



BIENVENIDA

CHARLA TÉCNICA

**ADITIVOS PARA LA INDUSTRIA
DE RECUBRIMIENTOS**

AFCONA Product for General Industrial Finish Coatings

Paulo Henrique Moda – Set/2014

AFCONA Additives for Industrial Coatings

Can be broadly separated by 2 categories:

- 1) Baking/stoving enamels
- 2) Ambient cure / forced drying coatings

Baking/stoving paints

Mainly for metal coatings for electrical appliances, such as fan, light box, machinery etc. However, the use of these coatings is less, due to the change to powder coating or coil coating.

Ambient cure / forced drying paints

These paint systems are very broad, the consideration factors are workability, application method and the end usage of the finishing goods. Systems can be physical drying system like NC and TPA, air-drying systems up to forced drying systems such as 2 pack PU's or Epoxies.

Resin Systems

Short Oil Alkyd + Melamine

The cheapest baking paint, normally use for drum paint.

Oil Free Polyester + Melamine

A very flexible baking paint. For application where flexibility is needed.

Thermosetting Acrylic + Melamine

Better in hardness compared to polyester. The resin is more easy available and wider variety due to the cooking process and monomer availability.

Main requirement properties

- Foam

Normally these systems are applied by conventional spraying or electrostatic spraying, therefore foam is not a problem. If applied by dipping or curtain coater foam is a problem.

- Leveling

Very important. Horizontal and vertical levelling needed.

- Dispersant

Very important for gloss, DOI and appearance.

AFCONA defoamers recommendation

	ALKYDS	Polyester	Acrylic
Dipping	AFCONA 2020 Dosage: 0.2 to 0.5% AFCONA 2050* Dosage: 0.2 to 0.5%	AFCONA 2720 Dosage: 0.2 to 0.5% AFCONA 2040* Dosage: 0.2 to 0.5%	AFCONA 2022 Dosage: 0.3 to 0.5% AFCONA 2040* Dosage: 0.3 to 0.5%
Curtain Coating	AFCONA 2022 Dosage: 0.3 to 0.5% AFCONA 2040* Dosage: 0.3 to 0.5%	AFCONA 2022 Dosage: 0.3 to 0.5% AFCONA 2040* Dosage: 0.3 to 0.5%	AFCONA 2022 Dosage: 0.3 to 0.5% AFCONA 2040* Dosage: 0.3 to 0.5%
Spin Coating	AFCONA 2035 Dosage: 0.2 to 0.5% AFCONA 2040* Dosage: 0.2 to 0.5%	AFCONA 2720 Dosage: 0.2 to 0.5% AFCONA 2040* Dosage: 0.2 to 0.5%	AFCONA 2720 Dosage: 0.2 to 0.5% AFCONA 2040* Dosage: 0.2 to 0.5%
Roler, drum Coating, Spray	AFCONA 2020 Dosage: 0.2 to 0.5% AFCONA 2050* Dosage: 0.2 to 0.5%	AFCONA 2020 Dosage: 0.2 to 0.5% AFCONA 2050* Dosage: 0.2 to 0.5%	AFCONA 2020 Dosage: 0.2 to 0.5% AFCONA 2050* Dosage: 0.2 to 0.5%

*** Better price and better performance**

Paulo H. Moda – mar-21

AFCONA Slip and levelling

	Anti-Crater	Levelling	Slip	Foam Stabilization	Intercoating Adhesion Problems
AFCONA 3030 0,2 to 0,6%	8	10	7	7	Yes
AFCONA 3034 0,1 to 0,3%	10	9	5	10	Yes
AFCONA 3250 0,1 to 0,5%	7	8	10	1	Yes
AFCONA 3236 0,1 to 0,5%	6	10	8	1	Yes
AFCONA 3280 0,1 to 0,6%	8	8	3	2	Not at all
AFCONA 3777 0,5 to 2,0%	10	9	3	10	Not at all
AFCONA 3700 0,3 to 1,0%	10	10	4	10	Not at all
AFCONA 3758 0,5 to 1,5%	9	9	6	7	Not at all

*** 1 Very bad – 10 Excellent**

Paulo H. Moda – mar-21

AFCONA Dispersant recommendation

	ALKYDS	Polyester	Acrylic
Primer	AFCONA LP 10126* Dosage: 1 to 2,5% AFCONA 5209 Dosage: 1 to 2% AFCONA W-010 Dosage: 1 to 2%	AFCONA LP 10126* Dosage: 1 to 2,5% AFCONA 5209 Dosage: 1 to 2% AFCONA W-010 Dosage: 1 to 2%	AFCONA 5209 Dosage: 1 to 2% AFCONA 5285 Dosagem: 1 to 2% AFCONA W-010 Dosage: 1 to 2%
Finish (color top coat)	AFCONA W-010 Dosage: on the TDS AFCONA 4071 Dosage: on the TDS	AFCONA 4071 Dosage: on the TDS AFCONA 4201 Dosage: on the TDS AFCONA 4720 Dosage: on the TDS	AFCONA 4071 Dosage: on the TDS AFCONA 4201 Dosage: on the TDS AFCONA 4720 Dosage: on the TDS

AFCONA LP 10126 – better cost option (low price)

AFCONA W-010 – Best performance for primers

AFCONA 4720 – For high performance (Special for Carbon Blacks)

AFCONA Additives for Ambient cure Paints

Ambient cure / Forced drying systems

- 1) NC - for fast dry application. For in-door use.
- 2) TPA – for fast dry application. For in-door and outdoor use.
- 3) Air dry alkyd – for temporary protection and low cost materials.
- 4) Polyurethane – for maximum protection. However, for chemical resistances, epoxy is better.
- 5) Epoxy – for chemical resistances and anti-corrosive requirements.

AFCONA defoamers recommendation

	NC	TPA	Alkyd	PU	Epoxy
Dipping	AFCONA 2020 0.2 to 0.5% AFCONA 2050 0.2 to 0.5%	AFCONA 2045 0.3 to 0.5% AFCONA 2040 0.3 to 0.5%	AFCONA 2020 0.2 to 0.5% AFCONA 2050* 0.2 to 0.5%	AFCONA 2040 0.3 to 0.5% AFCONA 2050* 0.2 to 0.5%	AFCONA 2720 0.5 to 1.0% AFCONA 2050* 0.2 to 0.5%
Brushing	N/A – too fast drying	N/A – too fast drying	AFCONA 2020 0.2 to 0.5% AFCONA 2050* 0.2 to 0.5%	AFCONA 2045 0.3 to 0.5%	
Tumbling	AFCONA 2020 0.2 to 0.5% AFCONA 2050 0.2 to 0.5%	AFCONA 2040 0.3 to 0.5%	AFCONA 2020 0.2 to 0.5% AFCONA 2050* 0.2 to 0.5%	Not a normal application	Not a normal application
Spraying	AFCONA 2020 0.2 to 0.5% AFCONA 2050 0.2 to 0.5%	AFCONA 2040 0.3 to 0.5% AFCONA 2050 0.2 to 0.5%	AFCONA 2020 0.2 to 0.5% AFCONA 2050 0.2 to 0.5%	AFCONA 2040 0.3 to 0.5% AFCONA 2050 0.2 to 0.5%	AFCONA 2720 0.5 to 1,0% AFCONA 2050 0.2 to 0.5%

AFCONA Slip and levelling

	NC	TPA	Alkyd	PU	Epoxy
Silicone (polysiloxano)	AFCONA 3033 0,2 – 0,5%	AFCONA 3033 0.2 to 0.5% AFCONA 3250 0.1 to 0.5%	AFCONA 3030 0.2 to 0.5% AFCONA 3250 0.1 to 0.5%	AFCONA 3231 0.2 to 0.5% AFCONA 3250 0.1 to 0.5%	AFCONA 3239 0.5 to 1.0% AFCONA 3238 0.2 to 0.5%
Non-Silicone	AFCONA 3777 0,3 – 1,0%	AFCONA 3777 0,3 – 1,0% AFCONA 3700 0,1 – 0,4% AFCONA 3758 0,5 – 1,0%	AFCONA 3777 0,3 – 0,8%	AFCONA 3777 0,3 – 1,0% AFCONA 3700 0,1 – 0,4% AFCONA 3758 0,5 – 1,0%	AFCONA 3777 0,3 – 1,0% AFCONA 3700 0,1 – 0,4%

*** Better price and better performance**

Paulo H. Moda – mar-21

AFCONA Slip and levelling

	NC	TPA	Alkyd	PU	Epoxy
Co-grinding	AFCONA LP 10126	AFCONA 5209	AFCONA LP 10126	AFCONA 5065	AFCONA 5065
	AFCONA 5209	AFCONA W-010	AFCONA 5209	AFCONA W-010	AFCONA W-010
	AFCONA W-010	AFCONA 4071	AFCONA W-010	AFCONA 4071	AFCONA 4071
Single grinding	AFCONA 5209	AFCONA 4071	AFCONA 5209	AFCONA 4071	AFCONA 4050
	AFCONA W-010	AFCONA 4201	AFCONA W-010	AFCONA 4201	AFCONA W-010
		AFCONA 4720		AFCONA 4720	AFCONA 4071

Dosage: on the TDS

Deformers e Levelling

Paulo Henrique Moda – Mar /2021

AFCONA – 2503

**Silicone based defoamer for
Water based pigment
concentrates**

AFCONA-2503

Solid content: 100%

Chemicals : Modified polysiloxane with fine dispersed silica

Use

For use in water based pigment concentrate and other high shear applications, such as fast speed Printing etc.

