

# Tissue Additives

## Auxiliaries for pulp and tissue manufacturing





# Our competence for your soft and safe products

.....  
**Evonik is one of the world's leading specialty chemicals companies. Our activities focus on the key megatrends health, nutrition, resource efficiency and globalization.**  
.....

We are active in over 100 countries around the world. The continuous expansion of our global presence in growth markets ensures outstanding growth prospects for our specialty chemicals business area. A balanced spectrum of business activities and end-markets is guaranteed by a close collaboration with our customers and a joint search for solutions.

These are the key factors to our success. Our outstanding application and process expertise is based on a broad technology platform of organic specialty surfactants and organo-modified siloxanes. Our product range covers a variety of products with specific application profiles for the pulp and tissue industry.

## **PRODUCTS TO INCREASE SUSTAINABILITY**

Our innovative products, systems and solutions enhance sustainable development and we work closely with our customers to help them meet their sustainability targets. Market-oriented research and

development play an important role. We support our customers in achieving the performance requirements of various tissue and paper products. Our process improving additives help to use less water and solvents during manufacturing and are developed to meet the latest consumer and environmental requirements. We offer our customers resource-saving and energy-efficient solutions for a wide range of applications. In this way, we play a part in meeting the rising sustainability requirements across all of our markets.

---

**THE PRODUCT RANGE OF EVONIK COVERS A VARIETY OF PRODUCTS WITH SPECIFIC APPLICATION PROFILES WHICH ADDRESS THE PULP AND TISSUE INDUSTRY.**

---

**AROSURF®**

Our AROSURF® products are highly substantive wet end softeners/debonders with high, medium and low debonding effect for premium to low sheet bulkiness with all qualities of feedstocks. They are highly substantive softeners with low impact on tensile strength to achieve good machine run-ability and excellent surface smoothness of the tissue.

In the converting line AROSURF® products are used as topical softeners or lotion concentrates. Based on various resources they provide smooth and soft handfeel for many final applications.

Most of our products are food contact compliant (FDA and/or BfR) or INCI listed (cosmetic ingredients).

**TEGOPREN®**

Our TEGOPREN® brand is based on the organomodified siloxanes chemistry.

The general molecular architecture of TEGOPREN® products is primar-

ily characterized by their multifunctionality.

Their properties include softening, levelling, wetting and dewetting, lubrication, defoaming, emulsifying and dispersing or coagulating.

As a result of the siloxane component TEGOPREN® products are highly surface active. TEGOPREN® products can reduce the surface tension much more than organic surfactants. They are also surface active in non-aqueous systems. With their high molecular weight and maximal flexibility they stabilize or spread interfaces.

**DYNOL™ / SURFYNOL®**

DYNOL™ surfactants and the Gemini-surfactant types under the brand name SURFYNOL® are low-foam, superwetting and coalescing surfactants for difficult-to-wet substrates. DYNOL™ and SURFYNOL® surfactants have a broad utility and are recommended for use in pulp and tissue applications. These unique, multifunctional additives are designed to provide

superior dynamic surface tension reduction and excellent stability in systems ranging from pH 3–13.

**SURFYNOL®**

Are low-foam, superwetting and coalescing surfactants for difficult-to-wet-substrates.





**TEGO® ANTIFOAM**

Evonik offers a full foam-control spectrum with organic oils, siloxanes and molecular based technologies: With specialties branded as TEGO® Antifoam, we offer formulators to identify the right foam control tools for a broad range of systems and applications.


**TEGOTEX®**

Different treatments containing TEGOTEX® products help to give better results, like softer handfeel, increased hydrophilicity and water repellency and stronger UV protection.

