



TECHNOCEL[®]

Native Cellulose Fibres

CFF
By your side.



HIGHER PROFIT BY BETTER PRODUCTS

TECHNOCEL® - products are made out of pulp, which is based on the renewable resource wood.

The **TECHNOCEL®** - product range offers a wide variety from powdery to fibrous cellulose fibres.

Due to their universal properties they are used in numerous industrial applications.

TECHNOCEL® - BASIC PROPERTIES

- Fibre length from $< 20 \mu\text{m}$ to $2500 \mu\text{m}$
- Fibre diameter approx. $25 \mu\text{m}$
- Specific density approx. 1.5 g/ml
- Bulk density according to the product between 20 and 250 g/l
- Temperature resistant up to 150°C , shortly up to approx. 200°C
- High absorption and retention of liquid media
- High tensile strength
- **TECHNOCEL®** - fibres are insoluble in water and oil and therefore not comparable with water soluble cellulose derivatives like carboxymethyl cellulose (CMC)
- Inert to acids and bases within a pH-value range of 4 to 12
- Physiologically and toxicologically safe

TECHNOCEL® - fibres
- made by nature.

Natural fibres always fit.

CELLULOSE FIBRES FOR BUILDING CHEMICAL APPLICATIONS

TECHNOCEL® - fibres
improve and optimise...

1. Rheological properties of the final product:

- Viscosity decreases as the shear rate increases (pump, stir, applique). A decreasing shear rate immediately results in viscosity rise. In rest position the original viscosity state arises again.
- The thickening of the system depends on the fibre length:
The longer the applied **TECHNOCEL®**-fibres, the stronger the thickening effect.

2. The homogeneity of the final product:

- Cross-linking of the system by building up a three-dimensional fibre skeleton and thereby a higher stableness and stability.
- Reinforcement aid to fill splices and gaps (gap closing).
- Crack closing and crack inhibition - **TECHNOCEL®**-fibres prevent micro crack formation in many applications.

3. Constant regular water release to sub-surface and surrounding:

- Reduced skin formation because of a longer open time.
- Excellent processability on strong absorptive ground.
- Plastic shrinkage is reduced by regular water release, so negative effects like shrinking cracks are suppressed.

4. Frost resistance

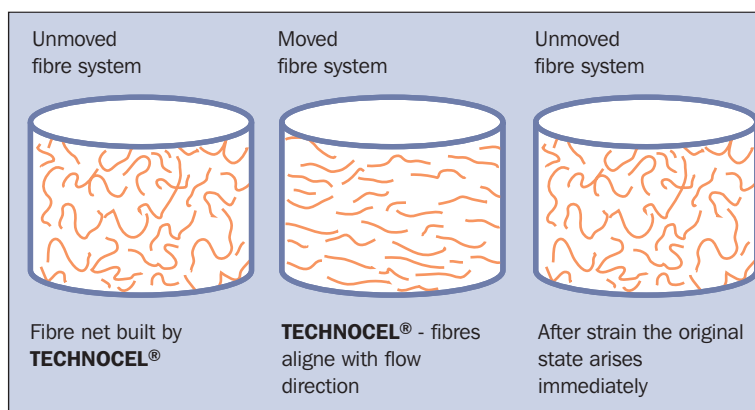
(freeze-/thaw-interaction):

- The remaining moisture is bound in the fibre capillaries by **TECHNOCEL®** reducing the freezing point down to -70 °C.

CFF offers a wide range from powdery to fibrous **TECHNOCEL®**- qualities for various industrial applications.

In the table on page 12 to 13 selected applications are linked with the recommended **TECHNOCEL®**- products.

The technical characteristics of all **TECHNOCEL®**- qualities are listed in the tables on page 14 and 15.



In rest position **TECHNOCEL®** - fibres are building up a stabilizing fibre skeleton.

Made of native cellulose the fibres are temperature resistant up to approx. 150 °C.

Advantages of applying **TECHNOCEL®** :

