

# ASKOFEN™ R 9600



## FORMALDEHYDE-REDUCED CROSSLINKING RESINS FOR THE FORMULATION OF CAN COATINGS

Butylated phenolic resins of the type ASKOFEN™ R are modified phenolic resins which, due to their pronounced reactivity and high chemical resistance, are particularly suitable as crosslinker resins in combination with epoxy or polyester resins for the formulation of can coatings. The properties of can coatings, such as excellent adhesion, good chemical resistance and sterilization resistance with optimum flexibility, are optimized by the use of these selected crosslinker resins. Although the proportion of crosslinker resins in the coating formulation is comparatively low, phenolic resins of the ASKOFEN™ R type represent a crucial building block for the formulation of a high-quality can-coating.

Since January 1, 2016, formaldehyde has been officially classified by the European Union as a carcinogen (category 1B). Previously, formaldehyde was only considered a suspected carcinogen. In the case of formaldehyde, an effect threshold (MAK value) has been defined, which, if adhered to, is not expected to make a significant contribution to the cancer risk for humans. Since phenolic resins contain small amounts of residual monomers, care should be taken when formulating coatings based on phenolic resins to ensure that the corresponding formaldehyde content is below the effect threshold.

	ASKOFEN™ R9500	ASKOFEN™ R9600
Solid ( wt% )	40-42	46-50
Viscosity@25°C ( mPas )	55-90	50-90
Color number	Max. 6	Max. 6
Solvent	n-Butanol	n-Butanol
Free formaldehyde content ( wt% )	<2.0	<0.1

Table 1: Specifications of ASKOFEN™ R9500 and ASKOFEN™ R9600 in direct comparison.

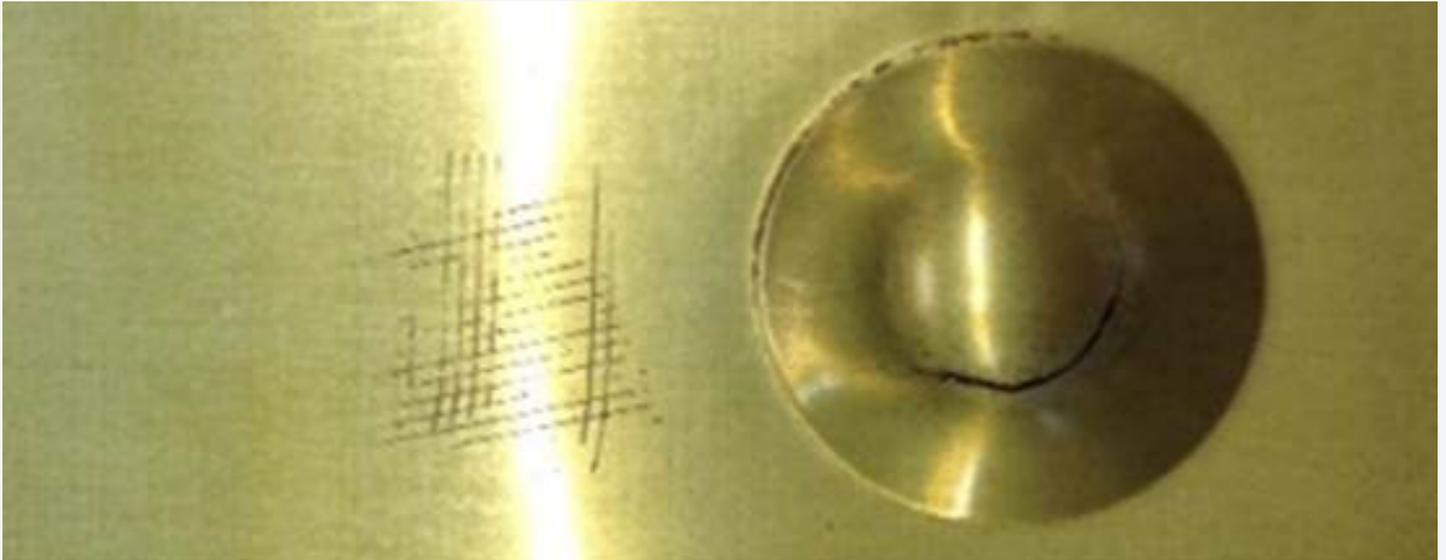


Figure 1: A can coating formulated on the basis of ASKOFEN™ R 9600 and polyester resin (Table 1) after curing at 180 °C for 20 minutes and subsequent sterilization in deionized water at 128 °C for one hour. The Erichsen cupping (7 mm) was performed before sterilization, the cross-cut (Gt 0) afterwards.

With ASKOFEN™ R 9600, ASK Chemicals offers a crosslinker resin that has a significantly reduced formaldehyde content of less than 0.1%, allowing coatings to be formulated with a formaldehyde content of less than 0.1% (Table 1).

The properties of embossed coatings formulated with ASKOFEN™ R 9600 differ only slightly from other commercially available phenolic resin coatings with higher formaldehyde content. ASKOFEN™ R 9600 can be easily formulated with both epoxy and polyester resins and, after application and drying, provides a golden yellow coating with good properties in terms of flexibility, chemical resistance, sterilization resistance and adhesion. A guide formulation is given in Table 2.

Component	Proportion (wt% )
Polyester resin	48,31
Butyl diglycol acetate	15,00
Askofen R 9600	20,00
Cymel 1156	2,00
Solvent Naphtha	14,49
Nacure 5076	0,20

Table 2: Model formulation based on ASKOFEN™ R 9600 and a model polyester resin.

#### ADVANTAGES AT A GLANCE

- Free formaldehyde content <0.1%
- Compatible with epoxy as well as polyester resins
- Excellent chemical and sterilization resistance
- Improved adhesion to metal
- Balanced flexibility behavior