Product overview


	Appearance at 20 °C						Chemical description							Area of application	Indirect food contact	Physical description		
	liquid	paste	clear	colorless	yellowish	turbid, hazy	non-ionic	cationic/quaternary	anionic	organic	OMS	surfactant	solvent free			Density g/mL at 25 °C	Viscosity, dynam. at 25 °C, mPa.s	Flash Point
<b>WETTING AGENTS</b>																		
DYNOL™ 360 	●			●			●					●	●	non foaming wetting for black and white liquor, quick dewatering and low foaming flotation	21 CFR 175.105	0.94–1.04	90–100	175
REWOPOL® SB C 212 	●		●			●		●	●					dewatering, deinking, coating	–	1.05	< 100	> 100
REWOPOL® SB DO 75 PG 	●			●				●	●					dewatering, deinking	BfR XIV, BfR XXXVI under B.I.10., FDA 21 CFR 178.3400, 175.105, 175.300, 176.170 and 176.180, GB 9685-2016	1.08	700–850	> 100
SURFYNOL® 104 E	●			●	●		●		●					non foaming dewatering, deinking	BfR XXXIV, FDA 21 CFR 175.105, 175.300, GB 9685-2019	1.0	100	116
SURFYNOL® 420	●		●		●		●		●					non foaming dewatering, deinking	FDA 21 CFR 175.105, 175.300, 176.170, 176.180, 177.1390	0.94	212	108
TEGO® SQS 25 	●		●		●		●		●					low foaming dewatering, deinking	FDA 21 CFR 176.210	1.0	4000–5000	210
TEGOPREN® 4506	●		●	●	●		●			●				black liquor, quick dewatering	BfR XXXVI, FDA 21 CFR 175.105, 175.300, 176.210, 176.170, 176.180	1.03–1.05	2000–3400	> 100
TEGOPREN® 5852	●		●	●			●			●				low foaming wetting for black and white liquor, quick dewatering and low foaming flotation	–	1.02	220–380	> 100
<b>DEFOAMER</b>																		
SURFYNOL® MD 20	●		●		●		●		●					molecular defoamer for black liquor, recycling, white water, quick dewatering (cleaning, bleaching)	–	1.0	240–260	130
TEGO® Antifoam 793	●			●	●		●			●				defoamer concentrate, deinking, dissolving, bleaching	–	1.02–1.06	700–1500	95
TEGO® Antifoam 3062	●			●			●			●				defoamer concentrate, deinking, dissolving, bleaching	BfR XXXVI, FDA 21 CFR 175-300, FDA 21 CFR 176-210, FDA 21 CFR 175-105	1.0	1000	> 100
TEGO® Antifoam MR 1015	●				●		●			●				defoamer concentrate, deinking, dissolving, bleaching	–	1.05	3000–4000	> 100
<b>DEFOAMER BOOSTER</b>																		
TEGOPREN® 4506	●		●	●	●		●			●				black liquor, quick dewatering	BfR XXXVI, FDA 21 CFR 175.105, 175.300, 176.210, 176.170, 176.180	1.03–1.05	2000–3400	> 100
TEGOPREN® 5801	●		●		●		●			●				emulsifier for black liquor defoamer, quick dewatering	BfR XXXVI, FDA 21 CFR 175.105, 175.300, 176.210, 176.170, 176.180	1.045–1.065	330–570	113
TEGOPREN® 5803	●		●		●		●			●				emulsifier for black liquor defoamer, quick dewatering	BfR XXXVI, FDA 21 CFR 175.105, 175.300, 176.210, 176.170, 176.180	0.95–1.05	600–900	> 100
TEGOPREN® 5888	●		●	●	●		●			●				emulsifier for black liquor defoamer, quick dewatering	–	1.025–1.040	800–1100	> 100
TEGOPREN® 6814	●		●		●		●			●				spreading agent for defoamer oils	–	0.88–0.92	240–450	> 101

