Intermediates

Expand your success on elastic fibers:

PolyTHF

BASF
We create chemistry

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At BASF, we create chemistry for a sustainable future. Our portfolio ranges from chemicals and materials to industrial solutions, surface technologies, nutrition & care and agricultural solutions. We combine economic success, social responsibility and environmental protection. Through science and innovation we enable our customers in almost all industries to meet the current and future needs of society. Our products and system solutions contribute to conserving resources, ensuring healthy food and nutrition and helping to improve the quality of life.

Top intermediates supplier

The BASF Group's Intermediates division develops, produces and markets a comprehensive portfolio of more than 600 intermediates around the world. The most important of the division's product groups include amines, diols, polyalcohols, acids and specialties. Among other applications, intermediates are used as starting materials for coatings, plastics, pharmaceuticals, textile fibers, detergents and crop protectants. Innovative intermediates from BASF help to improve the properties of final products and the efficiency of production processes. The ISO 9001-certified Intermediates division operates plants at production sites in Europe, Asia, and North America.

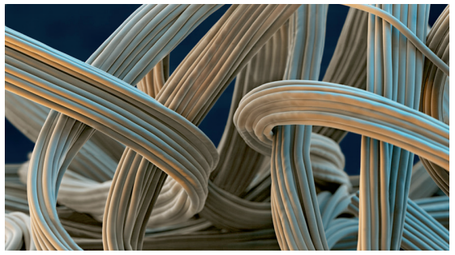
PolyTHF is an important component of elastic spandex fibers for textiles such as swimsuits.

BASF's PolyTHF

As a highly elastic synthetic fiber, spandex, or elastane, is currently a very popular textile material. The advantage of spandex is its elasticity,making spandex containing clothes very comfortable to wear. Besides clothing, spandex is being gradually applied in the medical and other industries. BASF is one of the world's most important manufacturers of PolyTHF®, the main raw material to produce spandex.

BASF's PolyTHF is used to produce high-quality spandex and elastane fibers including dry and melt-spun fibers. PolyTHF is also an important intermediate in manufacturing thermoplastic polyurethane elastomers (TPU). These products are used for highly abrasion-resistant and flexible hoses, films and cable sheathing. Other applications include thermoplastic polyetheresters, polyetheramide and cast polyurethane elastomers, proven in their use for skateboard wheels and inline skates.

One polymer and many options: PolyTHF

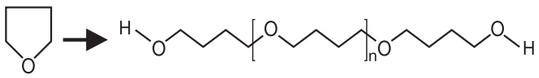


Spandex fibers under the electron microscope: the fibers are 80% PolyTHF. This BASF intermediate therefore essentially determines the excellent properties of these fibers, such as long durability, resilience and long-term elasticity.

PolyTHF is the key raw material used to produce spandex fibers. It is a polymer which, depending on its molecular weight, solidifies between –15 and 30 °C in a waxy-like manner. PolyTHF is integrated by further reactions into polymers with molecular weights of 40,000 and higher.

BASF delivers PolyTHF in the following molecular weights:

- PolyTHF 250 (technical grade)
- PolyTHF 650
- PolyTHF 1000
- PolyTHF 1400
- PolyTHF 1800
- PolyTHF 2000



PolyTHF (= Polytetrahydrofuran) is a polymer created by linking a series of identical units (= monomers) together, thus forming a chain.

The unit is tetrahydrofuran (THF); water (H-O-H) caps the ends.

Spandex made with BASF's PolyTHF delivers top performance features:

- elasticity
- hydrolytic stability
- microbial resistance
- not allergenic
- high abrasion resistance

Swimsuits, underwear, outerwear, socks, pantyhose and modern sportswear – highly elastic fibers made from BASF's PolyTHF have demonstrated their value especially in direct contact with the body.

Global player with local presence

BASF is acting from a network of PolyTHF world-scale production sites around the world in Asia, North America and Europe. With plants in Ludwigshafen (Germany), Geismar (USA), Ulsan (Korea), Caojing and Korla (China). Since we use the same process in all plants we can deliver consistently high quality and supply security.

