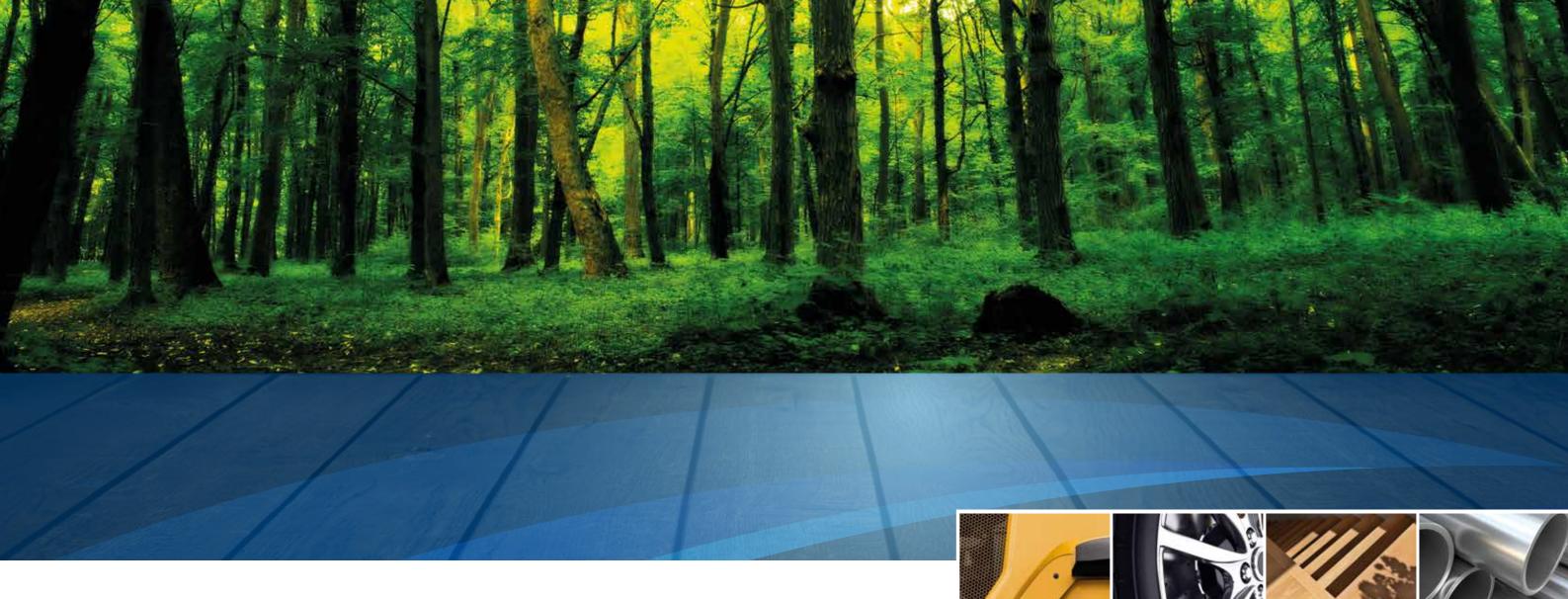
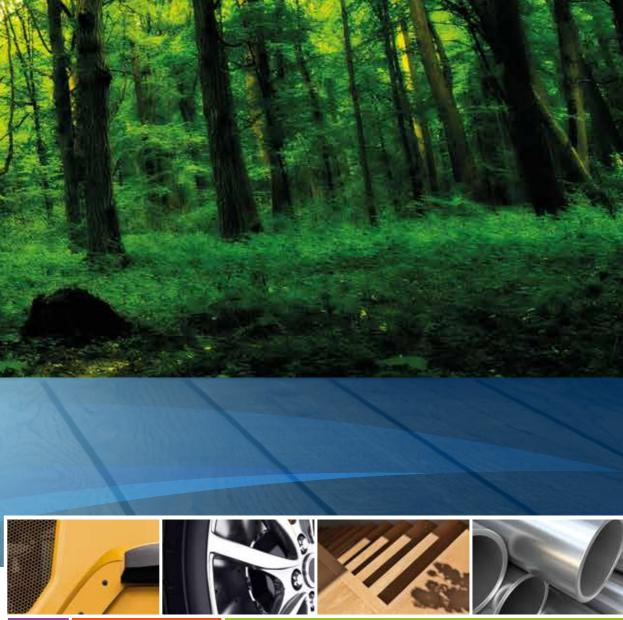
Environmental friendly and sustainable coatings resins and additives (Automotive OEM, Industrial Metal, Wood and Decorative Applications)





