

NACURE[®] XC-311

Catalysts for Lower Temperature Cure of Coil and Automotive OEM Coatings



NACURE XC-311 is a novel catalyst that can reduce the cure temperature of solventborne amino crosslinked coatings. Advantages include:

- Reduces coil coating cure temperature to 170-200°C PMT for 25 seconds
- Reduces automotive OEM cure temperature to 110°C (20 minute cure)
- Provides excellent humidity resistance
- Excellent overbake and UV resistance
- Good adhesion and intercoat adhesion properties

NACURE XC-311 Typical Properties

Appearance	Clear, light amber liquid
% Active	50
Volatile	2-Butanol/ 2-Butoxyethanol

NACURE XC-311 Typical Use Levels

1.0 - 2.0% as supplied on total resin solids

Applications



Coil/Precoated
Metal

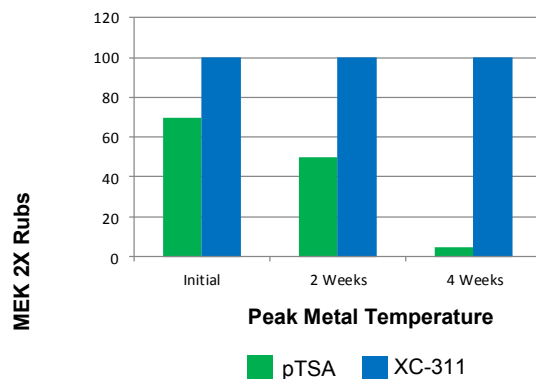
Appliance
Enamels

OEM Topcoats

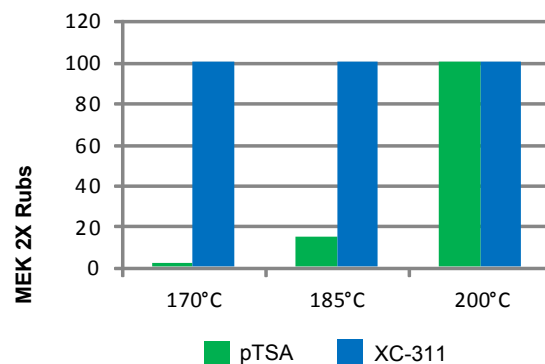
Cure Response

Coil Cure response of NACURE XC-311 in a polyester/HMMM coil enamel shows better low temperature reactivity at 185°C and 170°C peak metal temperature and a 25 second bake schedule. Additionally, NACURE XC-311 (1.0% as supplied on TRS) maintains its catalytic performance after extended storage of the pigmented coating. Using 1% of a blocked pTSA catalyst as supplied on TRS shows poor cure response below 200°C and loss in cure response during storage.

Cure Studies with White Model Coil Formulation 25 Second PMT Cure Time



Catalyst/Pigment Interaction 4 Week Cure Stability @ 50°C 25 second 200°C PMT

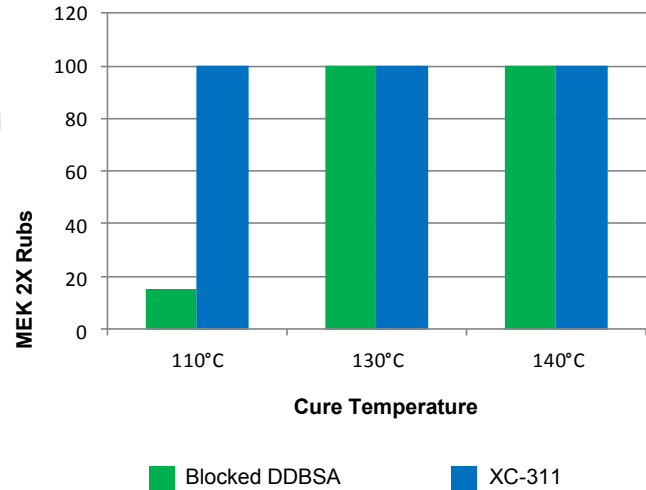


Automotive OEM

NACURE XC-311 can also be used in OEM topcoats to provide lower temperature cure performance and good weathering resistance.

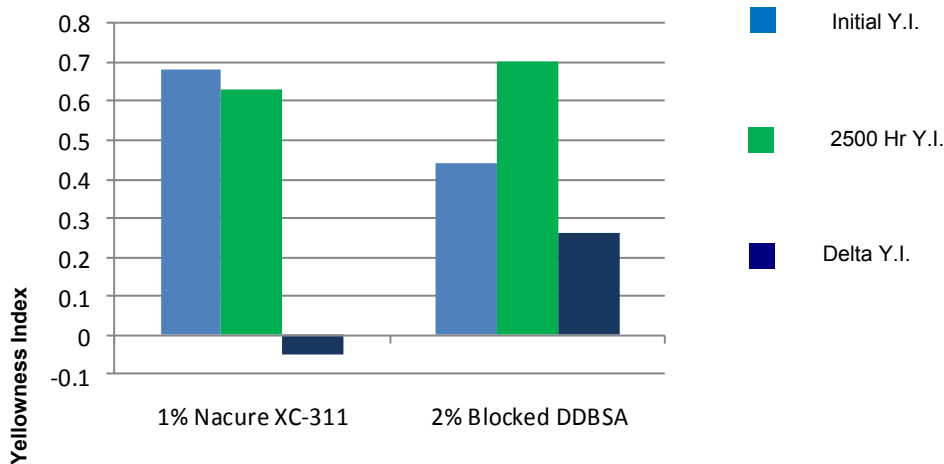
A high solids acrylic topcoat formulated with a fully methylated/butylated amino crosslinking resin shows good cure response using NACURE XC-311 on bakes as low as 110°C (232°F) for 20 minutes. Use of a blocked dodecylbenzene sulfonic acid catalyst commonly used in clearcoat applications shows a slower cure response than NACURE XC-311 at bake temperatures below 130°C (266°F). A use level of 2% blocked DDBSA was not sufficient at boosting cure in comparison to only 1% of NACURE XC-311 as supplied on total resin solids.

Cure Studies with Model OEM Formulation 20 Minute Cure



NACURE XC-311 has good UV durability required in topcoat and clearcoat applications. The graph below shows the improvements in yellow index values measured after 2,500 hours of QUV A exposure testing.

UV Stability QUV Yellow Index, 2500 Hours



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