



Biorenewables and/or waste material as phenol replacement in binders for high pressure laminates

(09 AT 0102 3CIP)



### Abstract

**A leading Austrian manufacturer of high pressure laminates is looking for a phenol replacement from renewable feedstock and/or recycled (waste) material. The result should be a more environmentally friendly product, while reducing costs and saving energy.**

**They are looking for alternative raw materials, a complete production technology or a commercial partner to further develop and exploit this technology.**

### Description

Today, phenol is produced via benzene and cumene from crude oil, which leads to high costs and problems with availability in the near future.

The Austrian company is currently carrying out a project, looking for new impregnation resins for the manufacturing of high pressure laminates.

In standard phenolic resins a maximum part of the phenol (or phenolic resin) shall be replaced by renewable raw materials or waste materials.

A possible replacement of phenol could be:

- ligninbased materials (lignosulphonates, alkalilignin),
- furfurylalcohol and
- natural resins like cashew nut shell liquid, bhilawan nut shell liquid/cardanol, wattle resin, tannins, colophonium, tall oil resins or others.

These replacement products will be tested for their usability in the existing manufacturing process (impregnation and curing) and if necessary, a suitable technology for their use has to be developed.

### Technical Specifications / Specific technical requirements of the request

- The objective is to use the new resins in the existing production process in the existing equipment.
- At the moment the phenolic resins (or suitable other

thermosetting resins) are produced in vessels equipped with stirrer, heating (up to 100°C), reflux and vacuum. They are stored in water solution of more than 50% concentration, but low viscosity (below 100 mPa.s) and are used for impregnation of kraftpaper.

The impregnated paper is dried by hot air stream (air temperature about 150°C) and cut into sheets. Several layers of impregnated sheets are put together and pressed at more than 70 bars and at temperatures up to 150°C (for abt. 20min) resulting in a cured plate.

The products (high pressure laminates) have to comply with the European Norm EN 438 (Decorative high-pressure pressed laminate board (HPI) - hardened resin-based board).

### For further information (including IPR status)

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