



EAGA CRYL BINDERS



EAGLE CHEMICALS™
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EAGA CRYL BINDERS

EAGA CRYL binders are high performance, low VOC binders that help users to formulate paints that set up faster, spray safer and return to service sooner. They help manufacturers maintain production speed, increase volume, and satisfy consumer preference.



APPLICATIONS

Products	Wood	PVC/plastic	Metal Coating	Decorative	Industrial	Road Marking	Clear Coat	Finishes	Primer	Parquet	Parquet 2C	Topcoat	Vehicles	Construction	Architectural
EAGA CRYL-50	●	●													
EAGA CRYL-190				●	●										
EAGA CRYL-121	●									●		●			
EAGA CRYL-162			●				●	●	●						
EAGA CRYL-6050						●									
EAGA CRYL-504	●		●								●		●	●	●



EAGA CRYL BINDERS



MAIN PERFORMANCE PARAMETERS

Products	Chemical resistance	Blocking resistance	Adhesion (general)	Pore wetting	Non-yellowing	Outdoor durability	Resistance (general)	Corrosion resistance	Sandability	Weathering resistance	Hardness	Alcohol resistance	Humidity resistance	High gloss	Hardness / Flexibility
EAGA CRYL-50	●				●						●			●	
EAGA CRYL-190		●				●						●			●
EAGA CRYL-121				●		●	●		●						
EAGA CRYL-162			●					●					●	●	
EAGA CRYL-6050	●				●					●		●			
EAGA CRYL-504	●								●					●	●



EAGA CRYL BINDERS

EAGA CRYL-50

An acrylic copolymer emulsion for use in wood coatings and applications on PVC substrates.

RECOMMENDATIONS

- EAGA CRYL-50 requires the addition of coalescent agent for proper film forming behavior (e.g. 6% butyl glycol)
- Small additions of crosslinker will improve chemical resistance as well as adhesion properties
- In parquet lacquers blending with urethane dispersions is recommended to improve abrasion resistance



GUIDE FORMULATION for general wood coatings

Raw Material	Kg	Remarks
EAGA CRYL-50	72.00	binder
Hard emulsion (Tg=80°C)	8.00	binder
Aquacer 513	3.00	wax
Drewplus S-4386	0.60	defoamer
Ethyldiglycol	7.00	coalescent agent
Butylglycol	3.00	coalescent agent
Ammonia 25 %	0.00	neutralizing agent
Acematt TS 100	1.00	flattening agent
Drewplus SG-4552	1.20	defoamer
Byk-346	1.00	levelling agent
Borchi Gel L 75 N	0.80	thickener
Demi water	1.20	
Isopropanol (IPA)	1.20	solvent
Ammonia 25 %	0.00	neutralizing agent

PREPARATION

Mix 1, 2 and 3. Make a premix of 4 till 6 and adjust pH with 7 till pH = 8.0, then add this premix to 1-3 while stirring well. Add 8, 9 and 10 while stirring well, make a premix of 11, 12 and 13 add this to 1-9. Adjust pH with 14 till pH=8.0 and disperse till a crater free film on glass is obtained.

SUPPLIERS

EAGA CRYL-50	EAGLE CHEMICALS
Hard emulsion	BASF
Aquacer 513	BYK Cera (www.byk-cera.com)
Drewplus S-4386	Ashland Chemical(www.ashland.com)
Ethyldiglycol	Oxeno (www.oxeno.de)
Butylglycol	BASF / Shell
Ammonia 25 %	various suppliers
Acematt TS 100	Degussa (www.degussa.com)
Drewplus SG-4552	Ashland Chemical(www.ashland.com)
Byk-346	BYK Chemie (www.byk-chemie.com)
Borchi Gel L 75 N	Borchers (www.borchers.com)
Isopropanol (IPA)	Clariant (www.clariant.com)

SPECIFICATIONS

Solids (w/w %)	37
pH	8,0
Viscosity, @25° DIN 4 mm	40 sec

EAGA CRYL BINDERS

EAGA CRYL-190

A modified acrylic copolymer emulsion for use in decorative and industrial coatings with low coalescent demand and good blocking resistance.

