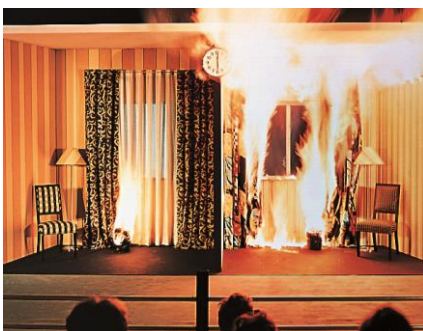
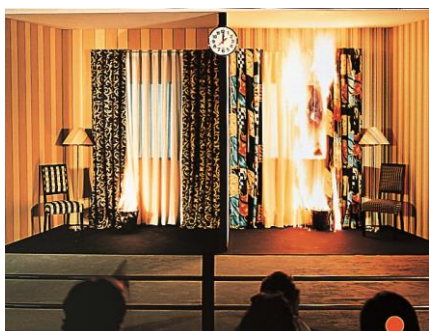




Time travel of the pioneer for flame-retardant textiles from 1980 to today.

Looking back, the 1980s were full of events - the computer game Pac Man, now a classic, was released for the first time, aerobics and leg warmers conquered the fitness world, stock markets boomed and broad shoulders were still emphasized with shoulder pads. And Trevira CS® is officially introduced to the market in 1980.



1970s: Before this happened, however, developers and researchers at Hoechst AG worked with a group of customers on an innovation: a polyester with a permanent, flame-retardant modification. As early as 1972, they began testing different modifications, at that time still with modacrylic and polyester. The decision was then made in favor of polyester due to its better care characteristics, which was particularly important for the contract sector. Modacrylic was rejected mainly because of the need to add a high proportion of PVC. It was not until 1975 that a modification was decided upon, which is still in use today.

In 2025 the company is not only celebrating 45 years of the market launch of Trevira CS, but also 50 years of the permanently flame-retardant Trevira CS modification.



The innovation - a flame-retardant modification of the polyester raw material. An article made from this material can no longer lose the FR property, neither through use, cleaning, abrasion, ageing nor washing. The key feature: the chemical structure of the polyester fiber has been changed, thus firmly anchoring the flame-retardant properties in the fiber in the form of a co-monomer - an organophosphorus compound. The researchers at the former Hoechst AG chemical group were pioneers of this development and the process was patented.

Permanent flame retardancy is also an important benefit from an ecological point of view: apart from environmentally friendly production, materials made of Trevira CS do not require any potentially environmentally harmful flame-retardant treatment. In the event of a fire, the amount of gas released is comparatively minimal. This is particularly important because, in the event of a fire, the risk of suffocation from smoke is greater than the risk of injury from fire, especially for firefighters, first responders and victims who are endangered by the presence of toxic gases. The first sample developments of our FR modified polyester were presented to customers in 1977. Over the next three years, the fibre was optimized and the first



customer fabrics were tested. Success had arrived.

1980s: 1980 was the official market launch of Trevira CS® in Europe. Eight years after the first developments! Just one year later, in 1981, samples were presented at the Heimtextil trade fair in Frankfurt, Germany. The name of the Hoechst AG polyester, Trevira®, which had been used since 1956, was given two additional letters - CS - for Comfort and Safety.



The name Trevira® was registered as a trademark back in 1932 and has a little story to tell - a mix-up. Adolf Kämpf, plant manager of what was then called the "artificial silk factory" in Bobingen, was looking for a name that would relate to the nearby city of Augsburg. He decided to use the Roman name of Augsburg and registered "Trevira". However, he confused the Roman name of Trier, Augusta Treverorum, with the Roman name of Augsburg, Augusta Vindelicum. Although this was clarified, the name remained Trevira.



When Hoechst AG produced polyester staple fibers in 1955, they were called Trevira, as were the "polyester endless threads" - the filament yarns, which were initially produced in 1956. And it has remained so to this day.



Trevira CS is categorized as "ingredient branding". It is not the flame-retardant filament yarn or the fiber that is called Trevira CS, rather the finished, brand-approved fabric or article. A tendency to burn cannot be ruled out with unwashed fibers, yarns or fabrics. Why?

