EASTMAN

Improved appearance and processability for industrial wood coatings

Eastman **SOLUS**™
performance additives

Wood coating formulators are looking for additives to improve the gloss, smoothness, clarity and durability of topcoats, sealers, primers and stains for furniture, flooring and joinery. Eastman Solus™ performance additives can enable high-solids industrial wood coatings with excellent appearance and performance, while reducing labor-intensive processing.

Working with wood substrates requires balancing beauty and haptics with durability, applicator processing, and volatile organic compound (VOC) usage.

Key attributes of Eastman Solus™

For formulators, Solus™ lowers solvent demand while still providing the high-performance attributes of cellulose esters, including:

- Fast dry time and hardness development
- Wide window of polishability
- Excellent chemical resistance
- Improved rheology, giving improved gloss and appearance
- Nonyellowing
- Improved compatibility with alkyd resins

Effect on yellowing

Due to the common problem of yellowing due to nitrocellulose (NC), customers have expressed a need for a modifying resin that is compatible with short-oil alkyd resins (often seen in 2K alkyd-urethane wood coating systems) as an alternative to NC. In Table 1, Solus™ shows compatibility with a wide range of alkyd resins and meets the need of reduced yellowing.

Table 1. Compatibility of Eastman Solus™ for industrial wood coatings, assessed in solution and as applied to glass panels

Alkyd	Addition of Eastman Solus™ to alkyd					
	10%		25%		50%	
	Solution	Glass	Solution	Glass	Solution	Glass
Uralac™ AY701	C	C	C	VSI	VSI	I
Uralac™ AY703	VSI	C	VSI	VSI	VSI	SI
Uralac™ AY713	C	C	C	C	C	C
Uralac™ AN620	C	C	C	C	C	C
Novalkyd™ S1022-60X	C	C	C	C	C	C
Novalkyd™ S2009-75X	C	C	C	C	C	C
Novalkyd™ S1352-60X	C	C	C	C	C	C

Uralac resins from DSM
Novalkyd resins from Novaresine

Legend:
C = compatible, VSI = very slightly incompatible, SI = slightly incompatible, I = incompatible

Formulations using Solus™ were applied onto a metal panel, and the change in yellowness index (YID) with QUV-B exposure was measured over seven days.

The results shown in Figure 1 and in Figure 2 indicate that, although both the alkyd resin and the aromatic isocyanate yellow, the relative rate of yellowing of the NC resin has a less desirable effect. Starting point formulations are available on request.