Corporate Center

Frankfurt The Squaire Am Flughafen D 60549 Frankfurt am Main Germany

The operating allnex group is legally owned by Allnex Holdings S.à r.l., a company based in Luxembourg, which also provides long term strategic decisions relating to its investment in allnex.

www.allnex.com



www.allnex.com

LRA002-ASIA-1017

LIQUID RESINS AND ADDITIVES



About allnex



Facts & Figures

- Global company with over €2.1 billion in sales
- Broad Technology portfolio: liquid coating resins, energy curable resins, powder coating resins, crosslinkers and additives, composites and construction materials
 Approximately 4000 employees
 Customers in more than 100 countries

• 33 manufacturing facilities

- 23 research and technology centers
- 5 ventures
- Extensive range of solutions for key coating segments: automotive, industrial, packaging coating and inks, protective, industrial plastics and specialty architectural

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Waterborne epoxy systems for rail, commercial ve
$\operatorname{BECKOCURE}^{\scriptscriptstyle \otimes}$ - the waterborne that works like so
One-component direct-to-metal for light duty app
Broad portfolio of waterborne technologies for in
High performance environmental friendly solution
construction and textiles
Other Technologies: ACURE®
Other Technologies: Crosslinkers

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.

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Introduction

allnex is a leading producer of liquid coating resins and additives (LRA). The LRA business provides a comprehensive range of environmental friendly and sustainable products with its core technologies including both water and solventborne: Alkyds, Acrylics, Epoxies, Polyesters, Polyurethane Dispersions and Additives for use in water borne, high solids and solvent free paint and coatings. Our products lend themselves to be used in multiple end-user segments including Automotive OEM, Vehicle Refinish, Marine & Protective, Rail, ACE, Container, Industrial Wood, Decorative and Construction. Additionally, we enable our customers and end users to reduce energy consumption through low temperature, fast curing resins.

allnex sees tremendous potential in developing technologies reducing VOC-content, energy consumption and toxicity aspects of coatings. Biosourcing and enhanced environmental performance are of paramount importance to our R&D and Marketing strategies. Recent developments such as BECKOPOX[™] (water epoxy dispersion and hardeners), ACURE[™] (fast drying and non-isocyanate system) and ultra low bake systems, exemplify our focus on these areas.

We continue to invest heavily to further improve and expand our product offering through research and development (R&D) activities at our 23 R&D centres across the world. Our 2 R&D and application centres and 5 production facilities in China focus on the unique requirements of the Chinese market and enable us to serve our customers effectively with increased speed to market.

allnex portfolio

Environmental

coating (EFC)

classification

- Water based
- High solidSolvent free
- Powder
- Radcure
- Crosslinkers

Sustainability and innovation at allnex

At allnex we take a mutli-pronged approach to developing resin systems that extend the life span of coatings, protect assets and are safe for the environment and applicators. In developing systems which reduce VOC we also try to use both renewable and recycled materials, avoid chemicals of high concern and reduce carbon footprint.

Low VOC Solutions

allnex supplies a variety of products that are low VOC, including High Solid, Waterbore, UV and Powder.

Examples of products include:

- High solid acrylic and polyester polyol
- High solid thermalsetting acrylic
- High solid methylated amino
- ACURE[™] Technology
- Wide Waterborne product portofolio
- Waterborne Alkyds, Polyester
- Waterborne 1K/2K Acrylic Emulsion
- Waterborne Epoxy/Amine
- PUD & PAD
- UV/EB Curable Resins
- Powder Resins

Reducing Energy Consumption

allnex offers a range of technologies that allow processes to run faster or at ambient temperatures.

Examples of products & projects include:

- EBECRYL[®] UV/EB Curable Resins
- SETALUX[®] Fast Cure Resins
- Low Temperature Curing CED
- Low Temperature Curing Powder
- ACURE Technology
- PUD/PAD for OEM Compact Process





Renewable and Recycled Raw Materials

allnex offers a range of resins containing renewable or recycled raw materials that replace traditional fossil fuel based feedstock.

Examples of products include:

- RESYDROL[®] and SETAL[®] Alkyd Resins
- CRYLCOAT[®] Powder Resins
- SETATHANE® Hydrophobic Polyol

Reducing Chemicals of Concern

allnex supplies a variety of products that are free of chemicals of concern, including tin-free, formaldehyde-free, isocyanate-free.

