



TECHNICAL C&A INFORMATION

FAQ: Benzophenone v Benzophenone-Free v1.1

With the addition of Benzophenone to the California Proposition 65 list of hazardous chemicals, awareness of the chemical composition of UV coating products has received more focus across the spectrum of the Graphic Arts Market. The listing of Benzophenone on the California Proposition 65 list does not ban the use of this material, as many substances that are commonly used are also listed on the Proposition 65 list. A substance that is listed does need to be properly labeled and the determination of use then lies on the end-user or consumer of the product.

Benzophenone is a low molecular chemical photo-initiator, CAS Number 119-61-9, and is widely used in UV coating formulations throughout the printing and packaging industries. Benzophenone-free coating products are not new to the industry and have been used for many years in various markets. Benzophenone-free UV coatings have been used for food packaging, plastic water bottles, cosmetics and pharma-care products to minimize the initiator migration into the product. Both types of coating product formulations have been used along with blends of Benzophenone and non-Benzophenone initiators.

General Q&A for Benzophenone-Free Coatings

Question	Answer
Do I need to run a Benzophenone-free coating differently than a coating that contains Benzophenone?	No. Benzophenone-free coating will run on the same equipment that Benzophenone coating is run on.
Do I need to run Benzophenone-free coating at a slower press-speed or with higher UV intensity than a coating that contains Benzophenone?	No. Benzophenone-free coating should cure at the same press-speed and UV exposure as Benzophenone coating.
Will a Benzophenone-free coating have less gloss than a coating that contains Benzophenone?	No. Benzophenone-free coating will exhibit the same gloss level as a Benzophenone coating.
If I see a difference in cure or gloss, what can I do to match previous jobs produced with a Benzophenone coating?	Identical to coating containing Benzophenone, cure dose or the amount of UV lamp power and press-speed/dwell can be changed to achieve the desired results.
Are their odor differences between Benzophenone-free coating and a coating that contains Benzophenone?	Yes. All UV coatings exhibit some degree of odor. Benzophenone coating, due to the low molecular weight properties of the substance, will have a different odor than a Benzophenone-free coating. Odor is a highly subjective sense and will have different results from person to person in terms of perceived results. Generally, Benzophenone-free coating will exhibit less odor when properly cured compared to a Benzophenone coating.
Are all Benzophenone-free coatings considered low-odor coatings?	Generally, Benzophenone-free coatings are considered both low-odor and low-yellowing, but this is dependent on the individual formulation being used along with qualification testing being performed in the actual conditions of use. Consult your C&A Technical Representative for proper product selection.

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General Q&A for Benzophenone-Free Coatings - *continued*

Question	Answer
Does use of a Benzophenone-free coating automatically qualify to be a low-migration coating?	No. Low-migration coatings require avoiding the use of low molecular weight materials that may migrate into products. In addition to the initiator, depending on the application, other alternative materials may be necessary.
Is Benzophenone a better initiator than non-Benzophenone initiator?	Benzophenone is an efficient and cost-effective initiator. The formulation of a coating without Benzophenone may require several different non-Benzophenone initiators to match the same coating performance. However, with proper formulation, the difference in performance between Benzophenone and Benzophenone-free coatings should be transparent.
Are Benzophenone-free coating products more expensive than coatings that contain Benzophenone?	Yes. Typically Benzophenone-free coating products cost 15-20% more than products formulated with Benzophenone due to the increased material costs.

For additional information, we recommend consulting your Coatings & Adhesives Corporation Technical Representative for specific product information.