High resistance to:

High shear forces

Long time grinding

Temperature, up to 250°C

Comparing AFCONA-2503 and Competitor (100% active) in water based pigment Concentrate preparation

Grinding formulation

Water	55.0	55.0
Propylene glycol	10.0	10.0
AMP 95 (neutralizing agent)	0.5	0.5
AFCONA-6225	9.0	9.0
Phthalo blue 15:3	25.0	25.0
Defoamer	0.5	0.5
	100.0	100.0

Comparison test AFCONA-2503 with a competitor defoamer
Recommended for the preparation of pigment pastes.
The samples were shaken in the Skandex for 90 minutes

Competitor : 100% solid defoamer based on modified polysiloxane



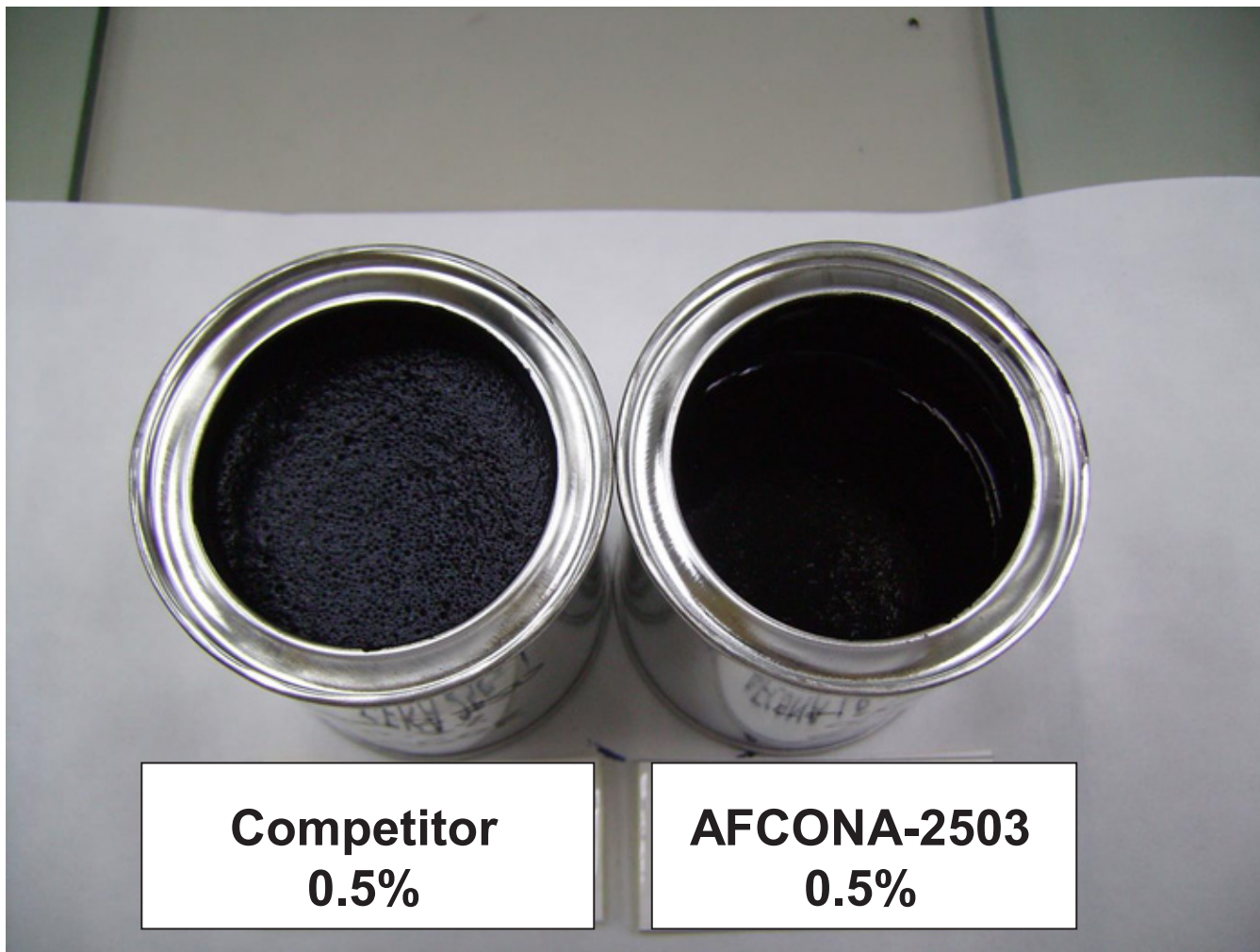
Comparing AFCONA-2503 and Competitor (100% active) in water based pigment Concentrate preparation

Grinding formulation

Water	55.0	55.0
Propylene glycol	10.0	10.0
AMP 95 (neutralizing agent)	0.5	0.5
AFCONA-6225	9.0	9.0
Carbon Black, PB 7	25.0	25.0
Defoamer	0.5	0.5
	100.0	100.0

Comparison test AFCONA-2503 with a competitor defoamer
Recommended for the preparation of pigment pastes.
The samples were shaken in the Skandex for 90 minutes

Competitor : 100% solid defoamer based on modified polysiloxane



AFCONA-2503

General description : defoamer for water based applications, which undergo during the preparation high shear forces, like pigment concentrates and other high filled or high solid products

Recommended for: High and Low PVC emulsion paints based on pure or modified acrylics
PU dispersions
Pigment concentrates
Printing inks

Addition and dosage: 0.1 – 0.5% on total formulation.
For pigment concentrates 0.3 – 0.4% is needed

AFCONA – 2524

**Silicone based defoamer for
Water based finishes**

Properties

Dilemma of a water based defoamer

- 1) Good defoaming lead to more craters
- 2) Good defoamer always affect the levelling
- 3) Adding leveling will lead to more foams.

Properties of AFCONA – 2524

- 1)Excellent in defoaming
- 2)Easy incorporation, even by hand
- 3)Improve the levelling performance
- 4)Very low tendency to craters

Defoaming test in PU dispersion resin at dosage 0.5%
on total formulation shake under shaker for 2 mins

