News Release

New Eco-Efficiency Analysis proves benefits of BASF's water-based adhesives for flexible food packaging

- **Water-based Epotal® adhesive systems offer a sustainable and cost-efficient alternative to conventional technologies**
- **Methodology and results of the study were validated by renowned testing institutes**

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BASF's water-based adhesive systems are an environmentally compatible and economically rewarding alternative to conventional technologies when it comes to lamination of flexible food packaging. This is the outcome of a recent eco-efficiency analysis conducted by BASF and COMEXI, a leading supplier of converting solutions for the flexible packaging industry. For the study, which started in 2013 and was completed by the end of 2015, four typical adhesive technologies were analyzed and compared.

The results of the eco-efficiency analysis show that water-based Epotal lamination systems offer significant advantages over solvent-based adhesives. Beside a lower carbon footprint, BASF's water-based systems also enable an increased flexibility and accelerated production procedures due to their unique polymer design.

The BASF Eco-Efficiency methodology was most recently validated by NSF International, and the results of the study were critically reviewed and validated by a panel of independent experts led by TÜV Rheinland.

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Improved health and safety and a smaller environmental impact

The analysis revealed that water-based adhesive systems by BASF have a clear ecological advantage over solvent-based systems due to the use of water instead of organic solvents – therefore they have a lower environmental impact over the whole life cycle. Water-based Epotal adhesive systems meet the food packaging regulations of the European Union and the U.S. Food and Drug Administration (FDA). As they contain neither organic solvents nor aromatic isocyanates, production risks are reduced to a minimum and health and safety in the workplace is improved.

“Converters and brand owners, as well as the general public, are increasingly looking for more sustainable and safer solutions for flexible food packaging”, explains Dr Axel Weiss, Head of Marketing Dispersions for Industrial Adhesives Europe at BASF. “In the packaging production process, choosing the right adhesive technology can be an important step towards meeting these demands.”

Higher cost-efficiency and increased flexibility

The study also found that water-based lamination systems are an attractive economical option for converters. By using water-based adhesives, the whole packaging process is accelerated. “Due to the high molecular weight of those systems, a high initial bonding strength right after lamination is provided. This translates into lower off-spec costs and less required storage and curing times. Reduced lead times eventually result in more flexibility for customer demand – converters can laminate and deliver within one day”, adds Axel Weiss. COMEXI responds to this market trend with the launch of their water-based laminator L20000, which was especially designed for a faster and more flexible production.

BASF’s portfolio for industrial adhesives

BASF offers water-based solutions that enable customers to convert from solvent-based to more eco-efficient water-based adhesive systems. BASF’s adhesive technologies for the flexible packaging

industry combine high performance standards with economic and environmental benefits. The Epotal® CF series enables lamination from general-purpose to retort performance.

About BASF's Dispersions & Pigments division

The Dispersions & Pigments division of BASF develops, produces and markets a range of high-quality pigments, resins, additives and polymer dispersions worldwide. These raw materials are used in formulations for coatings and paints, printing and packaging products, construction chemicals, adhesives, fiber bondings, plastics, paper as well as for electronic applications such as displays. With its comprehensive product portfolio and its extensive knowledge of the industry, the Dispersions & Pigments division offers its customers innovative and sustainable solutions and helps them advance their formulations. For further information about the Dispersions & Pigments division, please visit www.dispersions-pigments.basf.com.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 112,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of more than €70 billion in 2015. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). Further information at www.basf.com.