

**SUFFERING
FROM POOR
UV PERFORMANCE?**



**TAKE BXI-100
TO RELIEVE
THESE
PROBLEMS**

- ✓ *Surface tackiness*
- ✓ *Shadow areas*
- ✓ *Deep sections*
- ✓ *High pigment levels*

Bomar introduces the Dual Cure System

FIGURE 1 *Standard UV curing of thin, clear liquid film.*

UV radiation completely penetrates the liquid film of monomers, oligomers and photoinitiators. Curing is almost instantaneous. However, surface tackiness can result from inhibition of the photopolymerization by dissolved oxygen at the air-liquid interface.

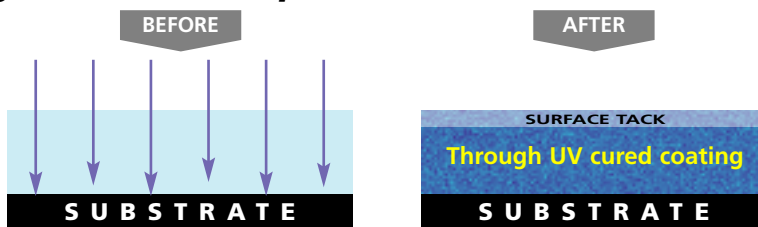


FIGURE 2 *Standard UV curing of thick, clear liquid film.*

In thick films, or heavily pigmented films, UV radiation does not penetrate the film completely resulting in partial curing and unsatisfactory properties.

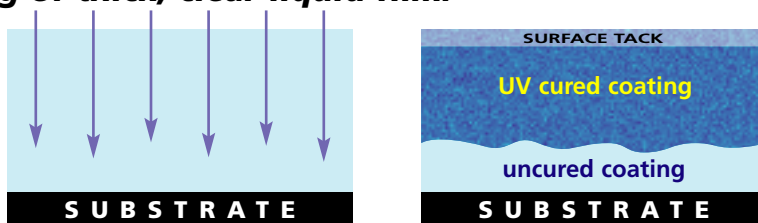


FIGURE 3 *Dual curing of thick, clear liquid films, UV + BXI-100.*

For complete curing of thick films, blend BXI-100 into formulation containing photoinitiators. BXI-100 initiates free radical cure of film where UV light does not penetrate. BXI-100 also scavenges oxygen at the film/air interface which promotes photopolymerization and eliminates surface tack.

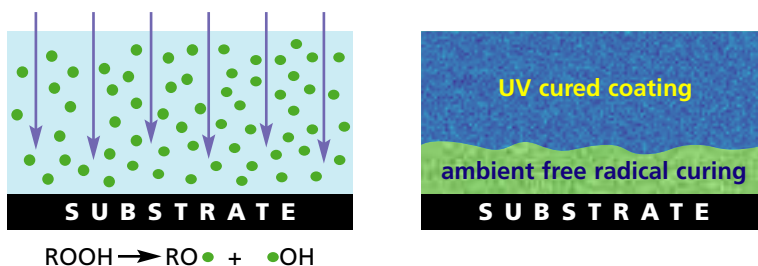


FIGURE 4 *Standard UV curing of substrates with shadow area.*

Three dimensional details on the part being cured can create recesses and/or shadow areas where the intensity of the UV radiation is greatly reduced. Under these circumstances a full cure may not be achieved in these problem areas.

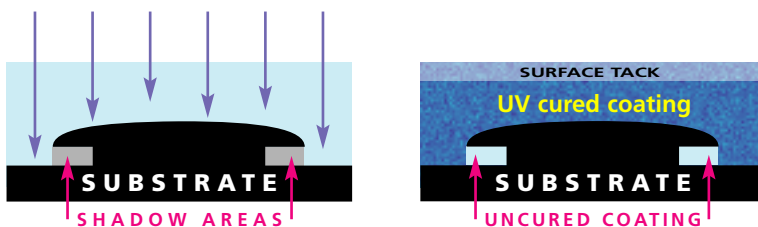
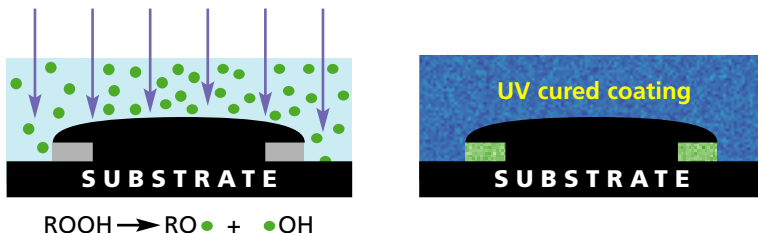


FIGURE 5 *Dual curing of substrates with shadow area, UV + BXI-100.*

When BXI-100 is added to the UV cure formulation, it reacts with oxygen to create free radicals that will cure the monomer-oligomer system in shadow areas where UV radiation is not effective.



DUAL CURE SYSTEM



■ What is BXI-100?

This is a polyallyl glycidyl ether oligomer that promotes free radical curing of coatings, inks and sealants. When the BXI-100 oligomer is combined with a UV cure formulation, it provides a Dual Cure mechanism by producing free radicals that can crosslink and cure films where UV light doesn't penetrate.

■ When is BXI-100 needed?

Under ideal conditions, UV radiation produces instantaneous and complete cure of coatings. In actual practice, there are a number of common problems with UV cure that detract from the final performance of the cured material. BXI-100 is the answer for the following UV cure problems:

- **Surface tack**
- **Deep sections**
- **High pigment levels**
- **Shadow areas**

■ How does it work?

Surface Cure: Dissolved oxygen in a UV cure coating inhibits the photoinitiator often resulting in less than complete cure at the air/film interface. BXI-100 scavenges the oxygen so that the photoinitiator can do its job.

Shadow Cure: When added to a standard UV curing formulation, BXI-100 scavenges oxygen which it converts into hydroperoxides that decompose at ambient temperatures into free radicals. These free radicals cure the coating where UV light does not penetrate.

UV cure formulations incorporating BXI-100 can be produced as either one or two package systems. The two package approach is superior for storage stability. The amount of BXI-100 needed in a formulation varies from 0.5 to 15%.

■ Cure speed

The ambient temperature curing initiated by BXI-100 is slower than UV curing and may require 24 hours or more for a complete cure. Cure speed can be accelerated by the use of heat or the addition of metal drying agents.

■ Advantages of BXI-100

Until now, formulators have relied on photoinitiator blends to optimize UV cure in highly pigmented systems. Phosphine oxide photoinitiators are among the most promising. The new Bomar BXI-100 has the following advantages over photoinitiator blends:

- **Lower cost**
- **Improved film properties**
- **Shadow cure capabilities**