Emulsion paints: Recommended quantity: 1 - 5 percent by weight	<ul style="list-style-type: none"> • Improved rheology (thus e.g. „airless sprayable“) • Reduced density • Tarnishing effect • Thicker wet film layers and thus imaginary higher opacity • Constant drying • Increased scouring resistance • Extended open time • Reduced raw material costs • Improved pigment distribution • Suppression of micro cracks
Flexible tile adhesives: Recommended quantity: 0.3 - 0.6 percent by weight	<ul style="list-style-type: none"> • Improvement of processing properties • Considerable less sticking on the tools • Improved anti-sagging of the adhesive compound • Reduced cracking • Prevention of de-mixing of dry products • Higher water retention, increased open time and improved moistening
Filling compounds: Recommended quantity: 0.3 - 1.5 percent by weight	<ul style="list-style-type: none"> • Improvement of processing properties • Improved grindability • Shrinkage and shrinking cracks are highly reduced
Plasters/Renderings: Recommended quantity: 0.3 - 1 percent by weight	<ul style="list-style-type: none"> • Improvement of processing properties • Improved anti-sagging respectively improved adhesion of fresh plasters on upright areas • Decrease of crack formation during drying and noticeable less drying holes • Reduced shrinking tendencies • De-mixing inhibitor for dry mixtures • Even drying • Higher processing speed due to thicker apply-able layers • Considerable less sticking of plasters on the tools • Light filler • Optimisation of cost/performance ratio
Bitumen applications: Recommended quantity: 3 - 8 percent by weight	<ul style="list-style-type: none"> • Improvement of processing properties • Increase of thermal resistance (>90 °C) • Stabilisation and thickening of the compound • Bitumen absorption • Crack inhibition • Asbestos substitute

FOR PAINTS, ...

TECHNOCEL® - fibres add various properties to emulsion paints, which help the user to achieve an optimal result both during processing and after completion.

ADHESIVES, FILLING COMPOUNDS, ...

Crack formation belongs to the most common problems when using adhesives and filling compounds.

TECHNOCEL® overcomes this problem as texturising fibres stabilize the final product.

PLASTERS, RENDERINGS ...

TECHNOCEL® - fibres are applied in textured decorative coatings, mineral bonding plasters and insulating renderings.

AND BITUMEN PRODUCTS.

Instead of hazardous asbestos cellulose fibres have become standard in many bituminous applications.

The application area ranges from medium viscosity spray- and spreadable compounds, roof coatings, bituminous filling compounds, expansion joints up to sound-deadening sheets.

*The use of **TECHNOCEL®**
ranges from emulsions
paints, flexible tile adhesives,
filling compounds, plasters
up to bituminous applica-
tions.*



WANNE

Wetterbeständig, wasserdampfdurchlässig

Verkieselt mit dem Untergrund.

Geeignete Untergründe: Kalk-, Kalkzement- und mineralische Altanstriche und Naturstein.

Ungeeignete Untergründe: Alte Dispersionsanstriche.

Verarbeitung: Neue, tragfähige, nicht saugende Untergründe.

Voranstrich: 2 Teile RISO-Silikatfarbe und 1 Teil RISO-Silikat-Grundiermittel.

Schlußanstrich: RISO-Silikatfarbe, bis zu 100% RISO-Silikatfarbe.

Verarbeitung: Stark saugende, sandende Untergründe.

Voranstrich: RISO-Silikat-Grundiermittel.

Zwischenanstrich: RISO-Silikatfarbe.

Schlußanstrich: RISO-Silikatfarbe.

Im Bedarfsfall kann mit Wasser verdünnt werden. Die Trockenzeit zwischen den einzelnen Anstrichen beträgt ca. 24 Stunden.

1 kg für ca. 2 m²
gebrauchsfertig

POLYURETHANE resp. ARTIFICIAL LEATHER

Polyurethanes are the most relevant polymers for manufacturing micro porous artificial leather. In the most important production process, the so called coagulation, polyurethane is dissolved in dimethylformamide (DMF) and mixed with cellulose fibres. The mixture is applied onto a textile carrier and dipped into a water bath. While doing so dimethylformamide is replaced by water:
The final product is artificial leather.

Advantages:

- Capillary agent in the production process
- Improvement of vapour permeability/ breathing activity
- Improvement of mechanical properties
- Increase of the leather-like character

THERMOPLASTICS

When heated thermoplastics repeatably melt to flow-ability and harden when cooled down.

TECHNOCEL®- fibres can be used at manufacturing temperatures up to approx. 200 °C.

Advantages:

- Reduction of density
- Increase of form stability resp. stiffness
- Decrease of abrasion tendencies
- Improvement of the surface finish of foils and coatings

Examples of applications:

- Polyethylene (PE) and polypropylene (PP): „woodlike plastic“, films and profiles
- Thermoplastic polyurethane (TPU): special synthetics
- Polyvinyl chloride (PVC): special profiles and films
- Melamin resin: laminate, overlay, shaped bodies and grouting materials
- Polymer mixes: plastics for diverse application areas

THERMOSETTING PLASTICS

Thermosetting moulding materials are enduring products formed under pressure and heat.