Figure 1. Yellowing as seen via QUV-B resistance

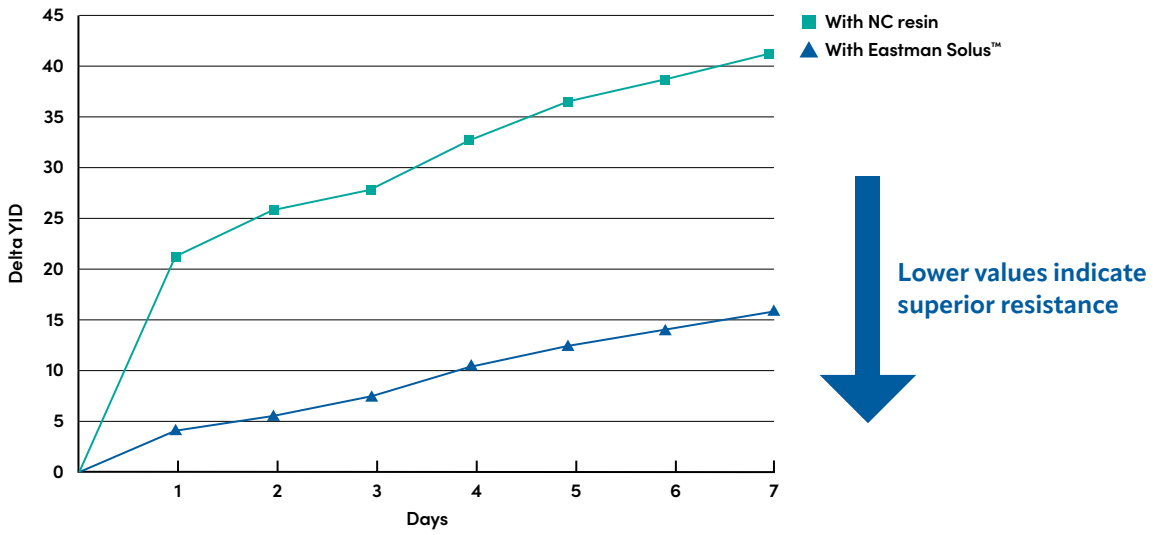


Figure 2. **Appearance on wood substrate (after 32 hr)**

With Eastman Solus™ | With NC resin

Effect on polishability and hardness development

Very high-gloss finishes on wood substrates are generally achieved by applying a chemically resistant 2K coating system, followed by labor- and time-intensive polishing processes. The polishing steps can be numerous and contribute significantly to the cost of the furniture. Figures 3 and 4 show the positive effect Eastman Solus™ has in reducing process steps, which will ultimately reduce cost. Solus™ clearly reduces the number of polishing steps compared to the formulation without it. Solus™ can be used in formulations to successfully comply with the VOC limits required by EU Directive 2004/42/EC, Annex II subcategory (j).

