

Phenolic Resins for Industrial Coatings



PHENOLIC RESINS

VaraFen

Phenolic-based crosslinking resins used for packaging, industrial and automotive metal coatings plus electronics, tires, textiles and other specialty end uses.

RESINS FOR PAINTS AND COATINGS

Excellent **performance**,
first-class **application**,
and **highest quality**
Tailor-made for you



As a specialist in tailored phenolic resins, **VARENA CHEMICAL** and **POLYOLS & POLYMERS** offer a wide range of solutions for this area.

In addition to excellent performance, highly efficient binding agents from VARENA CHEMICAL also feature top-class application properties. Phenolic resins from VARENA CHEMICAL are well-known as VARAFEN resins.

VaraFen GP PHENOLIC RESINS

Baking enamels – sole binder

VaraFen GR; pure heat-reactive phenolic resins can be used as the sole polymer in the formulation of interior drum and pail linings. The resins provide the highest level of chemical resistance and produce hard, brittle films with good adhesion on metal. Because they lack in flexibility, they are used on rigid metal substrates that do not require impact resistance. Coatings can be modified with, e.g., polyvinyl butyral to enable them to withstand shocks or rough handling and yet maintain their chemical resistance. Optimal baking conditions are in the range of 15min. at 210°C.

Benefits

- Highest chemical resistance
- Good adhesion
- Conforms to US FDA, 21 CFR § 175.300 and EU 10/2011, Annex 1

Application areas:

Metal primer, interior drum and pail linings, rail and tank car linings, pipe coatings.

Product	Solids [%]	Viscosity [mPa.s]	Color
GR 5600	52 - 56 in ethanol	700 – 1.100	Gardner color; max. 7
GR 5610	49 – 52 in butanol	700 – 1.500	Gardner color; max. 7
GR 5620	49 – 56 in butanol	700 – 1.500	Gardner color; max. 7

VaraFen RS

Can Coatings

High molecular butylated phenolic resins are used as crosslinkers for epoxy and polyester systems.

VaraFen RS offer good compatibility with different resin systems. According to the formulation, the produced can coatings provide high elasticity and excellent chemical resistance.

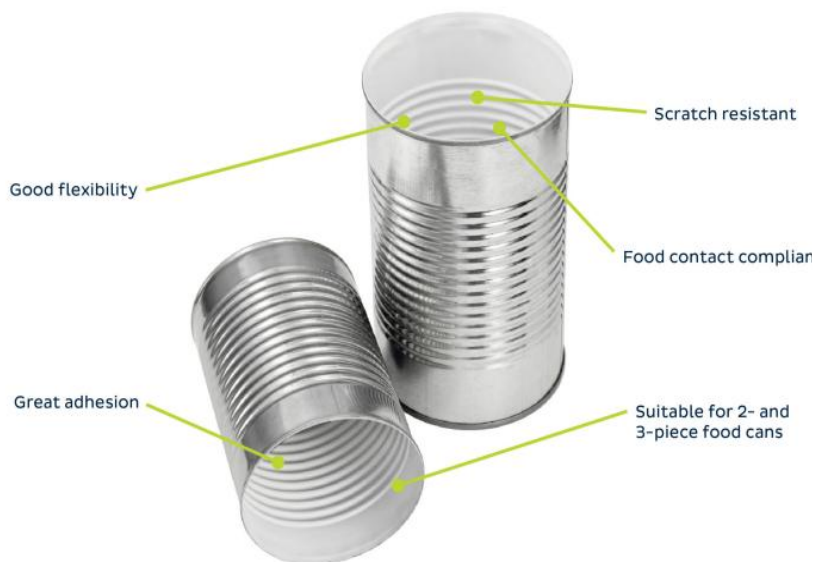
Benefits

- Good compatibility
- Good chemical resistance
- Conforms to US FDA, 21 CFR § 175.300 and EU 10/2011, Annex 1

Application areas:

Can Coatings





FORMALDEHYDE-REDUCED CROSSLINKING RESINS FOR THE FORMULATION OF CAN COATINGS

Butylated phenolic resins of the type VaraFen RS 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 VaraFen RS type represent a crucial building block for the formulation of a high-quality can-coating.

	VARAFEN RS 500	VARAFEN RS 600
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

With VaraFen RS 600, VARENA CHEMICAL 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).

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

The properties of embossed coatings formulated with VaraFen RS 600 differ only slightly from other commercially available phenolic resin coatings with higher formaldehyde content. VaraFen RS 600 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%]
VaraPol CC	48,31
Butyl diglycol acetate	15,00
VaraFen RS 600	20,00
Cymel 1156 or KOMELOL MB-92	2,00
Solvent Naphtha	14,49
Nacure 5076	0,20

Table 2



VaraFen; PHENOL-FORMALDEHYD

Product	Delivery Form [%]	Viscosity [mPa.s/23°C]	Description
PR 312	80 in B	80 - 150	Curable phenolic resin. Used to formulate interior can coating systems.
LB 319	42 in S2B	1500 - 2100	Precondensate of epoxy resin and partly butylated phenolic resin. Used in protective coatings, interior coatings for containers, boils, tube coating and injection spraying (tube lining). Offers chemical resistance, hardness and adhesion to steel, tinplate and aluminium.
PP 332	50 in S2B	1800 - 2500	Saturated polyester resin modified with a phenolic resin. Used in interior lacquers for food cans and crown corks. Offers light color after stoving and deep drawing properties.
FB 209	57 in B	340 - 490	Non plasticized n-butylated phenolic resin. Used in interior can coating (gold varnishes) and general industrial chemical resistance enamels. Offers chemical resistance, hardness and compatibility with epoxy resins.
FB 210	60 in B	500 - 1000	Used in interior can coatings, gold varnishes and chemical resistant coatings. Offers chemical resistance and hardness.
PR 217	55 in B	100 - 200	Used in can and general coatings.

VARENA CHEMICAL CROSSLINKER RESINS

VARENA CHEMICAL is a global company in the intermediates, coating, adhesives, inks and composite and solid surface resins, thermoset compounds, gel-coats and niche specialties and specialty additives for coatings and inks.

VARENA CHEMICAL is known for its superior quality and impressive range of products and with its excellent distribution network it can provide first-class service to customers whatever their market. Customer Service and Technical Service teams are renowned for their customer focus, offering the best service even after products have left manufacturing.

The group strives to keep customers satisfied, assisting them in producing premium quality products every time they use its products.



Product innovation is important for the group's business and it's the reason for which it constantly works with customers to find solutions to problems.

Introducing new or improved products ensures that VARENA CHEMICAL continue not only to deliver what the market wants and needs, but also when it is wanted and needed.



INNOVATIVE TECHNOLOGIES FOR RESINS & ADDITIVES
DR. IRANKHAHI CHEMICAL COMPANY

PRODUCTS WITH PERSPECTIVE