

News Release

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BASF offers butanediol and polytetrahydrofuran with product carbon footprints significantly below global market average

- **Analysis comprising product-specific emissions from cradle to gate**
- **Market comparison reveals good position for a range of intermediates**

From early 2024 onward, BASF will offer its products 1,4-butanediol (BDO) and polytetrahydrofuran (PolyTHF®) as “LowPCF” products. BASF has calculated the individual product carbon footprints (PCF) of both chemical products.¹ The results were compared with assessments of market-wide average carbon footprints of the corresponding products of third parties.² The analysis shows that due to BASF’s production setup, the PCFs of BDO and derivatives such as PolyTHF are significantly below the global average PCF of the corresponding third-party chemicals that are all produced from fossil-based raw materials.

On its journey to achieve net zero CO₂ emissions by 2050, BASF is the first large chemical company to make available to its customers the individual PCFs of all its sales products. The PCF comprises the total greenhouse gas emissions that occur until the product leaves BASF’s factory gate for the customer: from the extraction of resources through manufacturing of precursors to the making of the final chemical product itself.

Various factors contributing to a low product carbon footprint

The PCF is determined by various factors. For example, energy generation in BASF’s own gas-fired combined heat and power plants generates significantly less

greenhouse gas emissions compared to other conventional energy generation methods. In addition, production processes of LowPCF intermediates are characterized by high production efficiency in terms of energy and raw material consumption due to BASF's integrated Verbund system and continuous efforts in operational excellence. Finally, LowPCF intermediates generally use oil, natural gas or Verbund by-products, but not coal, as primary raw materials. Due to its chemical properties, the use of coal generally results in a higher carbon footprint of downstream products compared to those based on natural gas or oil.

“Company CO₂ emission reduction targets are playing an increasingly important role in the value chains we serve. With our LowPCF intermediates, we are supporting our customers in achieving their targets: They now have the option to consciously choose a product with a carbon footprint significantly below the global market average,” said Ketan Joshi, head of BASF's Intermediates operating division. “By making CO₂ emission data at the individual product level available to our customers, we also offer a level of transparency that is unique in the chemical industry.”

BDO and PolyTHF: Essential raw materials in many value chains

BDO is mainly used for the production of PolyTHF. BASF's customers use PolyTHF for example to produce elastic spandex and elastane fibers that are used for a wide range of textiles such as swimsuits, sportswear and underwear, but also outerwear such as shirts and stretch jeans. The elastic fibers ensure wearing comfort in the long run, they are resistant to moisture and microbes. PolyTHF also serves as a chemical building block for the production of thermoplastic polyurethanes (TPU), which BASF customers use to make highly abrasion-resistant and elastic hoses, films and cable sheathing, primarily for the automotive industry. Other applications include thermoplastic polyetheresters, polyetheramides and cast elastomers for the manufacture of wheels, for example for skateboards and inline skates. With a total of five production plants for PolyTHF in Europe, North America and Asia Pacific, BASF is one of the world's most important suppliers of this versatile intermediate.

BDO is also a starting material for polybutylene terephthalate (PBT), an engineering plastic that is used successfully (under the BASF trade name Ultradur®) in the automotive, electrical and electronics industries. BDO also serves as an intermediate for the production of tetrahydrofuran (THF) and N-methylpyrrolidone (NMP), whose main applications are as essential solvents in the manufacturing of

pharmaceuticals and for lithium-ion battery cathodes e.g., for electrical vehicles.

¹The product carbon footprint (PCF) calculations follow the requirements and guidance given by ISO 14067:2018. In a methodology review, TÜV Rheinland has confirmed that the PCF (SCOTT) methodology developed and used by BASF SE is scientifically-based, is in accordance with ISO 14067:2018 and the Together for Sustainability PCF Guideline^[*], and reflects the state of the art ([ID-Nr. 0000080389: BASF SE - Certipedia](#)).

[*] 'The Product Carbon Footprint Guideline for the Chemical Industry' (Together for Sustainability, 2022)

² BASF has made these assessments of corresponding third-party products using publicly available information and fee-based, proprietary market survey data on production routes and deployed raw materials, to the extent available, as well as BASF's own market and technology know-how. The data assumptions and allocation factors for third-party PCFs are the same as for the calculation of the PCF of the BASF product, as applicable. BASF's assessments of the PCFs of the corresponding third-party products have not been subject to an LCA critical review by an independent third party.

*More details on the mentioned chemical intermediates:

<https://chemicals.basf.com/global/en/Intermediates/sustainability/low-pcf.html>

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 111,000 employees in the BASF Group contribute to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio comprises six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of €87.3 billion in 2022. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the United States. Further information at www.basf.com.

PolyTHF® is a BASF brand in many countries.