Figure 3. **20° gloss measurements**

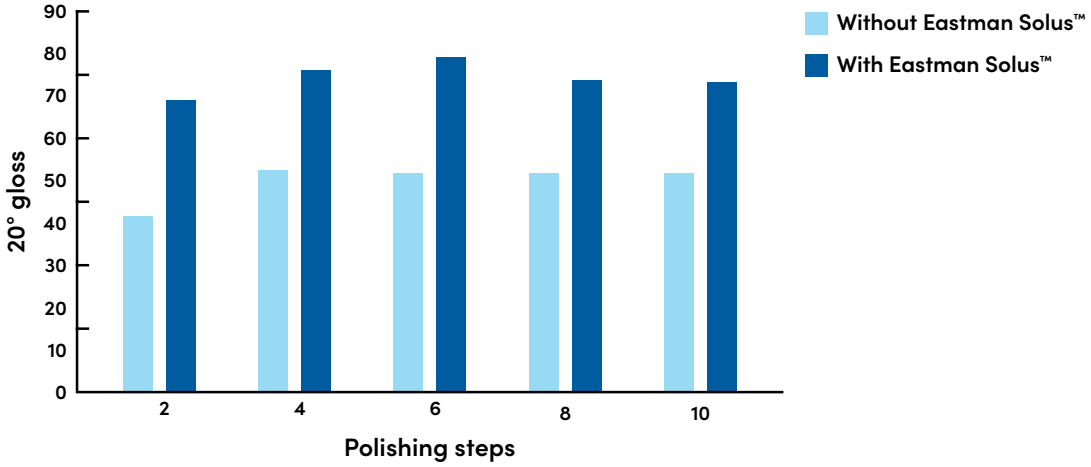
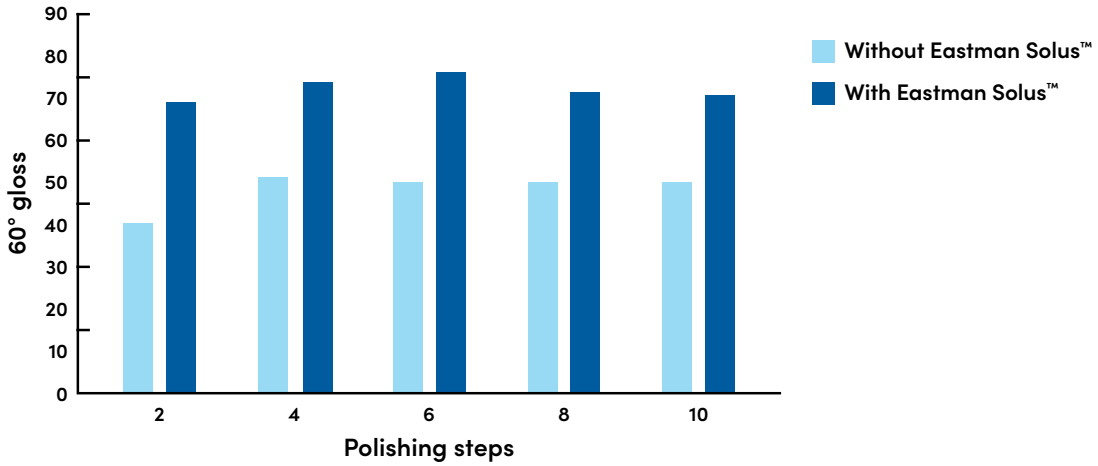
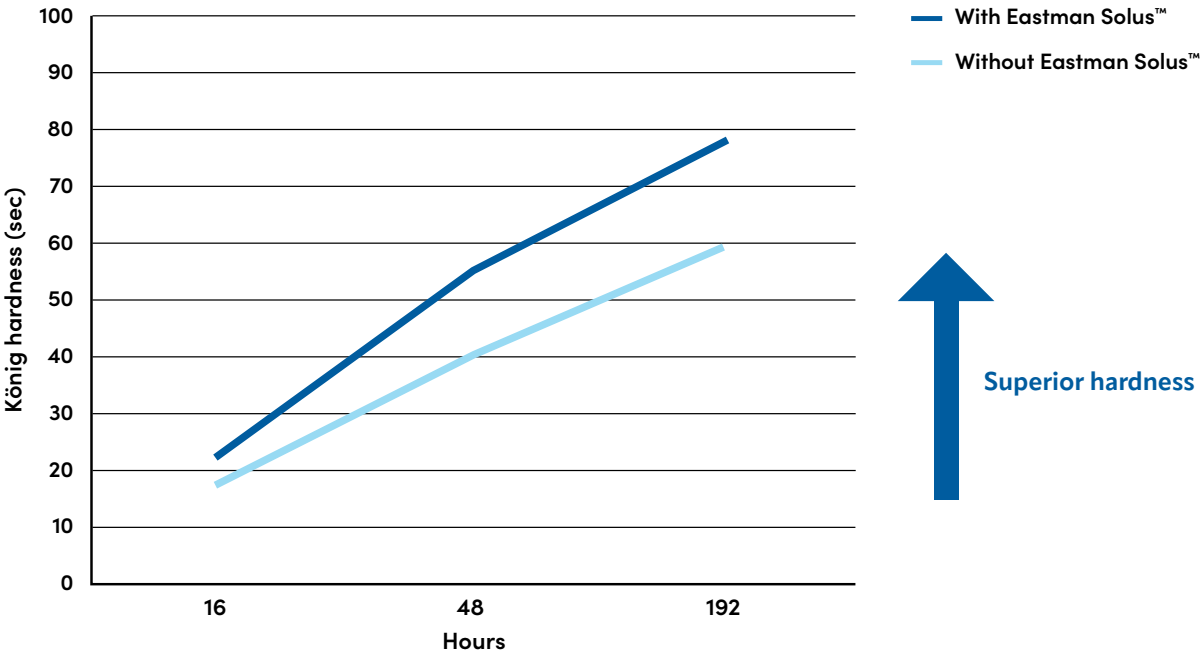


Figure 4. 60° gloss measurements



As shown in Figure 5, the hardness development was assessed daily for seven days and clearly shows the positive effect of Eastman Solus™ on film hardness.

Figure 5. 60° gloss measurements



Conclusion

Eastman Solus™ performance additive can provide the formulator a route to solve the performance deficiencies of current high-solids systems. In particular, Solus™ offers advantages in flow and leveling, hardness development, nonyellowing and improved polishability.

For nearly a century, Eastman has been the world leader in manufacturing specialty cellulose esters and has developed deep application expertise. Eastman Solus™ can help formulators achieve high performance, enduring beauty, sustainability and regulatory compliance. Because of the breadth of possibilities, this naturally derived cellulosic is ideal for many applications. It offers the consistency and quality that formulators require and brand owners rely on. Eastman Solus™ — the natural choice.

EASTMAN

Eastman Corporate Headquarters
P.O. Box 431
Kingsport, TN 37662-5280 U.S.A.

U.S.A. and Canada, 800-EASTMAN (800-327-8626)
Other locations, +(1) 423-229-2000

eastman.com/locations

COAT-IND-17494 2/24