

ACRONAL® PRO 770

Product description Acrylic emulsion polymer for direct to metal (DTM) paints and anticorrosive primers

Key benefits

- Superior corrosion protection
- Good adhesion to metal substrates
- Excellent application properties (airless spray, dip coating, etc.)
- Excellent outdoor durability
- Good pigment wetting: can be used as grind vehicle
- Excellent protection achieved by zinc-free formulations or with low zinc content
- Zinc and APEO free

Chemical Nature Styrene acrylic dispersion

Properties

Typical Properties	Solids content	%	48.5 – 50.5
	pH value		7 – 8.3
	Viscosity	cps	600 – 1200
	(Brookfield; #2/ 30 rpm / 25 °C / 30 sec)		
	Density		~ 1.05 g/cm ³
	Minimum film-forming temperature (MFFT)		~ 19 °C
	Acid value (on solids)	calculated	~ 7 mg KOH/g
	Freeze/thaw stable		no

Application

ACRONAL® PRO 770 can be used universally to formulate waterborne direct to metal (DTM) paints and anticorrosive primers. It shows excellent adhesion to metal substrates.

ACRONAL PRO 770 shows outstanding anti-corrosive properties both in glossy DTM and matte monocoat/ primer applications without or with only limited addition of phosphate anticorrosive pigments.

Formulation guideline

Coalescents

To achieve good film formation, it is necessary to have sufficient coalescing solvent present after most of the water has evaporated. ACRONAL PRO 770 has been shown to form a good film at room temperature with levels of approximately 1.5 - 4 % coalescing solvent on total formulation. Typical coalescent solvents may be used, in particular EB and DB showed good results for glossier paints. For higher filled primers we recommend a combination of phenoxy propanol with white spirit (180 - 210 °C) (1:1).

For anti-corrosive paint the adhesion and early water resistance may be further improved by the addition of high boiling solvents (e.g. LOXANOL® CA 5308) or plasticizers (e.g. EFKA® PL 5646) or a combination of both.

Dispersing agents

ACRONAL PRO 770 is shear stable and can be used as a grind vehicle with the addition of low levels of pigment dispersant. For colored glossy paint, DISPEX® Ultra PA 4575 was found to show superior performance when compared to other dispersants.

Please note that this dispersion shows moderate stability to bivalent ions like Zn²⁺. Therefore, we recommend DISPEX CX 4230 in combination with DISPEX PA 4570 for good zinc phosphate stability (up to 5% zinc phosphate or similar type anticorrosive pigment). At 5% content this dispersion is known to outperform other dispersions in formulations containing significantly higher amount of zinc phosphate. An alternative dispersing resin for good thermal stability of the paint is JONCRYL HPD 296-E.

Defoamers

Typical defoamers for waterborne industrial paint may be used. For glossy paint, we found good properties with FOAMSTAR® SI 2210. Typical dosage levels are app. 0.2% of delivery form on total formulation for pigment grinding and let down. For primer formulations, mineral oil defoamers like FOAMASTER® MO NDW have been found to be beneficial.

Rheology modifiers

For the application of ACRONAL PRO 770 in anticorrosive paint, especially on untreated metal, it is recommended to use urethane thickeners (HEUR), for example RHEOVIS® PU 1191.

Flash rust / Organic inhibitors

It is recommended to use a flash rust inhibitor on metal surfaces to avoid the formation of flash rust. ACRONAL PRO 770 shows good compatibility with common types on the market (nitrite and organic).

Starting Point Formulation

ACRONAL PRO 770 White DTM Formulation

Materials	Pounds	Gallons
GRIND		
DI Water	85.48	10.25
Dispex® Ultra PX 4575	22.12	2.48
Hydropalat® WE 3650	2.01	0.25
Foamaster® MO NDW NC	3.02	0.41
DMEA (50% in water)	1.01	0.13
Ti-Pure ¹ R-900	195.09	5.84
HIGH SHEAR DISPERSE FOR 30 MINUTES at 3400 RPM		
LET DOWN		
Acronal PRO 770	567.16	64.74
Grind (add grind to resin)	308.72	19.36
DI Water	50.28	6.03
DB (diethylene glycol monobutyl ether)	65.36	8.21
FoamStar® SI 2210	2.01	0.25
Flash-X ² 150	5.03	0.53
DMEA (50% in Water)	2.01	0.26
Rheovis® PU 1191 (50% in DB)	5.03	0.62
Total	1005.60	100.00

Formulation Attributes

Solids	49.24%
PVC	15.9%
VOC (calculated)	180 g/L

¹Registered trademark of Chemours, Inc.

²Registered trademark of ICL Phosphate Specialty

Safety

General

The usual safety precautions when handling chemicals must be observed. These include the measures described in Federal, State and Local health and safety regulations, thorough ventilation of the workplace, good skin care and wearing of protective goggles.

Safety Data Sheet

All safety information is provided in the Safety Data Sheet for ACRONAL PRO 770.

Important

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