Examples of products include:

- CYMEL[®] NF Crosslinking Resins
- EBECRYL LEO UV/EB Curable Resins
- SETALUX High Solid Resins
- BECKOPOX[™] & BECKOCURE[™] resins
- ACURE Technology

Longevity

allnex offers products that increase the lifespan and reduce the maintenance frequency of the coated items.

Full product range, e.g.:

- BECKOPOX Epoxy Dispersions
- CRYLCOAT Powder Resins
- SETAL Alkyd Resins
- SETAQUA® Acrylic resins

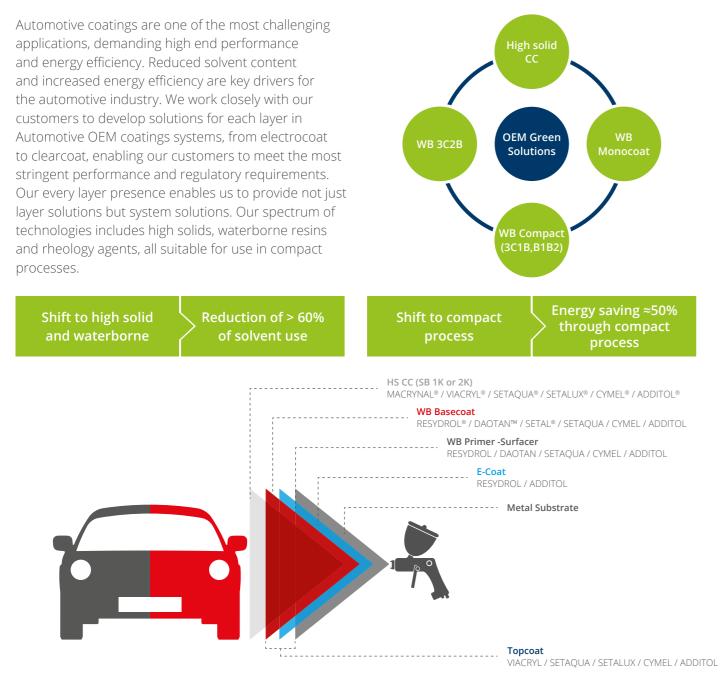




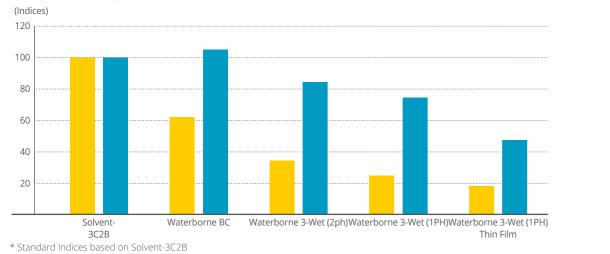




Green technologies for automotive OEM and refinish



Environment Impact measures



allnex automotive portfolio by layer

CED (DFT 20um)	WB Primer-surfacer (DFT 30-40um)
 Main Resin Standard (Tin free) RESYDROL® EZ 6635WCAT/35WA Thermal Stable (no yellowing) RESYDROL EZ 6645WCAT/35WA Additive Resin BECKOPOX™ EM 2120w/45WA RESYDROL EZ 6639w/32WA 	 Main Resin RESYDROL AZ 541w/42WA Additive Resin DAOTAN™ VTW 1225/40WA Depersion Resin RESYDROL VAF5540w/70MP SETAQUA® E-270 Crosslinker CYMEL® 327 CYMEL 1130
	Clear coat 40~50um Basecoat 10~25um Primer 30~50um CED 15~20um
Compact process B1/B2 3C1B DAOTAN VTW 1686/40WA DAOTAN TW 6466/36WA	Clear coat 40~50um BC2 10~20um PS/BC1 10~20um CED 15~20um

VOC Energy

WB Base coat (DFT 12-18um)

PUD

- DAOTAN VTW 6462
- DAOTAN VTW 6463
- DAOTAN TW 6464

PAD

SETAQUA 6801,
 6802, 6803

Additive Resin

Dispersion Resin

- ADDITOL[®] XL 250
- SETAL[®] 6306

Improve stone-chip and adhesion

- DAOTAN VTW 1237
- DAOTAN VTW 6434
- DAOTAN TW 6490
- DAOTAN VTW 1236
- DAOTAN TW 6450

....L

SB HS CC (DFT 30-40um)