They consist of thermosetting synthetic resins as binders and additives like hardeners, inhibitors and dyestuffs. Furthermore they contain of filling and reinforcing components. At this cellulose fibres act as resin carrier during the manufacture of thermosetting plastics and moreover improve the properties of the final product.

Advantages:

- Resin carrier and matrix former
- Reduction of density
- Increase of stability
- Improvement of structural reinforcement and impact strength
- Reduction of abrasion tendencies during processing

Examples of applications:

- Melamin resin moulding materials: track-resistant components, dishes, heat insulating components
- Melamin/phenolic resin moulding materials: housing components of household appliances, pot handles
- Polyester resin moulding materials: luminaires, oven grips, household appliances, switches
- Phenolic resin moulding materials: switch covers, rollers, grips, grip shells, shims, coil formers
- Carbamide moulding materials: hood covers, base plates, screw tops, materials for electric installation



WELDING ELECTRODES

When manufacturing top quality welding electrodes **TECHNOCEL**[®]-fibres are used for coatings. As a result of slag burning a local excess pressure arises during the welding process, thus pressing the liquid metal into the welding seam. At the same time the developing carbon dioxide acts as inert gas and thereby prevents oxydation of the welding seam resp. a weakening of it.

Depending on the type of electrode **TECHNOCEL**[®] portions vary:
Pipeline electrodes resp. cellulosic electrodes contain between 30 and 45 % of cellulose, whereas rutile electrodes contain from about 5 to 13 % of cellulose.

Advantages:

- Short drying times and reduced crack formation when producing sheathing material
- Reduced smoke developement
- Less slagging
- Good flow characteristics and thus deeper penetration into the welding seam
- Reduced sparking during welding
- Better inert gas atmosphere
- Trouble-free welding also in difficult positions (e.g. over head welding)

TECHNOCEL[®] - fibres are used as additives for polyurethane resp. artificial leather, thermoplastics, thermosetting plastics and welding electrodes.



Native fibres - the many-sided agent.

OTHER APPLICATIONS

TECHNOCEL® products are also used in countless further applications, some of them are explained briefly:

COMPACTION AND PELLETING OF SEED

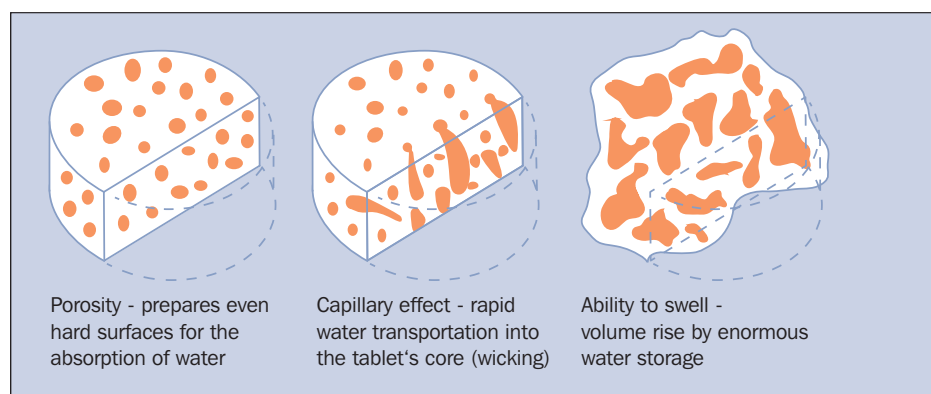
During compaction (e.g. washing agent tableting, fertiliser pelleting, metal dust briquetting, ceramics pressing aids)

TECHNOCEL® acts as binding agent, filler and anti-caking agent as well as rapid dissolution agent in contact with dilute media.

Furthermore **TECHNOCEL®**-fibres are an approved filling and compaction material when manufacturing seed pills.

This is due to the chemical inert surface, the water absorption capacity and the ability of biodegradation.

They are produced for machine-made single grain release and improve the seed quality.



TECHNOCEL® - fibres
accelerate the disaggregation -
they are used as so called
rapid dissolution agents.

CARBONLESS COPY PAPERS

In carbonless copy papers **TECHNOCEL**[®] powder cellulose acts as micro capsular spacer. Furthermore the application of **TECHNOCEL**[®] enables an even coating, fast drying, high production speed, lower sensitivity against mechanical loads and a clear type face.

ENZYMATIC APPLICATIONS

TECHNOCEL[®] is harmless to handle and acts during fabrication of dust-free and free flowing enzymes as granulating aid, carrier material and to regulate moisture.