RECOMMENDATIONS

- High gloss interior and exterior decorative paints and wood stains
- Industrial coatings for joinery, e.g. window frames
- Concrete floor paints and parquet lacquers
- Metal and plastic topcoats
- Finishes for commercial transport vehicles

GUIDE FORMULATION

Raw Material	Kg	Remarks
Monopropyleneglycol	3.40	coalescent agent
Deionied water	3.85	
Dehydran 1293	0.60	defoamer
Disperse-Ayd W-28	0.90	dispersing agent
Coatex A 122	0.70	dispersing agent
Tioxide R-TC90	19.70	pigment
Hydrocarb	6.50	extender
EAGA CRYL-190	53.70	binder
ZnO paste*	2.20	pigment paste
Ethyldiglycol	2.70	coalescent agent
Dehydran 1293	1.20	defoamer
Byketol-WS	3.10	mar/slip agent
Tafigel PUR 40	0.15	thickener
Nuvis FX 1070	1.30	thickener



PREPARATION

Disperse 1 till 7 under cowless until desired fineness (< 10 microns). Add 8-14 in listed order and disperse until a craterfree film on glass is obtained.

SPECIFICATIONS

Solids (% w/w)	52.7
pH	9.0
Brookfield Viscosity 6 rpm	5300 mPa.s
Brookfield Viscosity 60 rpm	3200 mPa.s
PVC (%)	25.4
Köning Hardness (sec)	80
Density (g/cm ³)	1.27

* ZnO paste:

Butyl glycol	36.5
AMP 95	0.2
Triton CF/ water 1:1	0.2
Orotan 850	4.2
ZnO harzsiegel	36.5
Agitan 260	0.6
Demi water	21.8

EAGA CRYL BINDERS

EAGA CRYL-121

A self-cross linking modified acrylic copolymer emulsion for use in wood coating offering superior blocking effects and chemical resistant films with good sandability.

RECOMMENDATIONS

- Wood finishes (both forced and ambient drying conditions)
- In combination with urethane dispersions in parquet lacquers
- Topcoats on primed substrates

GUIDE FORMULATION Industrial Metal Topcoat

Raw Material	Kg	Remarks
Demi water	5.30	
Orotan 165	0.80	dispersing agent
Triton CF 10	0.20	dispersing agent
Drewplus SG-4552	0.10	defoamer
TiO ₂ Kronos 2190	21.70	pigment
EAGA CRYL-121	54.70	binder
Demi water	4.80	
Drewplus SG-4552	1.00	defoamer
Butyl glycol	2.40	coalescent agent
Butyldiglycol	2.40	coalescent agent
Monopropyleneglycol	0.40	coalescent agent
Lusolvan FBH	1.00	coalescent agent
Demi water	1.00	
Ammonia 25 %		neutralizing agent
Byk-341	0.50	levelling agent
Dehydran 1293	1.00	defoamer
Nuvis FX 1010	0.15	thickener
Butyl glyco	0.15	coalescent agent
Demi water	2.40	
Ammonia 25 %		neutralizing agent



PREPARATION

Pigment paste:

Prepare the pigment paste by mixing the ingredients (1-5) in listed order and disperse with a high speed dissolver till a particle size of < 10 µm. Keep emperature < 40°C by cooling.

Let down:

Premix 6 and 7. Add 8 with good stirring. Separately premix 9-13 in given order. Adjust pH of mix 9-13 to >7.5 with 14 (only a few drops). Slowly add mix 9-14 to 6-8 with good mixing. Add pigment paste 1-5 to 6-14 with good mixing. Add 15 and 16 in given order. Separately premix 17-19 and adjust pH to > 8.0 with 20 (only a few drops). Add premix 17-20 to 1-16 with good stirring and mix until a craterfree film on glass is achieved.