Top view

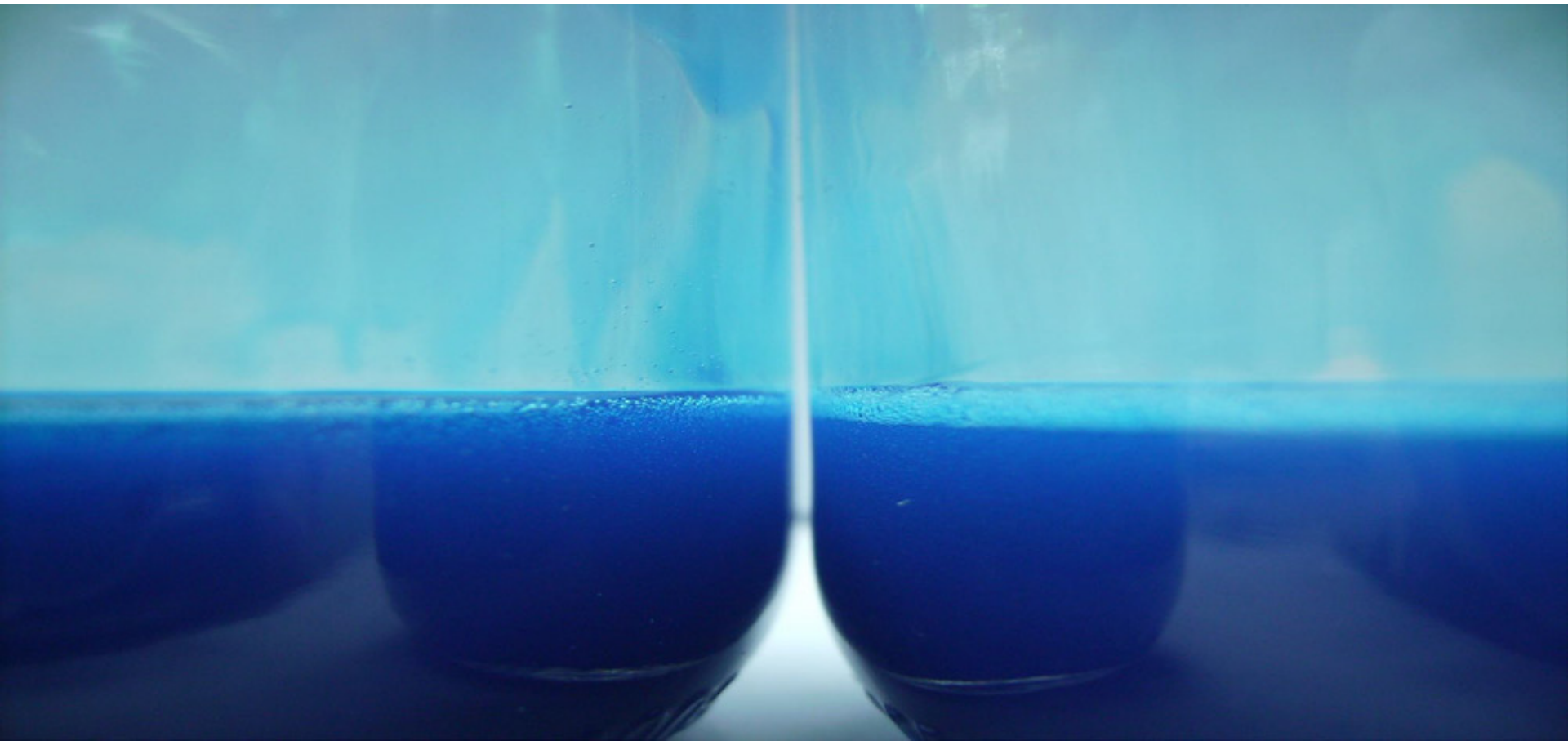


Competitor B



AFCONA 2524

Side view



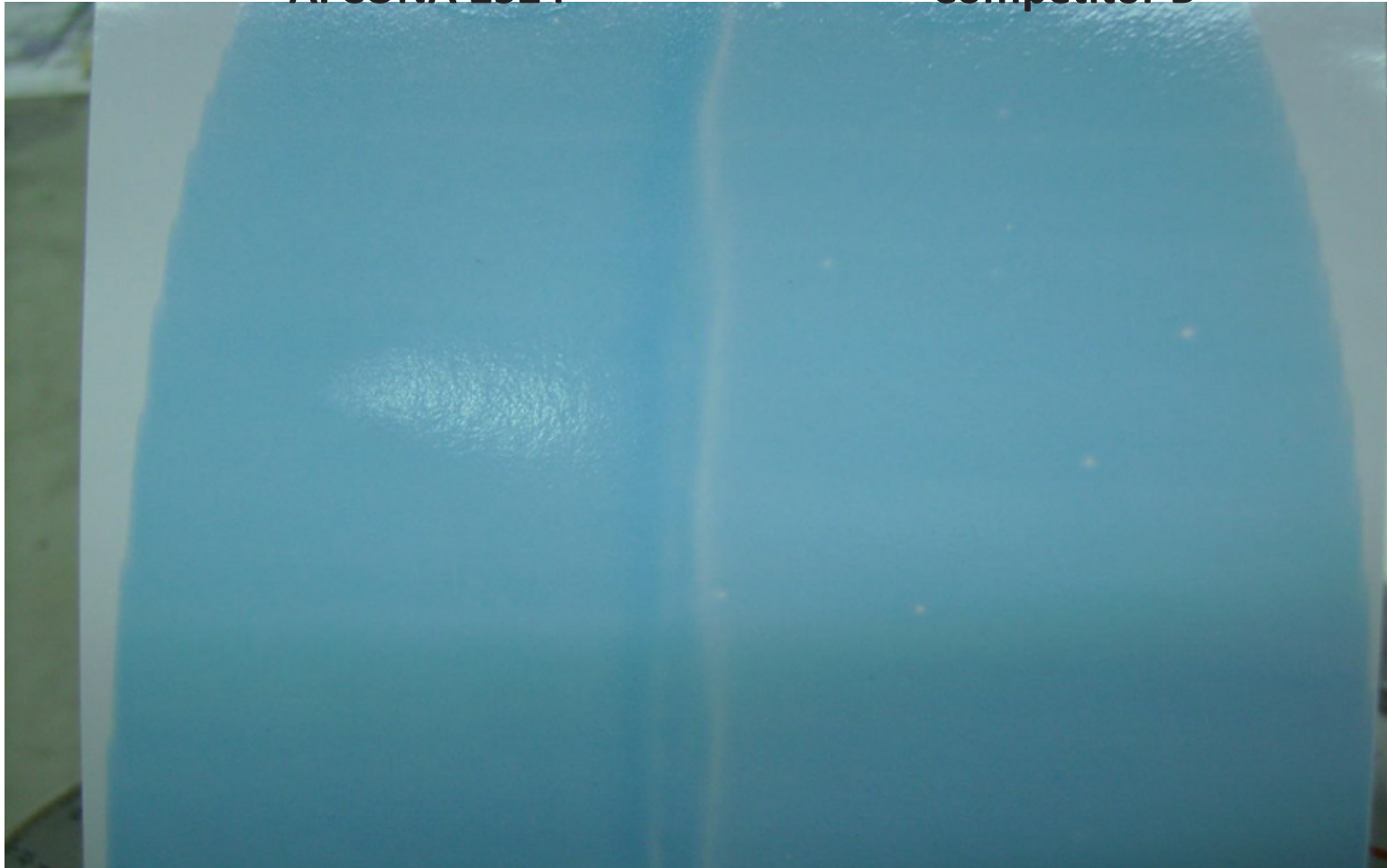
AFCONA 2524

Competitor B

Crater test (Photo copy)

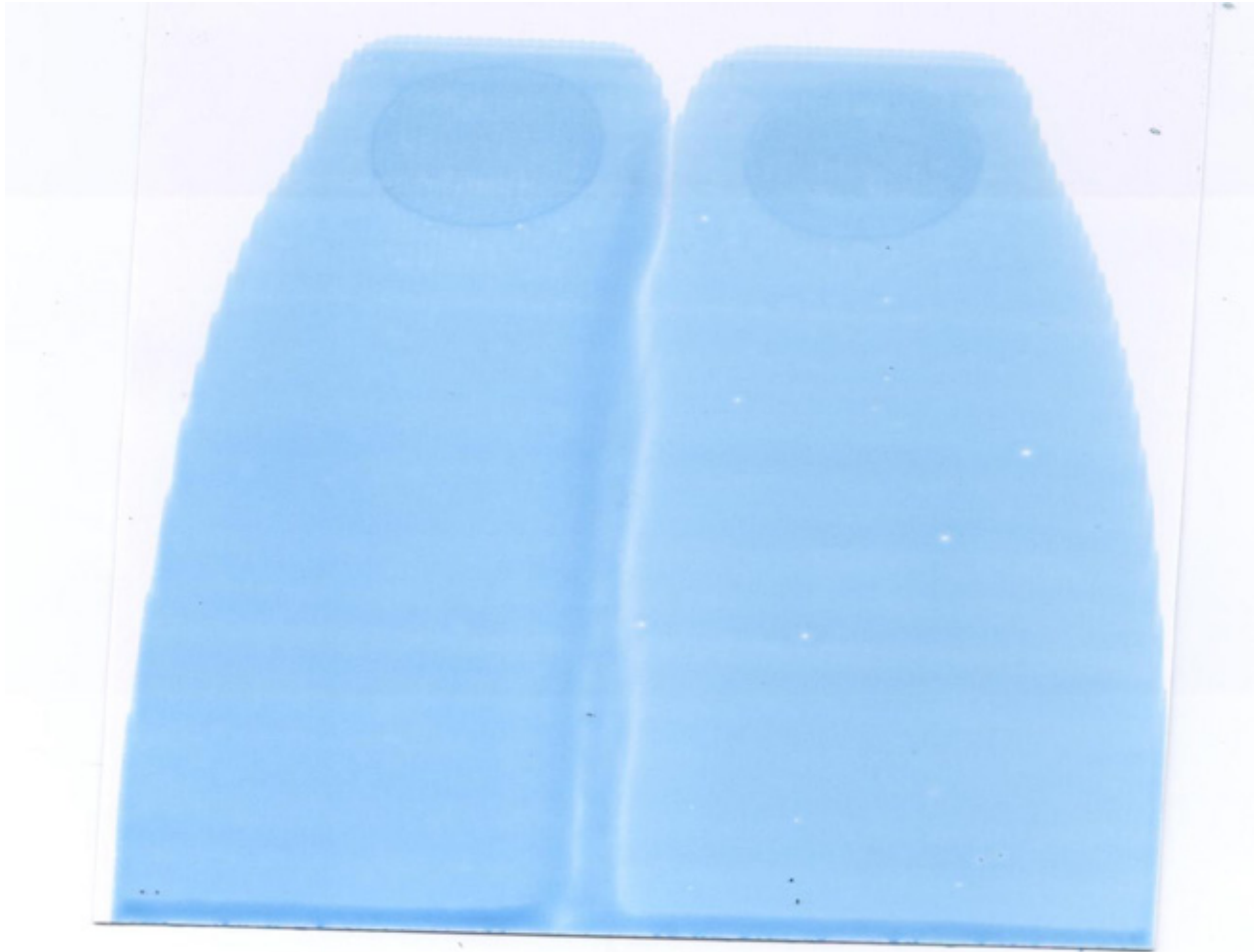
AFCONA 2524

Competitor B



Crater test (Scan copy)

AFCONA 2524 Competitor B



AFCONA – 2727

**Silicone based defoamer for
solventless epoxy and high
build polyurethane**

AFCONA - 2727

Solid Content : 50% in aliphatic hydrocarbon

Chemicals : Modified ether-alkyl polysiloxane

Use

Very effective defoamer for solventless epoxy and high build polyurethane for floor coating and maintenance coating.

Properties:

High effective defoaming, deaeration and anti-foam

No influent on final color

Long term effectiveness



**Self Leveling Epoxy System
0.5% Competitor**

**Self Leveling Epoxy System
0.5% AFCONA 2727**

Levelling agents

AFCONA – 3250

**Silicone based slip and
levelling agent**

AFCONA-3250

Chemical composition: **organically modified polysiloxane**

Product general description:

Special modified polysiloxane to impart high slip performances

Product properties:

Afcona 3250 is specially developed for applications where maximum slip Performances are requested.

- it improves slip and levelling performances**
- very compatible for the use in clear systems**
- very low tendency to foam formation**
- avoid the formation of Bénard cells**

Special recommendations for:

- Afcona 3250 is very effective in all kind of solvent based, solvent free and UV curable systems**

AFCONA-3250

Product specification

Active ingredients	: >95%
Density at 20 °C	: 0.98 – 1.00 g/cm ³
Refractive index	: 1.420 – 1.430
Flash point	: >100 °C
Appearance	: Transparent to slight yellowish liquid

Addition and dosage

0.05 – 0.5% on total formulation

Incorporation

Can be added at any stage during the production process.

