PHENODUR® PR 612/80B LF

Technical Datasheet

PRELIMINARY PRODUCT INFORMATION

DEVELOPMENT PRODUCT

This product is serving for trial purposes only. Deviations which might occur during transfer into manufacturing in a commercial scale are possible and do not constitute any material defect.

TYPE

Curable phenolic resin

FORM OF DELIVERY (f.o.d.)

80% in n-butanol (80B)

USES

Heat-curable phenolic/epoxide resin combinations, high-adhesion, chemically resistant protective coatings for apparatus, vessels and pipelines. PHENODUR PR 612 LF also for wire insulation varnishes. Usable in epoxy-free (= BADGE-free & BPA-NI) formulas with polyester resins. **PHENODUR PR 612 LF intentionally does contain neither Bisphenol A nor Bisphenol F and has a very low content of free formaldehyde of < 0.1%.**

TENTATIVE PRODUCT DATA

Determined per batch:

Dynamic Viscosity (Ubbelohde)		
DIN EN ISO 53177 dynamic viscosity 60% B (23°C)	[mPa.s]	80 - 125
Non-Volatile Matter DIN EN ISO 3251		
non-volatile matter analogue DIN EN ISO 3251 (1 h; 135°C; 2 g; B)	[%]	78 - 82
Iodine Colour Number DIN 6162		
iodine color number		<= 30

PROPERTIES AND USES

PHENODUR PR 612 LF is preferably used as curing resin in combination with high molecular weight epoxide resins to formulate interior can coating systems. PHENODUR PR 612 LF is additionally used in electro-insulation varnishes and magnetic wire enamels and can be used to formulate BPA-NI coatings as well.

Can coating
After being stoved, combinations of 30 - 45% PHENODUR PR 612 LF and of 70 - 55% of high molecular weight epoxy resin of type #7 and type #9 (based on solids in each case) yield highly flexible films with good adhesion and chemical resistance for the interior coating of cans, tubes and other packaging containers used in the food and luxury commodity industries. PHENODUR PR 612 LF can also be combined with food contact compliant polyester resins of our DUROFTAL® product family to formulate BPA-NI coatings. The addition of acid catalysts, e. g. up to 5% of CYCAT® XK 406 N (based on total solid content) increases the reactivity of the lacquers and the adhesion (especially on aluminum) of the stoved films, as well as their hardness and resistance to sulphur compounds. The gold coloring can be intensified by adding 5 - 10% PHENODUR PR 308 or PHENODUR PR 309 (based on total solid content).

Chemically resistant protective coatings
PHENODUR PR 612 LF can be used as sole binder for relatively brittle, highly resistant pigmented stoving enamels on rigid substrates, e. g. for chemically resistant interior linings for vessels, apparatus and pipelines. Polyvinyl butyral (PVB) grades in additions of only 5 - 25%, improve the film flexibility without impairing the resistance of the protective coatings to chemicals. In the case of multiple-coat paint applications as required for protective coatings of this type, the first coats are not fully cured initially, but only cured completely together with the last coat.

Wire coatings, electro insulation varnishes
PHENODUR PR 612 LF can be used as binder in such coatings, especially in combination with (poly)vinyl formal resin. The mixing ratio between PHENODUR PR 612/80 LF and the (poly)vinyl formal resin is approx. 40:60, the “solvent” mixture contains phenol/cresol and alcohol. Such lacquer can be used as wire coating systems and applied by a multi- layer process and cured between 300 and 350°C.

PROCESSING

Glycol ethers, esters, diacetone alcohol and ketones are suitable solvents/diluents for PHENODUR PR 612 LF. This resin can be pigmented with inert pigments and fillers like titanium dioxide, iron oxide red talk and spars. Pigmented systems are preferably used in acid and alkaline resistant systems. In case of surface defects, more likely with catalyzed systems, the additives ADDITOL® XL 480, MODAFLOW® Resin and MODAFLOW® 2100 act as excellent flow agents and help to improve leveling.

Stoving conditions
Depending on the form of use and required coating thickness, the stoving conditions are between 30 and 10 minutes at 180 - 220°C. The upper temperature limit where overstoving begins to occur and flexibility accordingly starts to decline is 220°C For thin films such as can coatings, conditions of 10-15 min/190 - 200°C are adequate, or 90 s/265°C (shock-drying). Good resistance to chemicals is obtained as from 190°C.

Catalysis
The addition of acidic catalysts increases the reactivity and the film hardness. At the same time, this catalysis improves the adhesion on aluminum and tinplate.

DISTINGUISHING FEATURES

PHENODUR PR 612/80B LF is a modification of PR 612/80B with a reduced free formaldehyde value of < 0.1% vs. < 0.5% for PR 612/80B. The QC-data profile and the technical performance of PR 612/80B LF and PR 612/80B are similar.

STORAGE

At temperatures up to 25°C storage stability packed in original containers amounts to at least 730 days. The expiration date may be extended and COA updated after QC testing of retained samples, only for material in allnex possession.

SAFETY AND HANDLING

Please consult the Safety Data Sheet (SDS) for safety, health, and environmental data available from allnex.

U.S. ENVIRONMENTAL PROTECTION AGENCY RESTRICTIONS AND REQUIREMENTS

The importation, processing or use of this product in the United States of America is subject to a Significant New Use Rule (SNUR) issued by the U.S. Environmental Protection Agency (US EPA). Among other conditions, the SNUR prohibits the predictable or purposeful release of the product to waters of the U.S. from manufacturing, processing or uses and imposes certain notice and recordkeeping requirements. Please see 40 CFR 721.5905 [or 40 CFR 721.5908 as applicable] for further information. This product may also be subject to export notification under TSCA Sec. 12(b).