Because preparation oils are required for processing on looms or knitting machines. Unsuitable auxiliaries in production or unsuitable dyes can also cause articles to burn. The Trevira CS brand concept

stipulates that the sellable, finished fabric is tested under trademark law. Only when it has passed the orientation fire test in accordance with DIN 4102 and meets the brand specifications does it receive brand approval for up to 5 years and the right to be labeled as Trevira CS. The brand promise - flame retardancy - can thus be ensured. Many users and institutions, such as fire departments, appreciate the performance reliability. Trevira CS is often used as a synonym for flame retardant fabrics.

The development of Trevira CS was awarded the German Industry Innovation Prize back in 1982. The need for safety and security grew from 1985 onwards, and stricter laws and fire standards led to the increased use of Trevira CS fabrics.



In der Brandversuchsanlage von Hoechst wird im direkten Vergleich schwerentflammables TREVIRA CS (jeweils links) gegen herkömm-



liche Textilien (jeweils rechts) getestet. Bereits nach 60 sec. steht die herkömmliche Dekoration in hellen Flammen. Während bei TREVIRA CS



nach Erlöschen der Zündquelle der Brand selbsttätig erlischt, breitet sich bei herkömmlichen Textilien das Feuer unaufhaltsam aus.

1990s: Around ten years later, in 1995, safety had become a high priority. The range of fibers and yarns was greatly expanded. In the meantime, there were over 200 different fiber types and yarns. The increased variety of resources also gave textile designers a much larger selection of yarns for differentiated designs. Due to the permanent flame retardancy, Trevira CS fabrics were mainly used in public areas, wherever a higher level of safety was required. Due to the increased variety of designs and the ease of care, more and more Trevira CS fabrics found their way into private areas, especially through interior decorators and interior designers.

The modified, flame-retardant fibers and filaments are also certified according to OEKO-TEX® STANDARD 100, Annex 6, product class 1, which means that they are also suitable for babies and toddlers up to the age of 3 years. The OEKO-TEX® Association was founded in 1992 (the first members were the Austrian Textile Research Institute (now ÖTI - Institute for Ecology, Technology and Innovation) and the German Hohenstein Research Institute). We have worked closely with the Hohenstein Research Institute since and met the requirements for Ökotex 100 certification (now OEKO-TEX® STANDARD 100) since 1995.

The main production of Trevira CS fabrics is still in Europe today. Creative spinning mills, fancy yarn manufacturers as well as (fabric) manufacturers and textile editors export the Trevira CS brand all over the world thanks to their network, distribution, partnerships, subsidiaries and global business relations. International activities of the brand itself support their efforts.

Over the next five years, thanks to this globalization, "Trevira CS goes global"! The market, trade fair presence and partnerships grew. The company worked with world-famous designers and architects such as Putman (Paris), Mendini (Milan), Clodagh and Gary Grain (both New York). Trevira CS could be found in many countries.

In 1996, Trevira GmbH with its Trevira CS brand was one of the first companies in the textile industry to have an Internet presence. Another innovation at the time was the so-called "digital fabric library", the Trevira CS Net. Here, interested parties could filter and display potential suppliers from around 300 Trevira CS suppliers online. At that time, it was one of the largest, if not the largest online fabric library. The Trevira CS Net was presented at the Decosit trade fair in Brussels, Belgium, in 1998.



The effort and further development of the brand paid off, and awards followed:

- In 1997, the brand received the AME - International Award for Marketing Effectiveness and GranDesign Innovation Award in Milan.
- In October 1998, the Baden-Württemberg International Design Award was presented by the Minister of Economic Affairs, Dr. Walter Döring, in Stuttgart.
- This was followed in 1999 by a second GranDesign Innovation Award, in Stuttgart, Germany, and iF Award from the Industrie Forum Hannover for excellent product design.

At the end of 1998, the Pemotex product name was created and registered - a flame-retardant, textured filament yarn. This was an NSK - a low-melting component yarn. The "low" melting component melts at a lower temperature in the finishing process. Once cooled, it stiffens the textile surface. The technology is particularly ideal for use in slats, roller blinds and technical applications. True to the Trevira CS motto of avoiding potentially environmentally harmful finishes wherever possible, no stiffening chemicals are required. It also saves a second production step, money and time: the yarn has additional functions. Yarns that only create low and medium stiffeners have been developed to extend the range of applications. In this way, lightweight, semi-transparent Trevira CS fabrics could be developed, some of which are slide-resistant and/or laser-cuttable, or also stabilize 3D constructions, which also provide acoustic effects.