AFCONA – 3580

**Short chain polysiloxane for
substrate wetting in solvent
based and solvent free
systems**



a d d i t i v e s

AFCONA-3280

Chemical composition: specially organically modified polysiloxane

Product general description:

Special modified polysiloxane for slip defoaming and surface characteristics

Product properties:

Is a special modified polysiloxane. It do not cause intercoat adhesion problems even without sanding. Due to the special modification is better in hot water resistance than other polyether modified polysiloxanes

- it improves levelling and surface smoothness and has a moderate slip performance
- no intercoat adhesion problems even without sanding
- act as a defoamer and de-aeration aid
- no inner bubble problems in PU coatings
- avoid the formation of Bénard cells

Special recommendations for:

- stoving enamels based on alkyd, acrylic and polyester resins
- acid curing and PU wood coatings
- self-levelling epoxy compounds
- UV curing inks and coatings

A d d i t i v e s F o r C o a t i n g s O r N e w A p p l i c a t i o n

AFCONA-3280

Product specification

Active ingredients	: >96%
Density at 20 °C	: 0.89 – 0.92 g/cm ³
Refractive index	: 1.425 – 1.435
Flash point	: >100 °C
Appearance	: transparent to slight yellowish liquid

Addition and dosage

0.05 – 0.5% on total formulation

Incorporation

Can be added at any stage during the production process. However, high shear force is needed when added into the let down stage due to the defoaming property. For easier incorporation dilute to 10% in any solvent

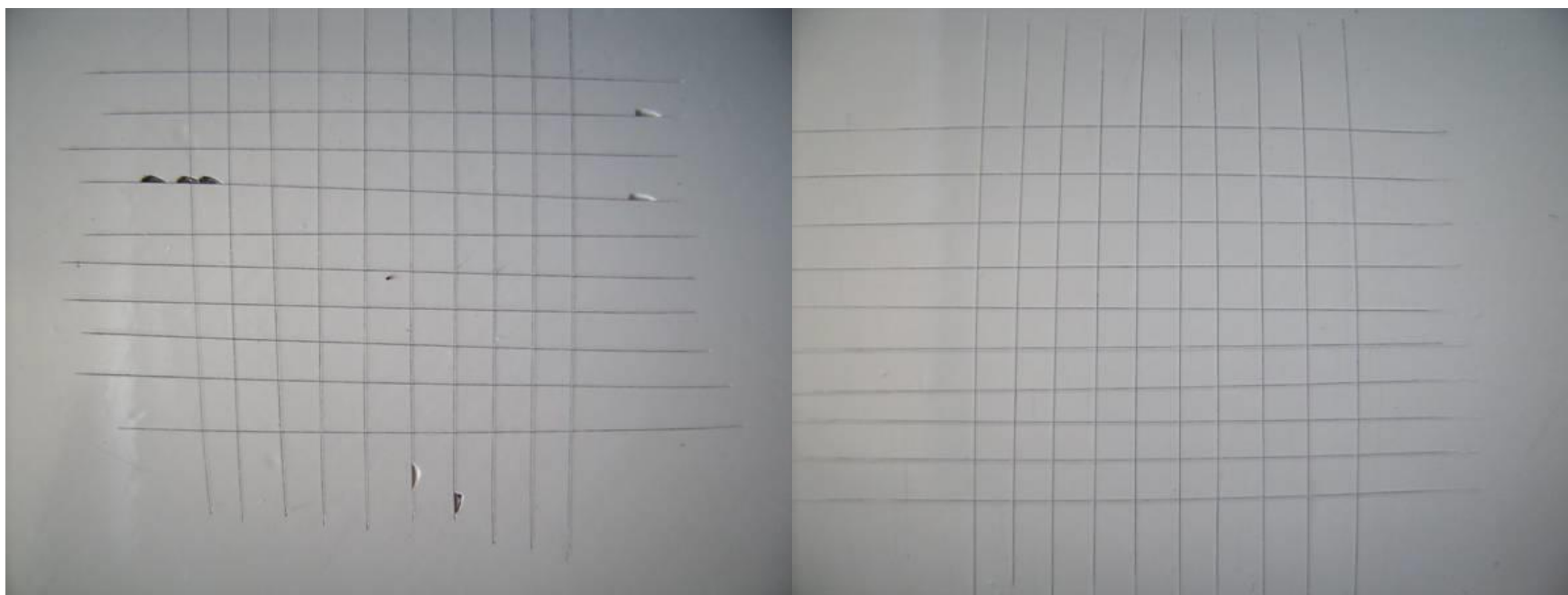
<u>Raw Material</u>	<u>Percentage / %</u>
Setal 84 xx 70	22.0
NC Solution 30% solid	47.0
Pasticiser	5.5
White Universal Paste	25.0
PMA	2.5
BA	10.0
Xylene	13.0
Total	125.0



NC White Topcoat
Control

NC White Topcoat
0.3% AFCONA 3280

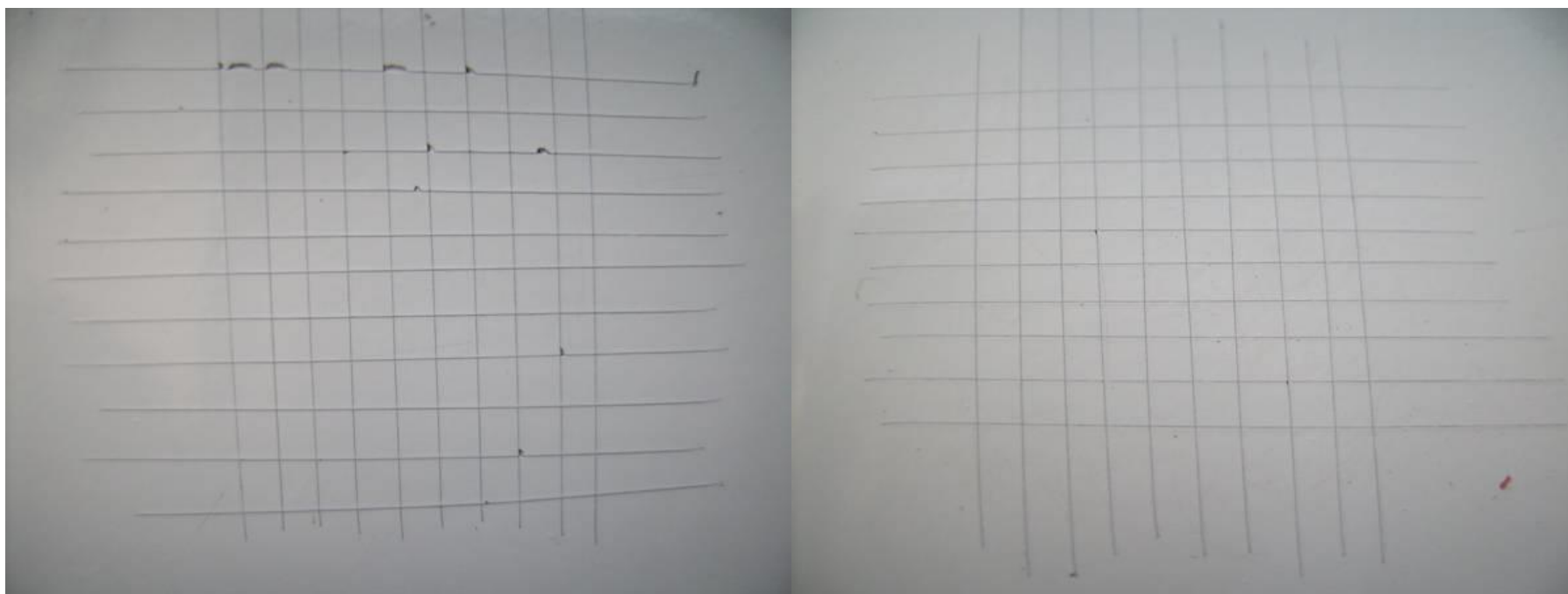
<u>Raw Material</u>	<u>Percentage / %</u>
Setal 84 xx 70	40.0
Urea + Melamine	33.0
Universal White Paste	25.0
NBA	4.0
IBA	4.0
Xylene	19.0
Total	125.0



AC White Topcoat
Control

AC White Topcoat
0.3% AFCONA 3280

<u>Raw Material</u>	<u>Percentage / %</u>
Setal 84 xx 70	60.0
Universal White Paste	25.0
PMA	5.0
BA	15.0
Xylene	20.0
Total	125.0
Hardener solution	62.5



PU White Topcoat
Control

PU White Topcoat
0.3% AFCONA 3280

AFCONA – 3280 in promoting intercoat adhesion

Testing

System : Oil free polyester melamine
Baking : 130C @ 30mins
Colour : White

A white baking paint was apply by spray and bake on above mentioned temperature.

Additional coats were added with bake in between.

AFCONA – 3280 in promoting intercoat adhesion

With 0.2% of AFCONA – 3280

2 coats

3 coats

4 coats

5 coats

Control

2 coats

3 coats

4 coats

5 coats

AFCONA – 3700 and 3750

**Polymeric fluorocarbon
additives for substrate
wetting**



AFCONA-3700 and AFCONA-3750

AFCONA-3750 is the 50% solid version for easier handling in winter periods

Chemical composition: polymeric fluorocarbon compound

Product general description:

Wetting, levelling and flow control agent for solvent-based coatings with excellent anti-crater properties

Product properties:

Highly fluorocarbon modified polyacrylic polymer. It provides very low surface tension and therefore it can substitute and perform as silicone without the negative side effects.