1K

- SETALUX® 1795
- SETALUX 1921
- SETAL 1606
- RCA Setal 10-6266
- SCA Setal 91796
- HS Amino

2KPU

- SETALUX 1918
- SETALUX n1921
- SETALUX 1901
- SETAL 1603
- DUROFTAL[®] 2803
- SCA

WB Monocoat

Main Resins

- SETAQUA 6160
- VIACRYL[®] VSC 6800
- VIACRYL VSC 6276

Dispersion resins

- ADDITOL XW 6528
- SETALUX 6100

Solutions for industrial metal, marine and protective applications

Based on our strong partnership with customers and understanding of the metal and plastic coatings, we are positioned to help customers achieve high quality, high performance coatings which not only protect assets but are also safe for the environment and end user. allnex has a comprehensive portfolio of waterborne and high solids resins for primer, basecoat, topcoat, clearcoats and direct to metal applications, based on acrylic, alkyd, polyester and epoxy technologies. Our strong technical service team can help you transition to waterborne systems for Rail, ACE, Container, Commercial Vehicles and other industrial metal protective applications.

Waterborne two component acrylic polyols

 Rail Commercial Vehicles (CV) ACE Container Protective 	SETAQUA® 6510 42% Solid Content 4.2% OH Content Good Water resistance, chemical resistance	SETAQUA 6511 42% Solid Content 4.2% OH Content Excellent appearance, layer thickness	SETAQUA 6515 45% Solid Content 3.3% OH Content Appearance,pot-life
SETAQUA 6516 40% Solid Content 3.5% OH Content Drying, adhesion	MACRYNAL [®] SM 6826w/44WA 44% Solid Content Matte Acrylic polyol Dependency of gloss on dry film thickness and cure temperature	MACRYNAL VSM 6299w/42WA 42% Solid Content 4.1% OH Content High hardness (>=2H) and gloss	MACRYNAL VSM 6810w/42WA 42% Solid Content 4.1% OH Content Broad application windows



High solid acrylic and polyester polyols





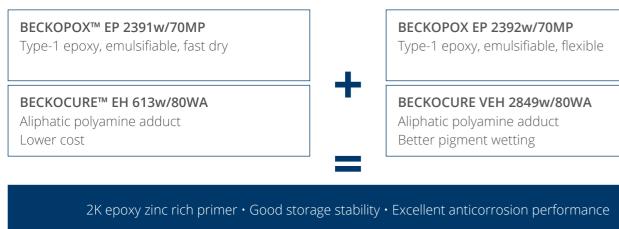
Waterborne epoxy systems for container coatings

Reducing VOC's in China on Container Coatings

China produces 2 -3 millions shipping containers annually. Each container uses 80 – 100 Kg of coating, which has traditionally solvent – based. This makes container production one of the largest sources of the VOCs in China. allnex has been perfecting waterborne container coating technology without VOCs since 2004. We produce key waterborne epoxy dispersions and hardeners in our China facilities and are poised to take advantage of new regulations which mandate the use of waterborne coatings on containers. Our solutions are a key component to the expected drastic reduction in VOCs by the container production industry.



ALLNEX SOLUTIONS FOR CONTAINER COATINGS Zinc primer (Zinc in Epoxy)





2K epoxy zinc rich primer • Ease of mixing • Excellent anticorrosion performance

Int. topcoat & ext. midcoat EP387/EH613

Exterior topcoat emulsion SETAQUA® XSZ 1701 1G

Additives VXW6208/60, VXW6394, VXW6393

Waterborne epoxy system for Rail, commercial vehicles, ACE and protective coatings



Low VOC



Excellent anticorrosion performance

BECKOCURE[™] The waterborne that works like solventborne

allnex solution

Increasingly strict VOC regulations push formulators to move from solventborne (SB) and high solids formulations to waterborne (WB) technologies Voice of Customers: What is needed in wb epoxy technology?

- Broader application window
- Fast return to service
- Low odor & Ultra low VOC • Suitable for high compliance
- applications
- Easy handling

BECKOCURE[™] EH 2260w/41WA

- Faster cure;
- Adhesion on different substrates
- Best in class, premium product

BECKOCURE: solvent free and high molecular weight, amine-based adduct hardeners for WB 2K-epoxy systems, contain very low residual low molecular amines (< 0,1%) resulting in fast drying, even at low temperatures.

