

Acrylic Metal Lacquer for Metallic Toy Car (2-coat system)

Formulation No: D2 - 12 & D2 – 13, Status Code C

- (a) **Introduction** - These starting formulations are suggested for metallic toy cars that require excellent acrylic topcoats that possess good gloss and colour retention. For the toy car topcoat, the suggested acrylic lacquer formulation is plasticised and nitro-cellulose is used as a co-resin to enhance the air-drying property. For the basecoat, lower cost acrylic resin is used as a main binder and VMCH is suggested as a co-binder. The co-binder enhances the coating adhesion onto the metal substrate. The pigments suggested are for reference only. The pigments can be changed according to individual's colour requirements.

(b) **Formulation**

White Acrylic Lacquer for Top Coat

Ingredients	w/w
Elvacite® 2614	23.0
Nitro-cellulose (¹ / ₂)	5.2
Butyl benzyl phthalate (²)	5.0
Titanium Dioxide	6.8
Methyl Ethyl Ketone*	10.0
Toluene*	25.0
Xylene*	25.0
Acrylic Base Coat	w/w
Elvacite® 2016	12.5
VMCH (¹)	5.0
Bentone BS-1C (²)	0.5
Titanium Dioxide	22.0
Dioctyl Phthalate	4.0
Methyl Ethyl Ketone*	22.0
EGME*	8.0
Xylene*	26.0

(EGME: Ethylene Glycol Monoether)

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- (1) VMCH is carboxyl-modified vinyl chloride/vinyl acetate copolymer from Union Carbide
- (2) Bentone is a thickening agent from Rheox
- (3) Dioctyl phthalate is a plasticiser
- * Solvent blend

(c) Processing Procedure

- (1) White Acrylic Lacquer for Top Coat
 - (i) Prepare a 40% solution of Elvacite® 2614 in the solvent blend and a 40% solution of nitro-cellulose in the solvent blend. This can be made using a high-speed disperser. Combine these 2 solutions and mix well.
 - (ii) Add in butyl benzyl phthalate and blend well.
 - (iii) Add in titanium dioxide at slow stirrer speed until fully incorporated and then mix at higher speed until a good dispersion is obtained.
 - (iv) Let down with rest of solvent and mix well.
- (2) Acrylic Base Coat

As above; resins used will be Elvacite® 2016 and VMCH instead of Elvacite® 2614 and nitro-cellulose.

(d) Application Guidelines

Before spraying, dilute with thinner to spray viscosity (about 25 seconds, Ford Cup #4). Alternatively, apply with a brush.

Substrate Preparation

The surface must be thoroughly cleaned with degreasing agent (e.g. solvent) before coating application. This is to ensure good adhesion of the coating. Alternatively, apply a layer of primer coat before application of this coating.

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Thinner

Dilute with xylene before application.

During hot weather such as summertime, add about 10-20% of high boiler such as Solvesso 100

NOTE:

The above formulations are suggested as a guide : they have not been optimised nor thoroughly tested.

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