It reduce drastically the surface tension of coatings systems. This, together with the good compatibility with most solvent-based systems and minimal foam stabilizing effect, makes it very suitable as an anti-crater agent and flow control agent for all solvent-based systems

Special recommendations:

- widely used in refinish top coats to prevent crater formation caused by different environments at application sites**
- Beside this it improves the vertical levelling strongly**
- stoving enamels based on alkyd, acrylic and polyester resins**
- polyurethane coating (no inner bubble sensitivity)**
- UV coatings**

AFCONA-3700/AFCONA-3750

Product specification AFCONA-3700

Active ingredients : >96 %

Density at 20 °C : 1.11 – 1.13 g/cm³

Refractive index : 1.450 – 1.460

Colour : max 3

Appearance : transparent to
yellowish liquid

Product specification AFCONA-3750

Active ingredients : 50 - 53 %

Solvents : methoxypropylacetate

Refractive index : 1.420 – 1.430

Flashpoint : 42 °C

Colour : max 3

Appearance : transparent to
yellowish liquid

Addition and dosage

0.05 – 1.0% on total formulation

0.1 – 1.0% on total formulation

Incorporation

Should be added at the end of the batch preparation

AFCONA – 3730

**Polyester based levelling
agent**



a d d i t i v e s

AFCONA-3730

Chemical composition: pure polyester polymer

Product general description:

Levelling agent for solvent-based and solvent-free coatings

Product properties:

A high molecular weight polyester with good levelling properties. It has very good compatibility and is therefore very suitable for clear coats and pigmented coatings, because it gives no haze, orange peel or other side effects to the coating

It is excellent in levelling and has no influence on the final gloss

Very wide compatibility and therefore no in-can haziness

No recoatability problem

High temperature resistance up to 300 °C

Contains OH functional group. Can cross-link into the system, therefore no plasticizing effect and no influence on physical and chemical resistance

Special recommendations:

- coil and can coatings, especially can coatings**
- two-pack PU and Epoxy**
- stoving enamels based on alkyd, thermosetting acrylic and oil free polyester resin**
- air-drying systems**

A d d i t i v e s F o r C o a t i n g s O r N e w A p p l i c a t i o n

Product specification

Active ingredients : 64 - 66 %

Solvents : alkyl benzene/butylcellosolve/xylene

Refractive index : 1.420 – 1.430

Flashpoint : 42 °C

Colour : max 3

Appearance : transparent to
slight yellowish liquid

Addition and dosage

0.05 – 1.0% on total formulation

Incorporation

Should be added at the end of the batch preparation

AFCONA – 3758

**Modified polyacrylate
substrate wetting agent**

AFCONA - 3758

Solid Content : >70%
Chemicals : Modified polyacrylate

Usage

As today, fluorocarbon(FC) is banned in many electronic application. However FC are widely use as non silicone leveling and anti-crater agent.

AFCONA – 3758 is a non flurocarbon leveling based on polyacrylate. With special modification to replacement FC containing non-silicone leveling agent.

Properties:

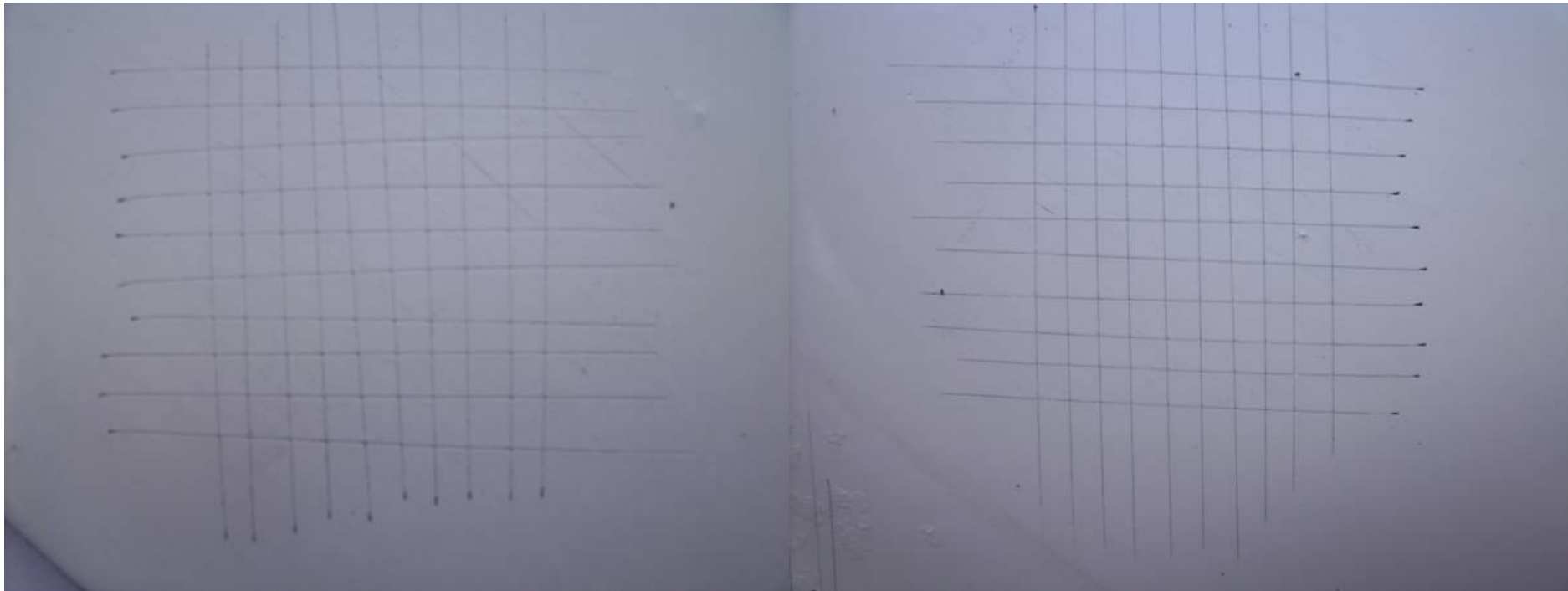
Effective in leveling and anti-crater

Very compatible

No intercoat adhesion problem

Adhesion test

Acrylic polyol Polyurethane

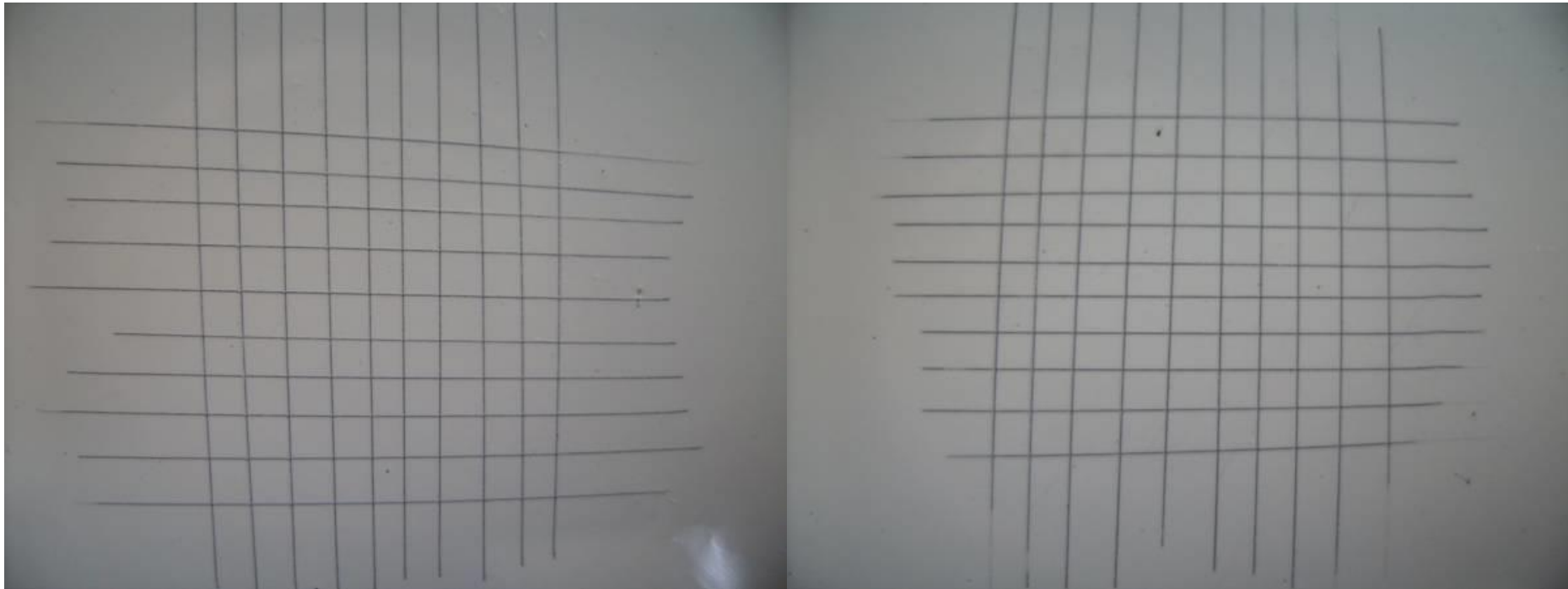


Acrylic PU White Topcoat
Control

Acrylic PU White Topcoat
0.3% AFCONA 3758

Adhesion test

Saturated polyester coil coating



Coil Coating White Topcoat
Control

Coil Coating White Topcoat
0.3% AFCONA 3758

Wetting and dispersing agents



AFCONA-4071

a d d i t i v e s

Chemical composition: modified polyurethane polymer

Product general description:

High molecular weight polymeric dispersant for deflocculation of all type of pigments

Product properties:

A new dispersant based on a innovative concept of polyurethane dispersants based on own developed intermediate monomers and new developed anchoring groups.