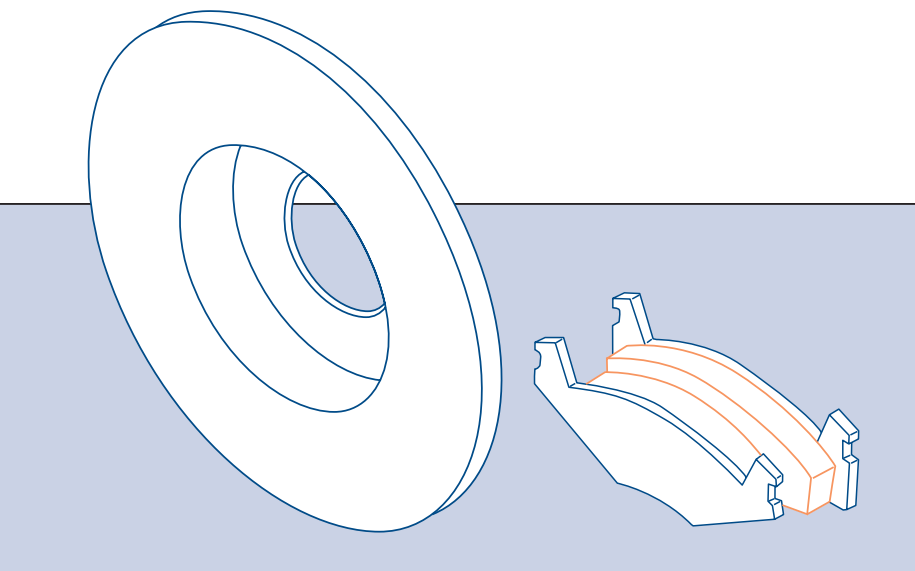
Another field of application is the enzyme fermentation. Here **TECHNOCEL**[®] is used as carbon source.

FRICTION LININGS

In friction linings for motorbikes, cars, trucks and railways hazardous asbestos fibres are replaced by natural **TECHNOCEL**[®]-fibres.

TECHNOCEL[®] reinforces green strength, inhibites de-mixing of single components and transports separated water out of the coating during the hardening process.

In the final products **TECHNOCEL**[®] provides reduced break sounds as well as less wear of brake and clutch linings. In addition, the coatings get an excellent grip, caused by cellulose pyrolysis on the surface.



TECHNOCEL[®] 1004-8 optimises the friction characteristics of brake and clutch linings.



*We are always
by your side.*

OUR SERVICE - OUR PRODUCTS

We offer you suitable grades for a large range of applications.

Just tell us your desired application or aim.

Our advice on the right product is only a first step of many to come. We know the performance of our products from own and external research and offer you the best suitable and efficient grades for your requirements.

We believe customer service is more than just a short contact. We give you personal, competent and individual advice and offer our support during application.

We are looking forward
to meet your requirements!

	TECHNOCEL® 10	TECHNOCEL® 30-1	TECHNOCEL® 40	TECHNOCEL® 40 TAB	TECHNOCEL® 75	TECHNOCEL® 75 TAB	TECHNOCEL® 90-2	TECHNOCEL® 150	TECHNOCEL® 150 DU	TECHNOCEL® 150 TAB	TECHNOCEL® 150-2
White fibres											
PAINTS											
Emulsion paints		●	●		●		●				
Silicate paints			●		●						
Paints for road marking											
Crack closing reinforcing paints											
Liquid spoilage		●									●
ADHESIVES / FILLING COMPOUNDS											
Emulsion tile adhesives											●
Tile adhesives / powder adhesives											
Filling compounds					●		●	●			●
Smoothing compounds					●		●	●			●
Gypsum compounds							●	●			●
Mounting binders					●		●				
PLASTERS											
Mineral plasters											
Mineral bonding plasters											
Decorative renderings											
Textured renderings											
Emulsion final plasters											
Screeds											
BITUMINOUS APPLICATIONS											
Bituminous systems in general			●		●		●				●
Spray- and spreadable compounds					●			●			
Roof coatings					●						
Bitumen filling compounds											
Seal ribbons											
Sound-deadening sheets											
POLYURETHANE LEATHER		●	●								
THERMO- / THERMOSETTING PLASTICS								●			
WELDING ELECTRODES					●			●	●		
OTHERS											
Friction linings											
COMPACTION Washing agent tableting and fertiliser pelleting Metall dust briquetting Ceramics pressing aids				●		●				●	
Pelleting of seed											●
Carbonless copy papers			●								
Enzymatic applications								●			
Epoxy resin systems	●		●		●						
Melamin resin systems	●	●	●								
Floorings (primarily PVC-floorings)								●			
Laminated sheet material	●	●	●								
Tumbling and rolling							●	●			●
Incense sticks		●	●		●						
Plasticine / Modelling material											●