BASF offers:

- a polymer science laboratory dedicated to PolyTHF applications
- analytical expertise in our polymer physics and our analytics department
- textile expertise
- design and optimization of solvent recycling facilities

Working for a consistently high quality: Employees at the BASF PolyTHF facility in Ludwigshafen, Germany. Besides, BASF is producing PolyTHF at four other plants in USA, China and Korea.

Over 30 years of top-level PolyTHF production: the PolyTHF facility at BASF's integrated "Verbund" site Ludwigshafen, Germany

BASF is dedicated to:

- products that make our customers more successful
- offering tailor-made services and technical support
- long-term reliability
- capacity reserves
- being the one-step supplier for spandex and polyurethane raw materials: PolyTHF plus all other basic raw materials like EDA, PDA, DEA, DMAC, DMF, MDI, etc.
- innovation
- long-term partnership

Technical services and tailor-made solutions

Around the world, we offer a comprehensive portfolio of high-class services for our PolyTHF customers: they are free to select exactly those services that meet their individual needs. Our experts examine our customer's entire value chain, share their advanced concepts and expertise in order to help our customers to be more successful.

This value-added portfolio includes:

Start-up

Improving spandex properties

- modulus
- elongation
- heat stability (polyester dyeing)
- heat setting behavior
- antistatic properties

Troubleshooting support

- analysis of deposits/gels
- analysis of spandex related textile defects
- discussion of production problems
- analysis of raw materials for impurities
- chemical analysis of problematic fibers

Joint projects with customers,

e.g. development of new fiber grades

Environmental support/product stewardship

- support in eco-labelling efforts
- information on safe product handling
- information about toxicology

Cooperation with renowned spandex experts

With BASF's technical support our customers will benefit from:

- higher competitiveness
- high-quality products
- good processes
- less down times
- lower investment costs
- safer production
- improved worker's safety
- energy savings
- environmental support

The PolyTHF plant at the Chinese site Caojing near Shanghai – where BASF has been producing high-quality PolyTHF since 2004. Besides, BASF is producing PolyTHF at four other plants in USA, China and Korea.

BASF offers technical expertise for all spandex production steps

Production steps	Raw materials	Prepolymerization	→	Chain extension	→	Spinning	Yarn	Added values
BASF services	■ Quality control ■ Safe handling	■ Recipe development ■ Adjustment of reaction conditions	■ Prepolymer analysis ■ Quality control	■ Recipe development ■ Adjustment of reaction conditions	■ Spandex solution analysis ■ Quality control ■ Viscosity development evaluation	■ Optimization of spinning parameters ■ Solvent recycling support	■ Quality control ■ Uniformity improvement ■ Improvement of mechanical properties	■ Support in eco-labelling efforts ■ Consultancy regarding safe product handling, toxicology and Responsible Care®

Innovative facilities and optimized support

In order to keep our services on a constantly high level and to further improve technical services especially in Asia/Pacific where more and more PolyTHF customers are active, BASF has set up a PolyTHF laboratory in Shanghai, China. With this laboratory – first of its kind in China – BASF will further improve technical customer services in the region, especially in the PolyTHF growth areas of spandex fibers and also in thermoplastic polyurethane and cast polyurethane elastomers (TPU, CPU).

BASF's PolyTHF laboratory in Shanghai offers:

- state-of-the-art polymer analytics
- lab-scale synthesis of small volume samples in order to optimize the characteristics of spandex/elastane, thermoplastic polyurethane and cast polyurethane elastomer polymers
- development of new PolyTHF-based formulations and improvement of existing ones
- analysis of samples and specimens
- laboratory support for starting up customer plants

Contact us

Get in touch:

www.intermediates.basf.com/contact

Visit our website at:

www.intermediates.basf.com

Spandex fibers on a bobbin:
The yarns are 80 % PolyTHF.

PolyTHF inside – our customers' benefits:

- global player with local presence
- technical services and tailor-made solutions
- innovative facilities and optimized support

 2023 edition

CI 2302-06/23