AFCON-4071 is an improved version of AFCONA-4046 and AFCONA-4050

Improved properties:

- better in carbon black and organic pigment dispersions
- No crystallization problem at low temperatures. Even below zero (- 15 °C) only slight haze will be observed
- better compatibility with CAB and NC
- better overall pigment stability, tinting strength and colour brightness
- **Pigment Concentrates – Resin free or with minimum Resin amount – Solvent industrial**

A d d i t i v e s F o r C o a t i n g s O r N e w A p p l i c a t i o n

Product specification

Active ingredients : 44 - 46 %

Solvents : butyl acetate/methoxypropylacetate/isobutanol/xylene

Density at 20 °C : 0.94 – 0.96 g/cm³

Flashpoint : 24 °C

Colour : max 6

Addition and dosage

TiO₂ : 2 – 3%

Other inorganic pigments : 2 – 4%

Organic pigments : 20 – 40%

Carbon blacks : 20 – 60%

Incorporation

Should be added in the mill base before adding the pigments



AFCONA-4201

additives

Chemical composition: modified polyurethane polymer

Product general description:

Solvent-free high molecular weight polymeric dispersant for deflocculation of all type of pigments

Product properties:

An new dispersant based on an innovative concept of polyurethane dispersants based on own developed intermediate monomers and new developed anchoring groups.

Special properties and recommendations:

- the unique structure (innovative intermediate) makes it very compatible even with systems where firsts generation polyurethane dispersants failed
- the exceptional good compatibility makes it suitable for solvent-based or solvent-free systems with poor compatibility like e.g. TPA + CAB or TPA with low wetting properties. The good compatibility makes it also very suitable for universal pigment concentrates in lines where these products are a big part of the turn over
- the nearly 100% active ingredients makes it also very suitable for high solid or solvent-free coatings like: epoxy, PU and especially UV
- very interesting product for printing inks, because free choice of solvents

A d d i t i v e s F o r C o a t i n g s O r N e w A p p l i c a t i o n

Product specification

Active ingredients : >96 %

Refractive index : 1.468 – 1.478 g/cm³

Flashpoint : >100 °C

Amine value : 11-21 mg KOH/g

Addition and dosage

TiO₂ : 2 – 3%

Other inorganic : 2 – 4%

Organic pigments : 20 – 40%

Carbon blacks : 20 – 60%

Incorporation

Should be added in the mill base before adding the pigments

AFCONA - 5209

Solid Content : 100%

Chemicals : Fatty acid modified polyamide

Use

Economic and effective wetting and dispersing agent. Target to substitute dispersants for long oil, and printing ink applications (Polyamide, NC and polyvinyl+polypropylene system).

Provide below properties:

Higher tinting strength
Better pigment stability
Price advantage

Comparison test between AFCONA – 5209 and a competitor in long oil alkyd

Grinding formulation of AFCONA – 5209 and a competitor in long oil alkyd

Raw Material	Blue	Red	Green	MA 100	Red Oxide	Yellow Oxide	Chrome Yellow
<u>Mill Base</u>							
Setal 270 W70	30.0	30.0	30.0	30.0	25.0	25.0	25.0
LAWS	56.43	56.43	53.7	53.7	19.9	30.6	25.25
AFCONA 5009	3.57	3.57	4.30	4.30	3.60	2.90	3.25
Pigment	10.0	10.0	12.0	12.0	50.0	40.0	45.0
TA 3000	---	---	---	---	1.50	1.50	1.50
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Raw Material	Blue	Red	Green	MA 100	Red Oxide	Yellow Oxide	Chrome Yellow
<u>Mill Base</u>							
Setal 270 W70	30.0	30.0	30.0	30.0	25.0	25.0	25.0
LAWS	57.23	57.23	54.66	54.66	20.7	31.25	25.98
Competitor 1	2.77	2.77	3.34	3.34	2.80	2.25	2.52
Pigment	10.0	10.0	12.0	12.0	50.0	40.0	45.0
TA 3000	---	---	---	---	1.50	1.50	1.50
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Grinding formulation of AFCONA – 5209 and a competitor in long oil alkyd

Raw Material	TR 92
<u>Mill Base</u>	
Setal 270 W70	25.0
LAWS	11.35
AFCONA 5009	2.15
TR 92	60.0
TA 3000	1.50
Total	100.0%

Raw Material	Long Oil Alkyd Clear Solution
<u>Mill Base</u>	
Setal 270 W70	80.0
AFCONA 3030	0.50
AFCONA 2020	0.50
MEKO	0.50
Mix Drier	2.50
LAWS	16.0
Total	100.0%

Long Oil Alkyd Clear Solution = 65gm
White Pigment Concentrate = 35gm
Pigment Concentrate = 3.0gm

Formulations of AFCONA – 5209, and competitors in Polyamide system for printing ink

Raw Material	Competitor 2	Competitor 3	AFCONA 5209
<u>Mill Base</u>			
35% Polyamide Resin	25.0	25.0	25.0
Toluene	15.0	15.0	15.0
Dispersants	0.80	0.80	0.80
MA 100	8.00	8.00	8.00
<u>Let Down</u>			
35% Polyamide Resin	45.0	45.0	45.0
Toluene	6.20	6.20	6.20
Total	100.0%	100.0%	100.0%

Raw Material	Competitor 2	Competitor 3	AFCONA 5209
<u>Mill Base</u>			
35% Polyamide Resin	25.0	25.0	25.0
Toluene	15.0	15.0	15.0
Dispersants	0.40	0.40	0.40
Permanent Rubine 152	4.00	4.00	4.00
<u>Let Down</u>			
35% Polyamide Resin	40.0	40.0	40.0
Toluene	15.6	15.6	15.6
Total	100.0%	100.0%	100.0%

Formulations of AFCONA – 5209, and competitors in Polyamide system for printing ink

Raw Material	Competitor 2	Competitor 3	AFCONA 5209
<u>Mill Base</u>			
35% Polyamide Resin	25.0	25.0	25.0
Toluene	15.0	15.0	15.0
Dispersants	0.40	0.40	0.40
Permanent Yellow BHG	4.00	4.00	4.00
<u>Let Down</u>			
35% Polyamide Resin	40.0	40.0	40.0
Toluene	15.6	15.6	15.6
Total	100.0%	100.0%	100.0%

Formulations of AFCONA – 5209, and competitors in Polyamide system for printing ink

Pigment	Dispersants	Fineness	Transparency/ Jetness	Gloss @ 60°
MA 100	AFCONA 5209	<10 µm	5*	85.3
	Competitor 2	<10 µm	4*	84.6
	Competitor 3	<10 µm	3*	81.2
Permanent Rubine 152	AFCONA 5209	<10 µm	5	67.3
	Competitor 2	<10 µm	5	68.2
	Competitor 3	<10 µm	5	65.7
Permanent Yellow BHG	AFCONA 5209	<10 µm	5	70.0
	Competitor 2	<10 µm	5	70.6
	Competitor 3	<10 µm	5	69.3

Result after storage at 60C for 2 weeks

Pigment	Dispersants	Fineness	Transparency/ Jetness	Gloss@60°
MA 100	AFCONA 5209	<10 µm	5*	87.4
	Competitor 2	<10 µm	4*	87.4
	Competitor 3	<10 µm	3*	81.6
Permanent Rubine 152	AFCONA 5209	<10 µm	5	76.1
	Competitor 2	<10 µm	4	75.0
	Competitor 3	<10 µm	3	72.6
Permanent Yellow BHG	AFCONA 5209	<10 µm	5	69.9
	Competitor 2	<10 µm	5	70.6
	Competitor 3	<10 µm	5	69.5

Rating:

**Transparency
Jetness**

: 1 – Poor and 5 – Excellent
: 1* – Poor and 5* – Excellent

- Concentrados de Pigmentos:
- **A : Sistema DECO**
- 1- **Universal Base Solvente + Água**
 - RFPC – Sin resina: Base **AFCONA 6226** – para punto de venta
 - Obs. se puede utilizar en fábrica, mediante evaluación económica
- 2 - **Base Solvente – Sistema Alquidico**
 - RCPC – Con resina: Base **AFCONA 5209** + Resina alquidica – para in plant

- Concentrados de Pigmentos:
- **B: Sistema Industrial + DECO**
- **3- Universal Base Solvente + Água**
- - RFPC : Base **AFCONA 4570** – para in plant y punto de venta
- **4 – Base água – todo sistema aquoso**
- – RFPC : Base **AFCONA 4595** –para in plant y punto de venta
- **5 –Base Solvente – todo sistema solvente**
- RFPC – Base **AFCONA 4071** – para in plant y punto de venta

A . Sistema DECO

1. Universal Base Solvente + Água

RFPC – Sin Resina

- Alternativa no peligrosa a los APE
- VOC free
- Excelente compatibilidad
- Buena actividad reductora de viscosidad
- Resistente al agua después del secado.
- Rango de precio aceptable
- Se indica para *punto de venta*
- *se puede utilizar in plant mediante evaluación económica*

A. Sistema DECO

1. Universal Base Solvente + Água RFPC – Sin Resina

AFCONA 6226

- Menor viscosidad para un mejor manejo
- Grupos de anclaje más ecológicos
- Mejor en reducción de viscosidad
- Desarrollo superior de pigmentos
- No es completamente soluble en agua, necesita una ligera neutralización.
- No reduzca la resistencia al agua

A . Sistema DECO

1. Universal Base Solvente + Água

RFPC – Sin Resina



AFCONA – 6226

Chemical Composition

Fatty acid modified polyester

Product general description

Dispersant and emulsifier for universal colourants and perform as colour acceptance additive

Product Properties

AFCONA-6226 is an improved version of AFCONA – 6225 where it based on more easy available raw materials. It gives better dispersing performance as well as better colour acceptance in decorative paints.