- Excellent anticorrosion performance on flash rust susceptible substrates
- Excellent top coat acceptance in WB and SB technologies
- Easy to handle and formulate
- Close to zero VOC formulations possible
- No monomer amine Low odor

BECKOCURE[™] EH 2100w/44WA

- Universal for metal & concrete; Better on sandblasted steel
- Low temperature cure up to 5°C
- Cost friendly high performance

GENERAL INDUSTRY

- Adheres to oily substrate
- Smooth film surface, avoid sanding between coats
- Optimized for 2K spray guns
- Wet on wet application

MILITARY APPLICATIONS

- Adheres to oily substrate
- Compatible with wide range of top coats
- Safe for workers and environment

RAILWAY

- Resistance to styrenated putty
- Smooth film surface, avoid sanding between coats
- High sag resistance; one layer application instead of two

AGRICULTURE &

CONSTRUCTION EQUIPMENT

- Resistance to styrenated putty
- Smooth film surface, avoid sanding between coats • High sag resistance; one layer application instead of two

CORE FEATURES

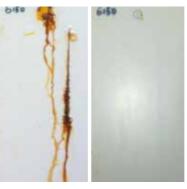
One component direct to metal for light duty applications

1K Epoxy:

2120w/45WA

1K Alkyd:

RESYDROL® AY 6150w/45WA Good balance between corrosion resistance and gloss





Salt Spray Humidity Resistance

Substrate: Q-Panel, R-36 Gloss (60°): ~80 DFT: 70~80 um

Salt Spray Test: 295h; Gloss (60°): 80 ~ 90 DFT: 40 ~50 um

O-Panel

BECKOPOX[™] EM

High gloss and hardness build up, better salt spay resistance

Sandblasted Stee

1K Acrylic:

Fast drying, durability, high gloss, adhesion and corrosion resistance

- SETAOUA® 6472 Standard 250g/L VOC
- SETAQUA 6491 Low VOC – 100g/L
- SETAQUA XCS 1701-1G APEO free, early water resistance, high hardness and salt spray resistance



Broad portfolio of waterborne technologies for industrial wood applications

Government regulations and end user's environmental awareness is driving the industrial wood market to shift rapidly from solvent borne to compliant coating systems such as UV and waterborne. allnex offers a complete portfolio of waterborne products based on acrylic, alkyd, polyester, urethane and epoxy chemistry in combination WB and 100% UV technologies that have optimum end use for general furniture, wooden doors, children furniture, cabinets, wooden flooring, exterior joinery and more.

Our technical service and subject matter experts work closely together with customers to obtain an optimum balance of coating properties and cost to achieve targeted end use performance. Our portfolio comprises products for all interior and exterior wood coating systems; stain blocking primers, pigment pastes, sanding sealers and topcoats whether 1K or 2K or UV cured aimed for coating performance to meet the wide range of performance specifications set by our customers across all regions. Local R&D ensures a strong focus is maintained on China industry drivers.

QUALITY KITCHEN / CABINETS	Work AreaTable topsOffice	TopcoatTopcoat Primers
		T +
GENERAL & KNOCKDOWN FURNITURE	LivingTablesBedroom	TopcoatTopcoatTopcoat
STAINS & PRIMERS	 Chairs Board Flat stock	 Topcoat Primers Primers Stains

Product type		
2	2K NCO	406
UA 630	WB UB & 100%	N EF 24
SETAQ	Dual Cure 1k/2k NCO	JROXY
ditol &	PUD	ers - Dl
ng - Adı	Gradient SXL 1k	s/Prim
Grindiı	Core-Shell SXL 1k	l Sealer
Pigment Grinding - Additol & SETAQUA 6302	WB Acid Catalysed	Anti-Bleed Sealers/Primers - DUROXYN EF 2406
Ρ	Other SXL 1k	Ant

VOC Compliance

Drying, Sanding, Stacking

Product
SETAQUA 6516 MACRYNAL® 6299w/42WA
Full range
SETAQUA 6795
SETAQUA F127 & F106
SETAQUA 6717 SETAQUA 6785
SETAQUA 6716 SETAQUA 6718
VIACRYL 6834/NF3030
SETAQUA 164-106
RESYDROL® VAL 5547 Wiping stains

High performance environmental friendly solutions for niche applications in decorative, construction and textiles

