

## Enzymatic production of formaldehyd free fiberboards and wood composites

Wood fiberboards do emit formaldehyd, which is toxic and cancerinogenic. The industry is looking for ways to reduce the emission or to find an alternative to current adhesives. At the University of Goettingen an innovative binder-free production of fiberboards based on enzymes and novel mediators has been developed. The Göttinger Enzyme-Mediator-production system is an alternative to substitute current chemical adhesives partially or totally.

### Challenge

Wood fiberboards are valuable materials made from renewable sources. For it wood fibers are mixed with binders, formed and finally pressed. Mainly chemical binders or adhesives are being used, like Urea-Formaldehyde binder (UF-binder). The produced fiberboards do emit formaldehyde, which is toxic and carcinogenic. Therefore the authorities reduced the authorized limits of formaldehyde emission in wood composites, and thus the industry is looking for ways to reduce them or to find an alternative to current adhesives.

### Our Solution

Scientists at the University of Goettingen developed an innovative binder-free production of fiberboards based on enzymes and novel mediators. The enzymatic adhesion of wood fibers is performed very quickly. There is no delay in the fiberboard production compared to current procedures. Thus, the Göttinger Enzyme-Mediator-production system is an alternative to substitute current chemical adhesives partially or totally.

### Advantages

- Substitution of formaldehyde-binders (completely or partially).
- Production of formaldehyde-free wood fiberboards.
- Use of innovative enzyme-mediator-production system.
- Technical norms may be complied.
- Saving of adhesive costs.
- No toxic emissions during production, processing, sale or use of composites and timber products.
- Commodities are easily available and affordable.
- No toxic decomposition products, easy recycling and composting.
- Independence from crude oil price.

### Applications

Easy and fast production of fiberboards and wood composites, particularly MDF (boards, furniture, constructino sector), HDF (laminat), LDF (boards), insulating materials, packaging industry,

moulds and pressed products.  
New market niche possible for ecological products.

## Developmental Status

Successful tested at pilot scale.

## Patent Status

Granted EP patent (EP2315651B1), validated in DE, FR, AT, PL.

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