li / 5.50 % Zr; NPE-free</td>
<td>Enhances surface and through drying; VOC &lt; 50g/l</td>
<td>-</td>
</tr>
<tr>
<td>ADDITOL VXW 6533</td>
<td>4.0 – 6.0 % binder</td>
<td>s, w</td>
<td></td>
<td>Special accelerated cobalt free combination drier; contents Mn and Zr</td>
<td>Allows fast set and through drying and excellent hardness development. Recommended for primers and top coats.</td>
<td>-</td>
</tr>
</tbody>
</table>

* ADDITOL additives
* CYCAT additives