2000s: In 2000, the brand celebrated its 20th anniversary at the Decosit trade fair in Brussels. The "birthday cake", 10 meters in diameter and 8 meters high, housed 20 pieces of seating furniture from renowned European manufacturers, all upholstered with Trevira CS fabrics. At the time, the total volume of Trevira CS



fabrics sold since 1980 was estimated at around 800 million square meters.

At the end of 2000, it was announced to colleagues in the staff magazine that there would be new brand logos, including for Trevira CS. The blue and red double T was still a tribute to and identification mark for Hoechst polyester products. "Trevira stood for polyester from geotextiles to stadium roofing, sewing threads, outerwear and underwear through to flame-retardant curtains. Today this no longer corresponds to the Trevira reality". The now familiar blue logo with the woven structure and the orange bar were introduced. The Trevira CS lettering was slightly rejuvenated at the end of 2019.

Hoechst High Chem

Fibres

GREIFEN SIE ZU: VIER VON TAUSEND

TREVIRA CS vermittelt ein neues Sicherheitsgefühl: nicht länger die Wahl zwischen Comfort oder Sicherheit – bei der das eine mit dem Verlust des anderen erkauft werden muß – sondern das beides in einer Faser vereint.

TREVIRA CS erfüllt in ungewöhnlicher Breite die Brand-Prüfnormen bedeutender Industrieländer, ist durch und durch schwerentflammbar.

In Europa bieten über 200 namhafte Hersteller Kollektionen in beispielloser Vielfalt – von der Avantgarde bis zur Klassik – vom Bezug bis zur Gardine.

TREVIRA CS verfügt zudem über alle Vorteile der bekannten Textilmärke: hohe Lichtechtheit und -beständigkeit, Strapazierfähigkeit, Formstabilität, Pflegeleichtigkeit.

TREVIRA CS wird heute weltweit genutzt – nicht nur in Bereichen, in denen Sicherheit Vorschrift ist.

TREVIRA CS ist ein Beispiel für jene Fasern, die in interdisziplinärer Zusammenarbeit durch Hoechst High Chem entwickelt werden.



TREVIRA CS erfüllt internationale Bestanormen wie DIN 4102 Klasse B1, BS 476 Part 6 und NF P 92 507 Klasse M1. Es genügt selbst den strengsten Sicherheitsanforderungen der zivilen Luftfahrt.



Die unauslöschliche Schwerentflammbarkeit wird durch den Einsatz eines Comonomers in das Polymergerüst erreicht. Es wird fest in die Molekülkette eingebunden und ist in der Praxis nicht mehr entfernbar.

Hoechst High Chem

Fibres



Palais des Congrès et de la Musique, Nice



Grand Hotel Baglioni, Bologna



Sportplatz Helsinki, Palais des Congrès, Nice



Egypt Airlines



Enzo Bertozzi



Casino di Venezia



Klimakontroll, Aachen



Club Miro, Milano



Hôtel Pullman, Bordeaux



Kartentheater Bad Nauheim

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The attack on the Twin Towers, the World Trade Center, in New York in 2001 affected the entire industry. Contract furnishings fell by up to 20 %. Hotels were closed down, office furnishings were sluggish. The markets recovered in 2003 and 2004, and Trevira CS took part in trade fairs such as Heimtextil Rossija in Moscow and Hospitality Design in Las Vegas.

Trevira CS continued to develop. Advancements were constantly being made and the product range was in expansion mode. Monofilaments (filament yarns that were finer than human hair) were introduced. In 2004, textured monofilaments, which are texturised for more volume, were also presented at the Heimtextil trade fair.

Following the introduction of an antimicrobial & flame-retardant staple fiber, textured, flame-retardant & antimicrobial textured filament yarns (ATY and DTY) were also presented at the Heimtextil trade fair in 2004. The brand was given an additional function: Trevira CS Bioactive - the flame retardant with antimicrobial effect - fulfilling the requirements for preventive fire protection and increased cleanliness in equal measure,

ideal for the demand for "functional textiles" for hotels, hospitals and the healthcare sector.