TECHNOCEL® - PRODUCTS

	Appearance					Whiteness	Apparent weight	Humidity	pH-value
	White	Off-white	Grey	Powdery	Fibrous	%	g/l	%	
TECHNOCEL® 10	●			●		>80	<300	<8.0	5.0-7.0
TECHNOCEL® 30-1		●		●		>70	<280	<8.0	6.5-8.5
TECHNOCEL® 40	●			●		>80	>220	<8.0	4.0-9.0
TECHNOCEL® 75	●			●		>80	>150	<7.5	5.0-7.5
TECHNOCEL® 90-2		●		●		>65	<180	<8.0	6.5-8.5
TECHNOCEL® 150	●			●		>80	>130	<7.5	5.0-7.5
TECHNOCEL® 150 DU	●					>80	>140	<6.0	5.0-7.0
TECHNOCEL® 150-2		●		●		>65	<150	<8.0	6.5-8.5
TECHNOCEL® 165		●		●		>74	>70	<8.0	4.0-9.0
TECHNOCEL® 180	●			●		>80	>110	<7.5	5.0-7.5
TECHNOCEL® 200	●				●	>80	>60	<7.5	5.0-7.5
TECHNOCEL® 200-1	●				●	>80	>40	<7.5	5.0-9.0
TECHNOCEL® 300	●				●	>80	>35	<7.5	5.0-7.5
TECHNOCEL® 500-1					●	>74	>60	<8.0	5.0-9.0
TECHNOCEL® 1000	●				●	>80	>30	<8.5	5.0-7.5
TECHNOCEL® 1000-1	●				●	>80	>30	<8.5	5.0-9.0
TECHNOCEL® 2500	●				●	>80	>35	<10.0	5.0-7.5
TECHNOCEL® 2500-1	●				●	>80	>20	<10	5.0-7.0
TECHNOCEL® 1004			●		●		>20	<7.0	
TECHNOCEL® 1004-1			●		●		>20	<6.0	7.0-9.0
TECHNOCEL® 1004-3			●		●		>30	<7.0	7.0-9.0
TECHNOCEL® 1004-5			●		●		>40	<7.0	7.0-9.0
TECHNOCEL® 1004-6			●		●		>90	<7.0	7.0-10.0
TECHNOCEL® 1004-8			●		●		>20	<7.0	7.0-9.0

	Sieve analysis in μm									
	> 32	> 90	> 125	> 160	> 200	> 300	> 500	> 800	> 1000	> 2500
TECHNOCEL® 10	<0,5									
TECHNOCEL® 30-1	<25									
TECHNOCEL® 40	<6									
TECHNOCEL® 75	<50	<1								
TECHNOCEL® 90-2	<70	<20			<0.5					
TECHNOCEL® 150	<65	<15		<1						
TECHNOCEL® 150 DU	<55	<15		<1						
TECHNOCEL® 150-2	<80	<20					<0.5			
TECHNOCEL® 165	<80		<20		<4					
TECHNOCEL® 180	<80	<35			<1					
TECHNOCEL® 200	<90	<25			<3					
TECHNOCEL® 200-1	<90	<50			<3					
TECHNOCEL® 300	<85	<50				<2				
TECHNOCEL® 500-1	<60	<50			<10					
TECHNOCEL® 1000	<85	<65			<40			<25	<2	
TECHNOCEL® 1000-1	<70							<10	<2	
TECHNOCEL® 2500	<95				<80			<70		<2
TECHNOCEL® 2500-1	<95					<35				<2
TECHNOCEL® 1004	<95				<60			<15		
TECHNOCEL® 1004-1	<95				<60			<20		
TECHNOCEL® 1004-3	<95				<55			<20		
TECHNOCEL® 1004-5	<95				<30		<5			
TECHNOCEL® 1004-6	<80				<25		<5			
TECHNOCEL® 1004-8	<90				<60			<20		

BY YOUR SIDE.

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CFF is a leading company in the development and production of natural fibres. Its worldwide distribution network with offices and representations provides a customer oriented support service.

Establishing and realising an effective quality management CFF sets extremely high standards for a service-oriented cooperation with its business partners. The relevant results of research and development find their way into a particular quality concept of solution-oriented product development.

After all the experience shows:
Only with the realisation of self-defined
aims business relations stay strong.
We look forward to talking to you soon.



PROJECT PART-FINANCED BY THE EUROPEAN UNION
AND THE FREESTATE OF THURINGIA.