Note :

It is very important to keep the pH between 7.8-8.0 to prevent strong viscosity increase upon storage.

EAGA CRYL BINDERS

SPECIFICATIONS

Solids (% w/w)	48.2
Solids (% volume)	31.1
pH	7.8-8.0
Viscosity Brookfield @25°C, 6 rpm	650-1120 mPa.s
Viscosity Brookfield @25°C, 60 rpm	350-650 mPa.s
Viscosity DIN Cup 4 @25°C (sec)	32-38
Specific gravity @20°C	1.21
König Hardness (sec)	140
Gloss 20°/60°	42/74
PVC (%)	18.1
Pigment/binder ratio (w/w solids)	0.88
* VOC (g/l)	217

* VOC = Volatile Organic Compounds with boiling point <= 250°C minus water

SUPPLIERS

Orotan 165	Rohm & Haas (www.rohmhaas.com)
Triton CF 10	Dow Chemical (www.dow.com)
Drewplus SG-4552	Ashland Chemical(www.ashland.com)
TiO2 Kronos 2190	Kronos (www.kronostio2.com)
EAGA CRYL-121	EAGLE CHEMICALS
Butyl glycol	BASF / Shell
Butyldiglycol	BASF / Shell
Monopropyleneglycol	BASF (www.basf.de)
Lusolvan FBH	BASF (www.basf.de)
Byk-341	BYK Chemie (www.byk-chemie.com)
Dehydran 1293	Cognis (www.cognis.com)
Nuvis FX 1010	Sasol Servo (www.servo.nl)
Ammonia 25 %	various suppliers

KEY BENEFITS

- Good adhesion to various AC-primers
- Very good QUV-B resistant



EAGA CRYL BINDERS

EAGA CRYL-162

A fine particle size styrene acrylic emulsion that is designed especially for coatings requiring outstanding corrosion, water and humidity resistance.

RECOMMENDATIONS

- Clear coats for metal
- To combine with polyurethane dispersions and optimize mechanical surface properties
- Metal finishes and primers



GUIDE FORMULATION **Direct-to-metal coating for industrial application**

Raw Material	Kg	Remarks	Suppliers
Add while stirring			
Demineralized water	6.67		
AMP-95	0.22	Multifunctional additive	Angus Chemie
Acrysol RM 8 1:6 with water	0.18	Rheology modifier	Dow Chemicals
Disperbyk 190	1.23	Dispersing agent	BYK Chemie
Byk 024	0.10	Anti foaming agent	BYK Chemie
Kronos 2310	24.90	Color pigment	Kronos Titan
Disperse for at least 10 minutes at 3000 rpm (check fineness 10 µm with hegman gauge)			
Let down: Add slowly under stirring			
EAGA CRYL-162	62.39	Binder	EAGLE CHEMICALS
Butylglycol	1.49	Coalescing agent	
Texanol	0.31	Coalescing agent	Eastman Chemicals
Nalzin FA-179	0.12	Flashrust inhibitor	Elementis
Surfynol 104E	0.31	Surfactant	Air Products
Nacorr 1352	2.08	Corrosion inhibitor	King Industries

TESTS

Tests	Unit	Value
Dry Solids by weight	%	51.9
Dry solids by volume	%	40.7
Density	Kg/l	1230
PVC	%	18
VOC	g/l	22

EAGA CRYL BINDERS

EAGA CRYL-6050

All acrylic binder for road marking waterborne paints with high drying speed and excellent outdoor durability.

