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Study Report

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Betreff **Study Report**

Laminate flooring compares very well!
The Eco-Efficiency of floor coverings is self-evident

Last year, the Eco-Efficiency center of BASF Aktiengesellschaft worked out an Eco-Efficiency study of various types of floor coverings. The results of this study were presented by the author, Dr. Peter Saling, Chemist and Analyst at the BASF Eco-Efficiency Center in Ludwigshafen (Germany), at the Annual Press Conference of the EPLF within Domotex 2005. The interesting results show that laminate flooring presents a noteworthy ecological profile. It must be noted that the chosen definition of "Eco-Efficiency" includes a combination of both ecological and economic factors. Selected areas of consideration being energy balance, consumption of resources; greenhouse gas potential and recycling effectiveness. Other types of flooring studied, in addition to laminate flooring, were: parquet, PVC, carpet, ceramic and marble flooring.

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The EPLF European Producers of Laminate Flooring established a co-operation with BASF for the study, in order to generate detailed information relating to future development of the product and to extract key ecological features. There was a wish to look beyond the current situation. Where do the various floor coverings stand in relation to measures of Eco-Efficiency? How does laminate flooring perform in comparison? BASF was selected to undertake the work because the company has three centres around the world concentrating on Eco-Efficiency across different fields of industry and has developed a high level of competence in these matters. BASF operates worldwide with in-depth knowledge of many industries. It cooperates closely with governmental departments, NGO's (Non Governmental Organizations), The UN, and the GTZ (German body for technical cooperation). The methods used by BASF in analyzing Eco-Efficiency are TÜV approved.

Input to the study comprised written reports of interviews with laminate flooring manufacturers and their suppliers, published data, Ecological profiles database information, e.g. from the German Department of the Environment, published ecological information on individual types of flooring, data from the 'Boustead' economic balance software and BASF internal data. A keynote of the research is the assumed product life of 15 years for laminate flooring, 30 years for parquet, 10 years for carpet, 15 years for PVC, 30 years for marble and 40 years for ceramic flooring.

It should be established in advance, that the different types of flooring display varying profiles of their respective eco-efficienciesand eco-efficiency is not determined by just one factor, but many. The final decision to buy will be determined by the particular preferences of indiviual purchasers. This only goes to show that eco-efficiency can play a unique role: beyond the plain subjective consumer preferences, and largely independent of these, it is important for an

industry with an ecological awareness to optimise the eco-efficiency of their products This study will prodide some tips in this direction.

Energy Balance

The energy balance of the products is one of the most important parameters against which the Eco-Efficiency of flooring is assessed. This relates to the total energy consumed in the production of the flooring, installation, cleaning, the effects of heating, and finally, disposal. The results of the combined effect of these individual factors show that laminate flooring and carpeting are the most efficient energy balance; i.e. they use the least energy. On a scale of 0 - 1, with the lowest value representing the lowest energy requirement over the life of the product, both floorings achieved a factor of 0.7. Other types of flooring consumed more energy overall, but eco-efficiency of a product is not determined solely from this measure.

Consumption of Resources

An assessment of the consumption of natural resources considers such items as Limestone, Iron Ore, Phosphorous, Potassium Chloride, Sulphur, Salt, Gas, Oil, and Coal.). It was small surprise that laminate flooring and parquet performed well in this aspect, with a factor of 0.3.. Both achieved a favorable rating because of their use of renewable, sustainable materials – wood and wood products. Carpeting was next best, with a factor of 0.35, followed by PVC (0.5) and ceramic flooring (0,55), while marble is recognized as a scarce resource and, as result had the highest rating (1.0).

Greenhouse Gas Potential

The latest climatic disasters give the assessment of greenhouse gas potential an added importance. This measure equates essentially to the levels of CO2 emissions associated with each form of flooring over the same product life as previously considered; i.e. during manufacture, laying, cleaning, heating and

disposal. On a scale of 0 - 1, the various types of flooring were all fairly evenly matched, with the average rating of laminate flooring explained by its comparatively high use of room heating.

Recycling Effectiveness

The evaluation of the recycle-ability of a floor is based again on factors of flooring production, laying, cleaning, heating, and disposal (e.g. conversion to energy. In this area, laminate flooring achieves the most favourable result, due to its low emission levels in production and good re-usability. In addition, it is supported by low wastage in the production process and in laying.

The Results

The results of the BASF Eco-Efficiency study into the various types of flooring certainly yielded varying results against the different parameters. “A product that scored highly in the energy balance assessment does not necessarily perform well in consumption of resources,” confirmed Dr. Peter Saling. Laminate flooring clearly achieved good results in three of the four parameters under consideration and also has a favorable cost calculation. As a result it occupies the top position among the flooring types considered in terms of Eco-Efficiency. This is not to say that other floors are poor in comparison. With the exception of marble, almost all the floors in the study perform well. It is possible, however, for laminate flooring to rank even higher. An increase in the average product life to, say, 20 years, would significantly improve its Eco-Efficiency rating. Whether the consumer would actually want that, is another matter.

To help achieve a potential improvement, BASF is producing an “Eco-Efficiency Manager” – special software exclusively for EPLF member companies – so that they can review the Eco-Efficiency of their products. In this way, future product development can be done considering the long-lasting aspect of the product and brought to market. In this way, the EPLF and its members would like to achieve

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a contribution to a more sustainable future for the market in Europe where they will have responsibility for their own products in balancing aspects of manufacture, life expectancy and long-term use

The above report provides an information base, which should serve as the core of an evaluation of all the different types of floor covering on the European market. As a result, the EPLF and BASF are prepared to widen and enlarge this study with other interested parties or associations in the floor coverings field.

For further information please contact:

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Study Report at:
www.sustainability.basf.com/en/sustainability/oekoeffizienz/projekte

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BASF has developed the Eco-Efficiency Analysis

The purpose of Eco-Efficiency Analysis is to harmonize economy and ecology. BASF Aktiengesellschaft in Ludwigshafen, Germany, is one of the first chemical companies to develop this method for use in its business activities. BASF plans to employ this approach to determine which products and processes it will pursue in the future.

Costs and environment calculations over the whole life cycle

Eco-Efficiency Analysis assesses the life cycle of a product or manufacturing process from the "cradle to the grave." For example, it includes the environmental impact of products used by BASF as well as of base materials manufactured by others. The analysis also takes into account the consumption behavior by end-users, as well as various recycling and disposal options. Further information of our services may be found at:
www.oekoeffizienzanalyse.de

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