AFCONA – 6226 has below special properties comparing to AFCONA - 6225:

- 1) AFCONA-6226 is more hydrophilic where it can dissolve in water much easy than AFCONA – 6225. Thus pigment paste that based on AFCONA - 6226 will gives better colour strength.
- 2) AFCONA-6226 gives better pigment stability, colour development and lower colour paste viscosity.
- 3) AFCONA – 6226 also gives better colour acceptance in water based and alkyl based

Product specification

Active ingredients	≥ 96%
Density at 20 °C	0.95 - 1.05 g/cm ³
Colour	max.18
Appearance	dark brown liquid

Addition and dosage

Calculation method for the required amount of active ingredient on pigment:

Universal colourants:

5 - 10%	for inorganic pigments
10 - 20%	for organic pigments

Base-paints	0.5 - 1.5% on total based paints
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Bentonites /thickeners	15 - 25% on active substance
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Incorporation

AFCONA-6226 can be incorporated in the mill-base or used as post additive for colour acceptance

A . Sistema DECO

1. **Universal Base Solvente + Água** **RFPC – Sin Resina**

AFCONA 6226

Dispersante para concentrado de pigmento universal
Adecuado para dispersar varios tipos de pigmentos.
Proporciona buena estabilidad al colorante.
Proporcionar una buena compatibilidad en aceite largo y a
base de agua
pintura alquídica

AFCONA 2503

Antiespumante para concentrado de pigmentos a base de agua
Buen rendimiento en aplicaciones de alto cizallamiento
Sin problema de cráteres

AFCONA 5071

Se utiliza principalmente como agente anti-sedimentación para
pigmentos pesados y inorganicos

A . Sistema DECO

1. Universal Base Solvente + Água

RFPC – Sin Resina

Guide Formulations

Raw Material	Red Oxide	Yellow Oxide	Monolite Red	Monolite Green	Monolite Blue	Violet RL 23	MA 100
Water	30.5	41.0	50.2	46.0	46.0	53.5	61.60
Propylene Glycol	5.00	5.00	5.00	5.00	5.00	5.00	5.00
AMP 95	0.50	0.50	0.50	0.50	0.50	0.50	0.50
AFCONA 6226	3.00	2.50	8.80	8.00	8.00	10.5	7.50
Pigment	60.0	50.0	35.0	40.0	40.0	30.0	25.0
AFCONA 2503	0.50	0.50	0.50	0.50	0.50	0.50	0.50
AFCONA 5071	0.50	0.50	---	---	---	---	----
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SOP	5.00%	5.00%	25.0%	20.0%	20.0%	35.0%	30.0%

A . Sistema DECO
2. Base Solvente
RCPC – Con Resina

Sistema:

Esmalte al óleo largo, medio y corto

Requisito Principal:

Agente humectante y dispersante económico y eficaz

Uso de resina para reducir costo.

Se indica para *in pant*

A . Sistema DECO
2. Base Solvente
RCPC – Con Resina

- **AFCONA 5209**
- Excelente dispersion de pigmentos
 - Alta fuerza tintorial
 - Mejor estabilidad del pigmentos
- Economico

Más eficiente



AFCONA – 5209

A . Sistema DECO

2. Base Solvente

RCPC – Con Resina



Chemical Composition

Fatty acid modified polyamide

Product general description

Anionic/cationic wetting and dispersing additive to improve the wetting of pigment surfaces

Product Properties

AFCONA-5209 is the 100% version of AFCONA - 5209. It reduces the interfacial tension between pigments or extenders and the vehicle. It stabilizes the pigments through electrical charge repulsion forces.

AFCONA – 5209 has below special properties and recommended in below systems:

- 1) AFCONA – 5209 is an excellent choice for Bentonite gelling where it result in excellent anti-sagging and anti-settle without increase too much of the system viscosity. To ensure a good Bentonite gelling paste as descript above, AFCONA – 5209 must be incorporated before loading the Bentonite powder.
- 2) Often, AFCONA – 5209 is used in primer and some decorative paint. It also widely used in marine and heavy duty paints as

Product specification

Active ingredients	> 96%
Amine value	< 5 mg KOH/g
Acid value	180 - 220 mg KOH/g
Density at 20 °C	0.90 - 0.92 g/cm ³
Appearance	transparent yellowish to brownish liquid

Addition and dosage

0.2 - 2.0% based on inorganic pigments
2.0 - 5.0% based on organic pigments

Bentonite Gelling

87-88	parts of solvent
3 - 2	parts of AFCONA-5209 (must load in and homogenously disperse in the solvent part before loading the Bentonite powder)
10	parts of Bentonite

100 parts	

A . Sistema DECO

2. **Base Solvente**

RCPC – Con Resina

Raw Material	Blue	Red Oxide	Yellow Oxide
<u>Mill Base</u>			
Setal 270 W70	30.0	25.0	25.0
LAWS	57.00	20,5	31,00
AFCONA 5209	3.00	3.00	2.50
Pigment	10.0	50.0	40.0
TA 3000	---	1.50	1.50
Total	100.0%	100.0%	100.0%

Raw Material	Blue	Red Oxide	Yellow Oxide
<u>Mill Base</u>			
Setal 270 W70	30.0	25.0	25.0
LAWS	57.00	20.5	31.00
Competitor	3.00	3.00	2.50
Pigment	10.0	50.0	40.0
TA 3000	---	1.50	1.50
Total	100.0%	100.0%	100.0%

B. Sistema Industrial + DECO

3. **Universal Base Solvente + Água** **RFPC – Sin Resina**

- Optimización de los concentrados utilizados en uno, con pérdidas de proceso reducidas, intermedios reducidos, costos de fabricación reducidos
- Excelente resistencia química y humedad
- Excelente reducción de viscosidad
- Excelente Estabilidad
- Excelente compatibilidad general: Resina Alquídica (Aceite Largo, Medio y Corto), Epoxi PU 2-pack (Acrílico, Poliester), NC, Esmalte Acrílico, Emulsión Acrílica Pura, Emulsión Acrílico-Stirene, Emulsión Vinílica.
- **Se indica para *in pant* y punto de venta**

B. Sistema Industrial + DECO
3. Universal Base Solvente + Água
RFPC – Sin Resina

AFCONA 4570

- Gran compatibilidad con diferentes tipos de resinas, tanto a base de solvente como al agua
- Grupos de anclaje más ecológicos
- Mejor en reducción de viscosidad
- Desarrollo superior fuerza tintorial de pigmentos
- Excelente Estabilidad de la dispersion
- No reduzca la resistencia al agua o quimica

B. Sistema Industrial + DECO

3. Universal Base Solvente + Água

RFPC – Sin Resina

AFCONA – 4570

Chemical Composition

Modified Polyacrylate polymer

Product general description

High molecular weight dispersing agent for color acceptance and resin free pigment concentrate preparation

Product Properties

AFCONA-4570 is a very effective polymeric dispersant for stabilizing inorganic and organic pigments as well as carbon blacks. It has very good stability performance, through effective steric hindrance and electric repulsion, on all type of pigments.

This results in:

- better gloss
- stronger viscosity depressing
- higher colour strength
- stability of the dispersion

Product specification

Active ingredients	58 – 60%
Solvent	Tripropylene glycol methyl ether (TPM)
Density at 20 °C	1.01 – 1.03 g/cm ³
Amine value	40 – 50 mg KOH/g
Colour	max. 8

Addition and dosage

Calculation method for the required amount of active ingredient on pigment:

TiO ₂	: 2 - 3%
Other inorganic pigments	: 2 - 4%
Organic pigments	: 20 - 40%
Carbon blacks	: 20 - 60%

B. Sistema Industrial + DECO

3. Universal Base Solvente + Água

RFPC – Sin Resina

Guide formulations on universal Pigment Concentrates for industry water and solvent with Afcona 4570

	Kronos 2190	Flamruss Black 101	Bayferrox 3920	Bayferrox 130 M	Novoperm F3RK70	Hostaperm Rosa E	Hostaperm Violet RL	Heliogen Blue L7072D	Monastral Green GBX-C
1) Afcona 4570	14,0	22,5	14,0	9,2	17,0	13,8	18,0	16,7	30,0
2) Aerosil 200	0,2		0,2	0,4					
3) 1-Methoxy-2-Propanol	20,8	47,5	30,8	25,4	63,0	71,2	64,0	63,3	40,0
4) Pigment	65,0	30,0	55,0	65,0	20,0	15,0	18,0	20,0	30,0
	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
5) % Pigment	65	30	55	65	20	15	18	20	30
6) Solid carrier	8,4	13,5	8,4	5,5	10,2	8,2	10,8	10	18
7) Relation 5:6	7,7/1,0	2,2/1,0	6,5/1,0	11,8/1,0	1,9/1,0	1,8/1,0	1,6/1,0	2,0/1,0	1,6/1,0
8) Colour Index	PW.6	PBK.7	PY.42	PR.101	PR.170	PR.122	PV.23	PB.15:3	PG.7

B. Sistema Industrial + DECO

4. Base Água

RFPC – Sin Resina

- RFPC – Resin Free Pigment Concentrates
- Excelente resistencia quimica y humedad
- Excelente reducción de viscosidad
- Excelente Estabilidad
- Excelente compatibilidad con todos los sistemas acuosos
- Se indica para *in pant y punto de venta*

B. Sistema Industrial + DECO

4. Base Água

RFPC – Sin Resina

- **AFCONA 4595**
- Fácil de usar porque es directamente soluble en agua.
- PH independiente
- Alto desarrollo de la fuerza colorante del pigmento
- Excelente reducción de viscosidad
- Excelente compatibilidad general para sistemas base acuosa
- Debido a su carácter ácido, excelente para la dispersión de Carbon Black.

