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Position on the use of propiconazole in wood preservatives

Preliminary note

As part of a commercial study, the IHD prepared a technical opinion on the use of propiconazole in wood preservatives. The objective was to assess the consequences of a possible non-approval of propiconazole as active substance in PT 8 according to the EU Regulation on Biocidal Products No. 528/2012 (BPR).

Technical opinion

Based on the BPR, about twenty substances with fungicide activity are currently approved for the use in wood preservatives (PT 8). Among these, only a few substances are suitable in preservatives applied by surface treatment and effective against wood-destroying and bluestain fungi as necessary for wooden products in use class 3 such as window frames, doors or facade elements (DIN EN 599-1:2014, DIN EN 335:2013). The clear majority of the corresponding wood protection products are based on IPBC in combination with propiconazole.

While propiconazole is approved as active substance in coating preservatives (PT 7) at least until 30.11.2026 (EU 2015/1609), there is a risk that the approval for wood preservatives (PT 8) will not be renewed after 31.03.2021 (EU 2020/27). This is primarily a consequence of the recent classification of propiconazole as reprotox 1B (toxic for reproduction) by the Risk Assessment Committee (RAC) of ECHA, which represents an exclusion criterion for active substance approval according to BPR. In addition, an ongoing evaluation is looking into the possible classification as an endocrine disruptor, which would be further exclusion criterion. However, there is currently the possibility of a further one-year approval if the re-evaluation procedure can't be completed in time.

Currently, there are no alternatives that can be used directly by manufacturers of wooden products for use class 3 without a considerable time and development effort. The manufacturers are forced to identify alternative wood protection strategies and to integrate them into production. This can hardly be realised within the remaining time frame. As far as we know, there are currently three general options for the substitution of propiconazole, which however contain different problems:

(1) The first option is a combination of IPBC with tebuconazole. Such protection products are already on the market and their overall performance is similar to that of IPBC/propiconazole products. In most cases, slightly higher IPBC concentrations are used to compensate the significantly lower efficacy of tebuconazole against blue stain fungi compared to propiconazole. In addition, the stable incorporation of tebuconazole into water-based formulations is more problematic. Nevertheless, a switch to these biocidal products does not appear to be a permanent and economical solution, as tebuconazole will probably receive the same ecotoxicological

assessment as propiconazole due to its chemical similarity. Tebuconazole is still approved for PT 8 until 09/2022 (EU 2019/1951); the renewal process is in progress.

(2) The second option is the use of IPBC without co-biocides. Experience has shown that the effectiveness against wood-destroying fungi as well as blue-stain fungi as required by DIN EN 599-1:2014 can be generally demonstrated in laboratory tests. However, this requires more than 0.9 % IPBC in the product. At the same time, higher product quantities of more than 160 g/m² have to be applied. This could increase the total biocide load, as IPBC/triacole products only require application quantities of 80 g/m² to 120 g/m². In addition, even with higher IPBC concentration and treatment quantities, there is still an insufficient protection against white-rot fungi, which limits the application to softwood. An important disadvantage of IPBC is its low UV resistance, what must be taken into account in the development of impregnation and coating formulations. Especially non-pigmented and low-pigmented coatings may be damaged by IPBC degradation on the surface, resulting in higher maintenance effort or earlier damages of the wooden products. Like other iodine organic compounds, IPBC may also cause discolouration at white or light-coloured coatings, especially at high dosages and with insufficiently optimised formulation compositions. Finally, it should be noted that there are no corresponding products with IPBC as sole active ingredient on the market yet.

(3) The third option is the use of IPBC in combination with penflufen, a new active substance, approved for PT 8 according to BPR since 01/02/2019 (EU 2018/1131). Penflufen is effective against wood-destroying fungi, but not against blue stain fungi such as propiconazole. Thus, the IPBC concentrations required for sufficient protection are probably higher than in IPBC/propiconazole formulations. Currently it is unclear whether a combination of IPBC and penflufen offers an equivalent alternative to IPBC/propiconazole, as no data have been published so far. As far as we know, there are no IPBC/penflufen products in the approval process according to BPR at national or EU level yet.

It should be mentioned that quaternary ammonium compounds, used primarily for vacuum impregnation, are also effective against wood-destroying fungi. However, such impregnations are difficult to apply and corrosion phenomena occur in combination with metal fittings or fasteners. Thus, this biocide group is not considered as an option for wood products in use class 3 which shall be protected by surface treatment.

At present, there are no new environmentally friendly and less toxic biocides in sight which might be available in the near future in the described field of application. This is mainly due to the high costs and long registration processes for BPR approval. According to our own survey of various European manufacturers of active ingredients and wood preservatives, the approval of a new active substance alone currently costs around 1 Mio € and takes 5 to 6 years. To this must be added the time and costs for the development and approval of biocide products, which are estimated to take another 4 to 5 years and more than 0.4 Mio €. This makes it difficult or even impossible for the industry to realise product developments for the wood preservation market and to refinance them within reasonable periods of time. In addition, the manufacturers of final wood products need a development period of about 1 to 2 years to integrate new biocidal products into their coating formulations, to adopt process flows and to ensure efficacy and quality of the products. This outlined timeline results in a serious problem for the producers of wood products: When a new active substance or biocidal product is finally introduced into production, the remaining approval periods for active substances and biocidal products are very short or even already expired (figure 1). Thus, wood product manufacturers have no planning reliability for product development and marketing.