ADVANTAGES

- Superior yellowing resistance with continuous outdoor UV radiation.
- Very fast drying in high humidity, low temperature and poor air flow allowing short open traffic time.
- Environmentally acceptable, formulated to V.O.C.s as low as 80 g/l meeting or exceeding most regulations for traffic marking paints.
- Better retention of glass beads helping paints to retain their flexibility on aging.
- Easier, safer cleanup that can be done using water and mild solvents or detergents with excellent wash-off resistance and good dirt pick-up resistance.
- Increased worker safety as exposure to volatile organic solvents is greatly reduced.
- Significantly reduces disposal costs as waterborne acrylic paints can be solidified easily and disposed of as nonhazardous waste



GUIDE FORMULATION

Raw Material	Remarks	Traffic paint* 60% PVC	
		White	Yellow
EAGA CRYL-6050	Binder	323.650	337.430
WD-EAGLE (AS 4/40)45%	Wetting and dispersing agent	0.004	0.005
Sulfinol CT-136	non-ionic wetting agent	0.002	0.002
Drew L-493	Defoamer	0.002	0.002
Titanium dioxide	Inorganic white pigment - enameled	71.050	14.820
Calcium carbonate	Oil absorption= 7,5 & 5,5 microns	540.430	555.600
Yellow 65 or 75	Organic pigment	----	23.700
Mix. the all ingredients above with a slight vortex (1000 -1500 RPM) for about 15 minutes. Slight vortex prevent break down of the emulsion and avoid skin and gel particles formation then add:			
Methanol		21.300	22.220
Texanol	Coalescent agent	16.130	16.810
Drew L-493	Defoamer	0.002	0.002
Natrosol 250HR	Hydroxyethylcellulose thickener +2% water	0.009	0.009
Water		27.413	29.370
TOTAL		1000.000	1000.000

If necessary to adjust the PH > 9,6 only with ammonia.

* These paints formulations are using in combination of glass beads on the surface during application

EAGA CRYL BINDERS

EAGA CRYL-504

An aqueous anionic, OH-functional Styrene / Acrylic emulsion

RECOMMENDATIONS

- In combination with appropriate hydrophilic/hydrophobic isocyanate curing agents such as Easaqua™ X D 401 / Tolonate HDT LV2 (Perstorp) or Bayhydur® 305 / Desmodur XP2410 (Bayer AG) for two component waterborne industrial finishes, suitable for use on big rolling stock (e.g. rail and commercial vehicles)
- It is also suitable for stoving systems in combination with appropriate melamine resins as Cymel 303, 328 (Cytec)



GUIDE FORMULATION **Water based 2-components iso-cyanate (glossy)**

Raw Material	Kg	Remarks
EAGA CRYL-504	76.90	binder
Deionized water	14.60	medium
Butylglycol	6.00	coalescent
Coatex BR 100 P	0.20	thickener
Tego Flow 425	0.60	levelling agent
Surfynol DF-58 Defoamer	1.20	defoamer
Byk-333	0.50	levelling agent

PREPARATION

Prepare a premix of 2, 3, 4 and 5 in sequential order. Add this premix to 1 while stirring at normal speed. Add 6 at high speed and add at last 7 and disperse until a craterfree film is obtained.

SPECIFICATIONS

Solids (% w/w)	37.5
pH (25°C)	7.0
Viscosity @25°C DIN cup 4 mm (s)	19
VOC acc. EU (g/l)	64

EAGA CRYL BINDERS

BENEFITS

- 2 components parquet lacquers
- Crosslinkable with water dispersible iso-cyanates
- Easy mixing with crosslinkers
- Very high chemical resistances

COMPONENTS 2

- Bayhydur 3100 (80% in Methoxy Propyl Acetate = MPA) : add MPA to Bayhydur 3100 at low speed until homogeneous
- Application advice : add the iso-cyanate mix to formulation above under hand or mechanical stirring
- Ratio Formulation above versus iso-cyanate mix can be varied: 85/15 or 80/20

SUPPLIERS

Material	Supplier
EAGA CRYL-504	EAGLE CHEMICALS
Butylglycol	BASF / Shell
Coatex BR 100 P	Coatex (www.coatex.com)
Tego Flow 425	Tego Chemie (www.tego.de)
Surfynol DF-58 Defoamer	Air Products (www.airproducts.com)
Byk-333	BYK Chemie (www.byk-chemie.com)



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