The global financial crisis from 2007 to 2008 also had a dampening effect on the textile industry. General cost and production structure measures were intensified, and production adjustments were planned. Textiles from Turkey became increasingly popular alternative.

At Heimtextil 2009 it was announced that the flame-retardant fibers and yarns for Trevira CS textiles now also bear the safety label of the Swiss Council for Accident Prevention (bfu). This label is awarded to products that meet certain safety requirements and thus contribute to accident prevention.

2010s: Three years later, in 2012, the Trevira CS Club was launched at the Heimtextil trade fair. In the dynamic textile supply chain, collaboration is key and the Trevira CS Club is a cornerstone of this effort. The Club is open to all suppliers of Trevira CS products and offers exclusive services tailored to different levels of membership - yarn manufacturers, fabric manufacturers and textile editors. Gold and Silver membership categories were achievable based not only on sales figures, but also on creativity, geographical reach and, above all, brand loyalty. In 2012, 38 partners and customers became club members in the first year; 15 of them were awarded Gold status.

Through small but select events in 2013 such as "Trevira CS Jobber Day" and "Trevira CS China Day", the brand was made known to US dealers and Chinese interior designers in cooperation with Trevira CS customers.

Entscheiden Sie sich für pflegeleichten Comfort und dauerhafte Sicherheit.

7 Vorteile machen TREVIRA CS zur optimalen Textilausstattung für jedes Objekt.

Vorteil 1
Dauerhaft und unauslöschlich flammhemmend durch toxisch unbedenkliche chemische Modifikation

Vorteil 2
Anspruchendes, textiles Verhalten

Vorteil 3
Fließender Fall, sympathischer Griff

Vorteil 4
Zuverlässige Formbeständigkeit und Kälteresistenz. Vorbildliche, TREVIRA-typische Pflegeeigenschaften, auch unter gewerblichen Bedingungen

Vorteil 5
Hohe Farb- und Lichtechtheit

Vorteil 6
Gute Beständigkeit gegen Sonneneinstrahlung

Vorteil 7
Gleichbleibend hoher Qualitätsstandard von TREVIRA CS. Strenge Kontrolle nach den Warenzeichen-Richtlinien der Hoechst AG



TREVIRA CS ist eine chemisch modifizierte Faser mit dauerhaft eingeleagerten flammhemmenden Eigenschaften. Die Modifizierung wird weder durch häufiges Waschen, Desinfizieren oder Chemisch-reinigen noch durch Gebrauch oder Alterung beeinträchtigt.

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Hoechst

In June 2014, the industry network "Initiative Textile Räume" was launched with Trevira GmbH and industry partners Backhausen, Christian Fischbacher, Création Baumann, Gebrüder Munzert, Gessner, Interstil, JAB Anstoetz Group (with all brands), Rasch Textil, Romo Group, Sahco, Saum & Viebahn, Schmitz-Werke, Tisca Tiara and Mira X as well as Zimmer + Rohde and the Zentralverband Raum und Ausstellung and EuroInterior on European level. The aim: to promote the home textiles market in German-speaking countries, providing new impetus to the industry (which had been stagnating for years), to boost sales of furnishing textiles, and to appeal to end consumers. The campaign was launched in 2015.

In 2016, Trevira CS was part of the Fraunhofer Institute's "Unerhörte Hotels" project - an initiative to improve acoustics in hotels. The aim was to characterize and further develop effective and economically viable solutions and products for improved acoustics.

The motto of the Orgatec trade fair 2016 in Cologne was "Rethinking work" and Trevira CS exhibited with a "Trevira City". The exhibition, designed with raumkontor Innenarchitektur, consisted of eight textile-designed houses that formed a center in a square - a symbolic stand that represented communication, creativity, inspiration, networking and movement. For this, the Trevira CS stand won the Famab Award 2017 - "Storytelling and experience space at its best".

In 2019, flame-retardant staple fibers became antimony-free. Antimony, a heavy metal, is a catalyst in polyester production. Antimony-free polyester is environmentally friendly as it no longer requires this heavy metal additive in production.