Deco & Construction

- APEO Free
- Ammonia free, low free monomer
- Formaldehyde free
- Low odor

ALLNEX PRODUCTS

High dirt pick up resistance for exterior applications

- VISCOPOL[®] 2050
- VISCOPOL 9000 • VISCOPOL 164 – 211
- Low Tg Elastomeric PA
- VISCOPOL 163 171
- Elastomeric SA

MediumTg

WB Road Marking Coating

• SETAQUA Expressline 88

Waterborne floor coating

- WB Hydrophobic polyols
- WB Epoxy Easy cure

Construction Waterproofing

• VALBOND 380 SE



Technical compliance & value

Textile

Oeko-Tex Association: OEKO-TEX[®] Standard 100

• Formaldehyde free, APEO free, low VOC

ALLNEX PRODUCTS

Curtain fabric-direct coating

- VALBOND[®] 43500
- VALBOND 8020

Curtain fabric-foam coating

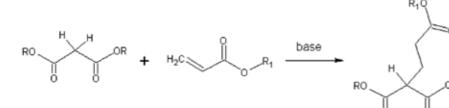
- VALBOND 8445E
- VALBOND 1609LB18
- Soft touch feeling

Supper soft touch feeling

Waterproofing canvas coating

- VALBOND 82-48-S
- VALBOND HBS-2
- VALPROOF® 14000

allnex offers other innovative technologies which reduce usage of chemicals of concern and improve efficiency ACURE™





The Michael addition reaction in ACURE chemistry.

ACURE Features	Customer Benefits
Faster Dry	ReducedFasterExtendedPaintReturn toPaintingWasteServiceSeasons
Much Longer Pot-life	
Cures at lower temperatures	Efficiency improvements in painting processes
Thicker films per application	ReducedIncreasedReducedenergylineCapitalcostsspeedsCosts
Isocyanate, organo-tin, BPA and formaldehyde free Very low VOC potential	Easier on the environment with increased worker comfort

Low Temperature Powder and WB



allnex also offers a broad range of formaldehyde free and water borne crosslinkers which can be used in combination with water borne resins for various automotive, metal and wood applications to provide a complete eco-friendly solution

Formaldehyde free

CYMEL[®] NF 2000

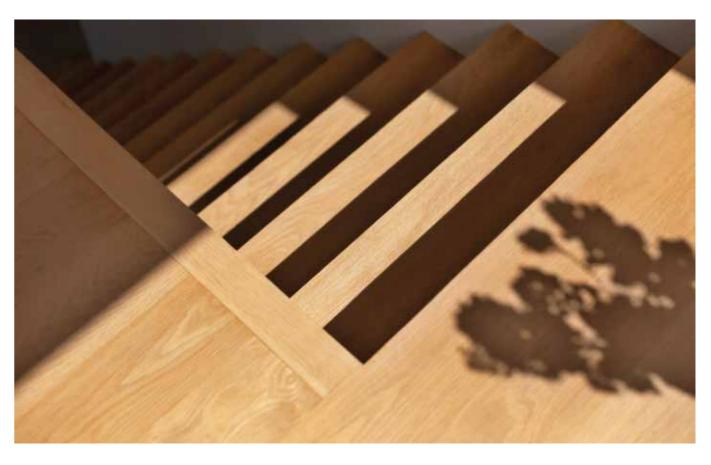
- Carbamate functional triazine crosslinker for high durability, heat cured applications
- Use in Auto OEM, Engineered Plastics, Coil and related applications

CYMEL NF 3041

- Modified urea crosslinker for air dry and forced dry, solvent soluble systems
- Wood coatings, primers and related general industrial markets

CYMEL NF 3030

- Modified urea crosslinker for air dry and forced dry, water soluble systems
- Use for industrial wood, encapsulation, textile, paper, etc.



Waterborne Amino

CYMEL 303 Highly methylated

• Free formaldehyde < 0.1%.

CYMEL 350 Highly methylated, complete water solubility

• 88% solid. Higher gloss. Fast cure. Does not require strong acid catalyst.

CYMEL 325 High Imino

• Fast cure response. Does not require strong acid catalyst. Low formaldehyde release.

CYMEL 327 High Imino, complete water solubility

• 90% solid. Fast cure and good stability. Does not require strong acid catalyst.

CYMEL 370 Partially methylated

• 88% solid, Fast cure, good flexibility. Does not require strong acid catalyst.

Notes		

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