Regarding the necessary replacement of propiconazole, the present situation seems to be critical for the continuation of the production of coated wood products. On the one hand, there is a lack of effective propiconazole substitutes in the next years, on the other hand, new protected wood products cannot be developed and marketed within the emerging time frames.

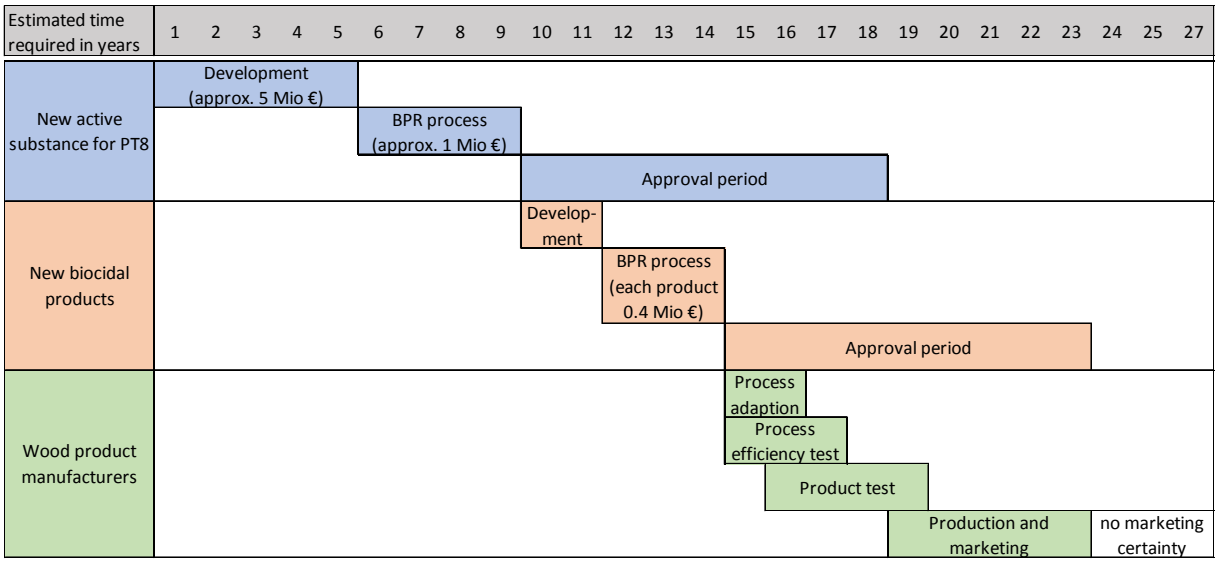

Figure 1: Timelines for the introduction of new biocidal products into the market regarding the EU Biocides Directive

Generally, the successive exclusion of active substances since the start of biocide regulation in 1998 due to the protection of evironment and health poses major challenges for material protection, including wood preservation. It must be avoided that the properties of wood products deteriorate due to insufficient protective measures. There is a risk that wood as a sustainable building material will be replaced by other non-sustainable or less sustainable materials, such as plastic, metal (steel, aluminium) or concrete, but also wood plastic composites (WPC) and bamboo composites with high proportions of synthetic binders. Maintaining and expanding the use of the sustainable native material wood in the construction sector is an important contribution to achieving the goals defined by the EU within the framework of the bio-economy strategy to improve climate protection, value creation and resource efficiency (European Commission 2018).

Conclusion

The predictable non-approval of propiconazole as an active substance in wood preservatives next year poses major challenges for manufacturers of wood products protected by surface treatment. Tebuconacole as an acceptable replacement is also at risk of non-approval due to its chemical similarity. Alternative equivalent substances are currently not available. The development and approval of new active substances as well as new wood preservatives require high costs and time periods that hinder the amortization of corresponding investments in the wood preservation market. At present, there is a high probability that alternatives are not equivalent or will not be available in time, thus endangering both the continuation of production and the quality of the wood products. In the mid and long term, this could lead to a reduction in the use of wood and its substitution by less sustainable building materials.

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References

DIN EN 599-1:2014. Durability of wood and wood-based products - Efficacy of preventive wood preservatives as determined by biological tests - Part 1: Specification according to use class; German version.

DIN EN 335:2013. Durability of wood and wood-based products - Use classes: definitions, application to solid wood and wood-based products; German version.

EU 2015/1609: Commission implementing regulation of 24 September 2015 approving propiconazole as an existing active substance for use in biocidal products for product-type 7:L 249/17–L 249/19.

EU 2018/1131: Commission implementing regulation of 13 August 2018 concerning the authorisation of penflufen as active substance for use in biocidal products of product type 8:L 205/12 - L 205/14.

EU 2019/1951: Commission implementing decision of 25 November 2019 postponing the expiry date of approval of tebuconazole for use in biocidal products of product-type 8:L 304/21–L 304/22.

EU 2020/27: Commission implementing decision of 13 January 2020 postponing the expiry date of approval of propiconazole for use in biocidal products of product-type 8:L 8/39–L 8/40.

EU Regulation No 528/2012: Regulation of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products.

European Commission (2018) A sustainable bioeconomy for Europe: Strengthening the connection between economy, society and the environment.