Perhaps encouraged by longer warm seasons, the desire to spend time outdoors increased in the late 2010's. This not only applied to private households, but also the contract market. The furnishings and surfaces selected became increasingly decorative. Flame retardancy is important for indoors, color and light-fastness are priorities for outdoors. A combination of both makes it possible to use decorative and seating materials both indoors AND outdoors. A flame-retardant & UV-stable polyester was developed.

2020s: In 2019, this development won the Brandenburg Innovation Award - for colorful, flame-retardant and UV-stable polyester yarn for outdoor use. At Heimtextil 2022, 22 flame-retardant and UV-stable filament spun-dyed colors were presented. The production of textiles from spun-dyed yarns requires fewer resources such as energy, water and chemicals. In 2023, the color palette was revised and expanded by noted colorist Judith van Vliet from The Color Authority™.

The special exhibition "Textile Future by Trevira CS" on the Trevira CS joint customer stand at the Heimtextil trade fair 2020 designed with star architect Werner Aisslinger and studio Aisslinger. The elaborate and extensive presentation showed textile applications in the areas of public life, the world of work, the hotel industry, health & care and mobility.

A new Trevira CS brand concept was also presented in 2020. To meet the increasingly complex requirements of the market and to offer customers and users even more flexibility, two brands were added to the Trevira CS brand concept: Trevira CS flex and Trevira CS eco. These two additional brands offer specific properties and functions in addition to the standard brand quality and performance:

Trevira CS - As always, the Trevira CS brand stands for textiles which consist of 100 % flame retardant yarns from Trevira and specialty yarn processing partners. The only permitted blending partners are Trevira fiber or filament yarns, and those with a low-melting component.



Trevira CS eco - flame retardancy and recycling by different methods. Flame retardant filament yarns are based on 50% recycled PET bottle material (post-consumer). Staple fibers are made from 100% pre-consumer material. Thanks to our own agglomeration plant, recyclable materials from production can be reprocessed and converted into fiber with the same FR properties as virgin material.

In addition to flame retardancy, Trevira CS flex allows further additional functions and/or design effects: at least 75 % flame retardant fibers and yarns for Trevira CS and/or the yarn processing partners and 25 % special yarns from approved manufacturers to achieve special effects or additional functions.

In 2022, the flame-retardant Trevira polymers were evaluated according to the GreenScreen® standard and listed in the GreenScreen® register. GreenScreen® tests and evaluates chemicals for potential risks to human health and the environment. This standard is of particular importance to Trevira CS as the brand is highly trusted and specified in the health sector. The GreenScreen® certification forms the basis of the specification criteria for the Healthier Hospitals Initiative (HHI) in the USA. Based on the rating achieved for Trevira flame retardant polymers, each textile manufacturer can have its Trevira CS articles individually GreenScreen® certified.



The 8 stations of the "Path of Sustainability" were presented at Heimtextil 2023. The Trevira CS take-back program, which was presented with the recycling company ALTEX in Gronau (D) represented one station describing how used Trevira CS fabrics (post-consumer) or unsold Trevira CS remnants (pre-consumer) can be recycled. Textiles that are evaluated and proven to be Trevira CS can enter the mechanical recycling process and start a second, high-quality life cycle as nonwoven insulation, soundproofing panels and more.

The long-term goal in the development of sustainable products is undoubtedly to move towards a closed-loop circular economy. This topic was featured at Heimtextil 2023 and presented to an audience at the Global Fiber Conference in Dornbirn 2023: development, modification and spinning of a flame-retardant polyester based on chemically recycled raw material.

How exactly does it work? The starting material for chemical recycling in the first pilot test was PET bottles, but theoretically this could also be other PET waste such as packaging material or textiles. In the subsequent trials, waste from the packaging industry no longer suitable for (food) packaging was chemically recycled. Chemical recycling involves depolymerization, a sequence of chemical reactions in which the polymer chains are broken down into their original components, i.e. the monomers. In a further process step, impurities are removed. This "purified" material was then used for the spinning and production of 1A flame-retardant polyester. Chemical recycling is an important step towards a circular economy, so that we can recycle textiles and save raw materials.



45 years of Trevira CS: 45 years of development & enhancements, a brand promise kept, and preventive fire protection throughout the ages, because fire has no expiry date.

Source: Indorama Ventures Fibers Germany