B. Sistema Industrial + DECO

4. Base Água

RFPC – Sin Resina

Mar 11

AFCONA – 4595



Chemical Composition

Special designed block copolymer

Product general description

High molecular weight polymeric dispersant for deflocculation of pigments in water-based decorative as well as industrial paints

Product Properties

AFCONA-4595 is a wetting and dispersing additive for water-based coatings and pigment concentrates. It prevents negative flocculation effects like; flooding and floating and improve the storage stability.

AFCONA-4595 is recommended for all kind of pigments. Also very suitable for transparent iron oxides.

Product specification

Active ingredients	38 – 42%
Solvent	Water
Density at 20 °C	1.05 – 1.07 g/cm ³
Refraction Index	1.39 – 1.40
Acid value	7 – 15 mg KOH/g
Colour	9 - 11

Addition and dosage

Calculation method for the required amount of active ingredient on pigment:

B. Sistema Industrial + DECO

4. Base Água

RFPC – Sin Resina

Afcona 4595 – Guia de Formulacion

	Kronos 2190	Special Black 6	Special Black 100	Hostaperm H3G	Hostaperm H6G	Bayferrox 3920	Novoperm HL 70	Bayferrox 130 M	Novoperm F3RK70	Hostaperm Rosa E	Hostaperm Violet RL	Heliogen Blue L7072D	Monastral Green GBX-C
1) Afcona-4595	12,5	26,0	19,0	25,0	25,0	17,5	16,0	17,5	21,0	25,0	25,0	21,0	31,0
2) Afcona-2503	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
3) Aerosil 200	0,2					0,2		0,3					
4) Water	17,0	56,7	40,7	49,7	49,7	25,0	30,7	14,9	33,7	59,7	64,7	38,7	28,7
5) Pigment	70,0	17,0	40,0	25,0	25,0	57,0	53,0	67,0	45,0	15,0	10,0	40,0	40,0
	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
6) % Pigment	70	17	40	25	25	57	53	67	45	15	10	40	40
7) Solid carrier	5	10,5	7,5	10	10	7	6,5	7	8,5	10	10	8,5	12,5
8) Relation 6:7	14,0/1,0	1,6/1,0	5,3/1,0	2,5/1,0	2,5/1,0	8,1/1,0	8,2/1,0	9,6/1,0	5,3/1,0	1,5/1,0	1,0/1,0	4,7/1,0	4,7/1,0
9) Colour Index	PW.6	PBK.7	PBK.7	PY.154	PY.175	PY.42	PO.36	PR.101	PR.170	PR.122	PV.23	PB.15:3	PG.7

B. Sistema Industrial + DECO

5. Base Solvente

RFPC – Sin Resina

- Optimización de los concentrados utilizados da línea solvente , intermedios reducidos, costos de fabricación reducidos
- Excelente resistencia química y humedad
- Excelente reducción de viscosidad
- Excelente Estabilidad
- Excelente compatibilidad general: Resina Alquídica (Aceite Largo, Medio y Corto), Epoxi PU 2-pack (Acrílico, Poliester), NC, Esmalte Acrílico, CAB,
- Se indica para *in pant y punto de venta*

B. Sistema Industrial + DECO

5. **Base Solvente** RFPC – Sin Resina

Los Productos **AFCONA** que hacen posible este concepto:

AFCONA - 4071

Un dispersante a base de PU de distribución estrecha de Peso Molecular que tiene una compatibilidad muy amplia, así como un rendimiento de estabilidad de pigmento.

AFCONA - 6788

El problema común de RFPC es que la formación de puntos ocurre durante la incorporación de la pasta de pigmento RFPC a varias resinas del sistema. El problema es más obvio en los sistemas TPA, NC, Low OH-Acrylate y CAB. AFCONA - 6788 soluciona este problema.

AFCONA – 4071



Chemical Composition

Modified polyurethane polymer

Product general description

High molecular weight polymeric dispersant for deflocculation of all type of pigments

Product Properties

AFCONA- is a result of an innovative concept of polyurethane dispersants. This innovative technology is based on an own new developed intermediate monomer and own new developed anchoring groups.

AFCONA – 4071 is an improve version of AFCONA – 4070 at higher solid content.

Comparing to AFCONA – 4070, AFCONA – 4071 has below special and improved properties:

- 1) AFCONA – 4071 has better performance in carbon black dispersing property. Gives very goods blue under tone with high jetness.
- 2) AFCONA – 4071 will not cause crystallization in low temperature. Even at 15° C below zero (-15° C) only slight haziness will be observe.
- 3) Better compatibility with CAB especially 551 series.

Product specification

Active ingredients	44 - 46%
Solvent	Butylacetate/Methoxy Propyl Acetate / Butanol / Xylene
Density at 20 °C	0.94 – 0.96g/cm ³
Amine value	5 - 10 mg KOH/g
Flashpoint	24°C
Colour	max.6

Addition and dosage

Calculation method for the required amount of active ingredient on pigment:

TiO ₂	: 2 - 3%
Other inorganic pigments	: 2 - 4%
Organic pigments	: 20 - 40%
Carbon blacks	: 20 - 60%

Incorporation

AFCONA-4071 should be incorporated in the mill base before adding the pigments.

5. **Base Solvente** RFPC – Sin Resina



AFCONA – 6788

Chemical Composition

Polymeric of acrylic compound

Product general description

Synergic agent for preparation of RMPC or RFPC pigment concentrate.

Product Properties

AFCONA – 6788 is a special acrylate polymer with the function to increase the compatibility and easy incorporation of pigment concentrate into the letdown based paint.

AFCONA - 6788 worked as compatible polymer for the pigment concentrate so that it allow the pigment concentrates that contained AFCONA – 6788 will have easier incorporated to the based paint, even stirring by hand. Combination with AFCONA 4071 for organic and carbon black or with 4531 for inorganic pigments will result in easy incorporation pigment paste, without seeding, for all kind of resin systems except air dry alkyd systems.

Product specification

Active ingredients	≥96%
Density at 20 °C	1.11 - 1.13 g/cm ³
Colour	max.3
Appearance	transparent to slight yellowish liquid

Addition and dosage

1.0% on total pigment concentrates formulation.

Incorporation

AFCONA-6788 should be added at the beginning of the batch preparation

Storage

AFCONA-6788 should be stored in a cool dry place. When kept in an original unopened container, it will keep up to 5 years from the date of manufacture. The expiry date is indicated on the container.



B. Sistema Industrial + DECO

5. **Base Solvente** RFPC – Sin Resina

	FW 200	Green PG 7	Violet RL Special	Heu. Blue 15:3
S100	25.3	22.6	40.5	19.4
PMA	25.3	22.6	40.5	19.4
AFCONA 4071	33.4	27.8	9.00	31.2
AFCONA 6788	1.00	1.00	1.00	1.00
Pigment	15.0	25.0	8.00	28.0
AFCONA 6745	--	1.00	1.00	1.00
Total	100.0	100.0	100.0	100.0
	Procedure : Mix all items accordingly and soaking overnight(min 12 Hours) than go for grinding			

	Yellow 2GLTE	Red F5RK	Red F2RK	Trans. Iron Yellow
S100	17.8	26.3	23.1	17.3
PMA	17.8	26.3	23.1	17.3
AFCONA 4071	33.4	24.4	27.8	33.4
AFCONA 6788	1.00	1.00	1.00	1.00
Pigment	30.0	22.0	25.0	30.0
Bentone SD1	--	--	--	1.00
Total	100.0	100.0	100.0	100.0
	Procedure : Mix all items accordingly and soaking overnight(min 12 Hours) than go for grinding			

A d d i t i v e s F o r C o a t i n g s O r N e w A p p l i c a t i o n



B. Sistema Industrial + DECO

5. **Base Solvente** RFPC – Sin Resina

	Trans. Iron Red	Red Oxide 130	Yellow Oxide 3920	Chrome Yellow 103
S100	17.3	9.00	15.0	9.20
PMA	17.3	9.00	15.0	9.20
AFCONA 4071	33.4	14.5	13.0	14.6
AFCONA 6788	1.00	1.00	1.00	1.00
Pigment	30.0	65.0	55.0	65.0
Bentone SD1	1.00	1.50	1.00	1.00
Total	100.0	100.0	100.0	100.0

Procedure : Mix all items accordingly and soaking overnight(min 12 Hours) than go for grinding

	White TR 92			
S100	9.25			
PMA	9.25			
AFCONA 4071	14.5			
AFCONA 6788	1.00			
Pigment	65.0			
Bentone SD1	1.00			
Total	100.0			

Procedure : Mix all items accordingly and soaking overnight(min 12 Hours) than go for grinding

A d d i t i v e s F o r C o a t i n g s O r N e w A p p l i c a t i o n

Conclusion

AFCONA presentó 5 opciones técnicas viables para que optimice los concentrados de pigmentos, siendo

2 exclusivo para el sistema DECO

3 para línea industrial + DECO

Afcona cuenta con capacitación técnica para ofrecer soporte para el desarrollo de Concentrados Universales (Sistema Solvente + Agua),
Solo Solvente (Industrial, DECO, o ambos) o
solo Agua (Industrial, DECO, o ambos)



Thank you!!!

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¡GRACIAS POR ACOMPAÑARNOS!



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