■ WETTING AGENTS ■ DEFOAMER ■ SOFTENER/DEBONDER ■ LOTIONS


 = Enhanced sustainable properties

\* = not EU

Product overview

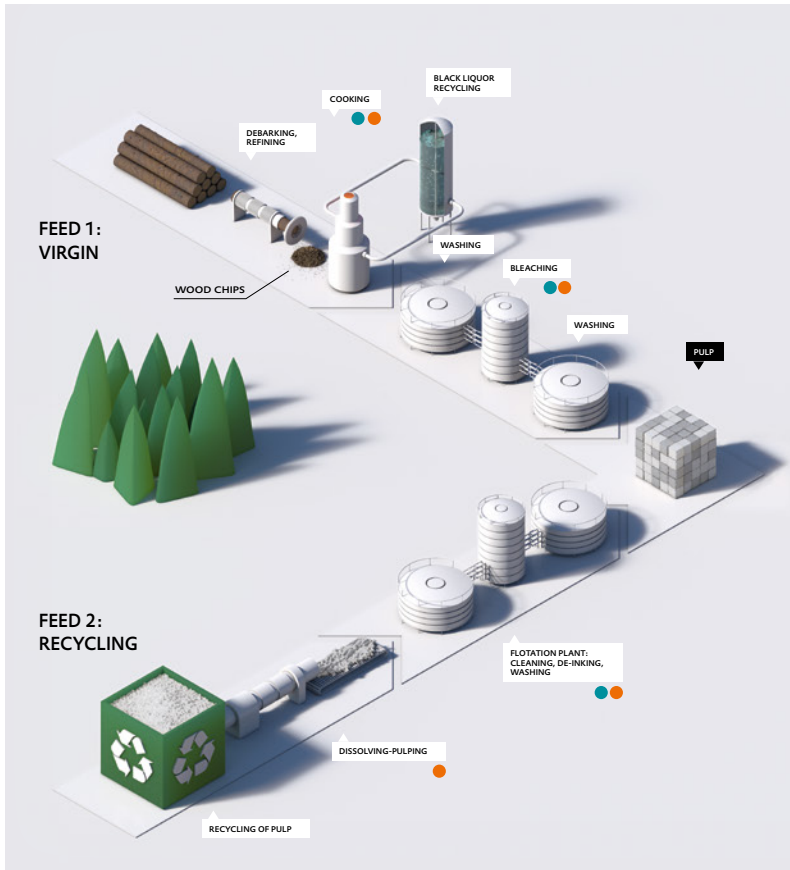
	Appearance at 20 °C						Chemical description						Area of application	Indirect food contact	Physical description			
	liquid	paste	clear	colorless	yellowish	turbid, hazy	non-ionic	cationic/quaternary	anionic	organic	OMS	surfactant			solvent free	Density g/mL at 25 °C	Viscosity, dynam. at 25 °C, mPas	Flash Point
<b>SOFTENER/DEBONDER</b>																		
AROSURF® PA 842 V	●		●		●	●	●		●				●	wet end, strong softener/debonder	BfR XXXVI, FDA 21 CFR 176.170, 176.180	1.0	1000–2000	> 100
AROSURF® PA 844 V	●		●		●	●	●		●				●	wet end, medium strong softener/debonder	BfR XXXVI, FDA 21 CFR 176.170, 176.180	1.0	150–300	> 100
AROSURF® PA 777 V	●		●		●	●	●		●				●	fluff pulp debonder	BfR XXXVI, FDA 21 CFR 176.170, 176.180	1.0	120–250	> 100
AROSURF® PA 780 V	●		●		●	●	●		●				●	wet end, medium debonder with good softening	BfR XXXVI, FDA 21 CFR 176.170, 176.180	1.0	50–150	> 100
REWOQUAT® W 3690 PG	●		●		●		●		●					softener/debonder concentrate	BfR XXXVI, FDA 21 CFR 176.170, 176.180	1.0	500	110
<b>LOTIONS</b>																		
AROSURF® PA 935	●		●	●		●							●	ready to use lotion	BfR XXXVI, FDA 21 CFR 176.210, GB 9685-2016, INCI	1.02	90–300	> 100
AROSURF® PA 852 *	●				●		●		●					ready to use lotion	FDA 21 CFR 176.170	0.94	80	> 100
AROSURF® PA 910 *		●			●		●							lotion formula concentrate	–	0.96	110	39
AROSURF® PA 920 *	●						●		●				●	lotion formula concentrate	FDA 21 CFR 176.170	0.95	4500	> 95
AROSURF® PA 930		●	●	●		●							●	lotion formula concentrate	BfR XXXVI chapter B.1. 10, FDA 21 CFR 176.210, GB 9685-2016	1.045–1.055	7000–12000	> 100
TEGOTEX® CS 0510 		●			●	●	●						●	lotion formula concentrate	–	1.03	2400	> 100

■ WETTING AGENTS ■ DEFOAMER ■ SOFTENER/DEBONDER ■ LOTIONS

 = Enhanced sustainable properties





\* = not EU

# PULP PRODUCTION FROM VIRGIN AND RECYCLED FIBERS



The pulp producing process involves several stages to assure efficiency and quality of the finished fibers. In support of this process, we provide cooking additives (wetting agents), defoamers, and defoamer boosters within our DYNOL™ and TEGOPREN® technologies. These technologies are used as intermediates in the process of pulp production to improve water recycling, reduce surface tension, control foam production and optimize the efficient use of chemicals for a balanced manufacturing process.

## WETTING AGENTS

DYNOL™ 360   
 REWOPOL® SB C 212   
 REWOPOL® SB DO 75 PG   
 SURFYNOL® 104 E  
 SURFYNOL® 420  
 TEGO® SQS 25   
 TEGOPREN® 4506  
 TEGOPREN® 5852


## DEFOAMER

SURFYNOL® MD 20  
 TEGO® Antifoam 793  
 TEGO® Antifoam 3062  
 TEGO® Antifoam MR 1015

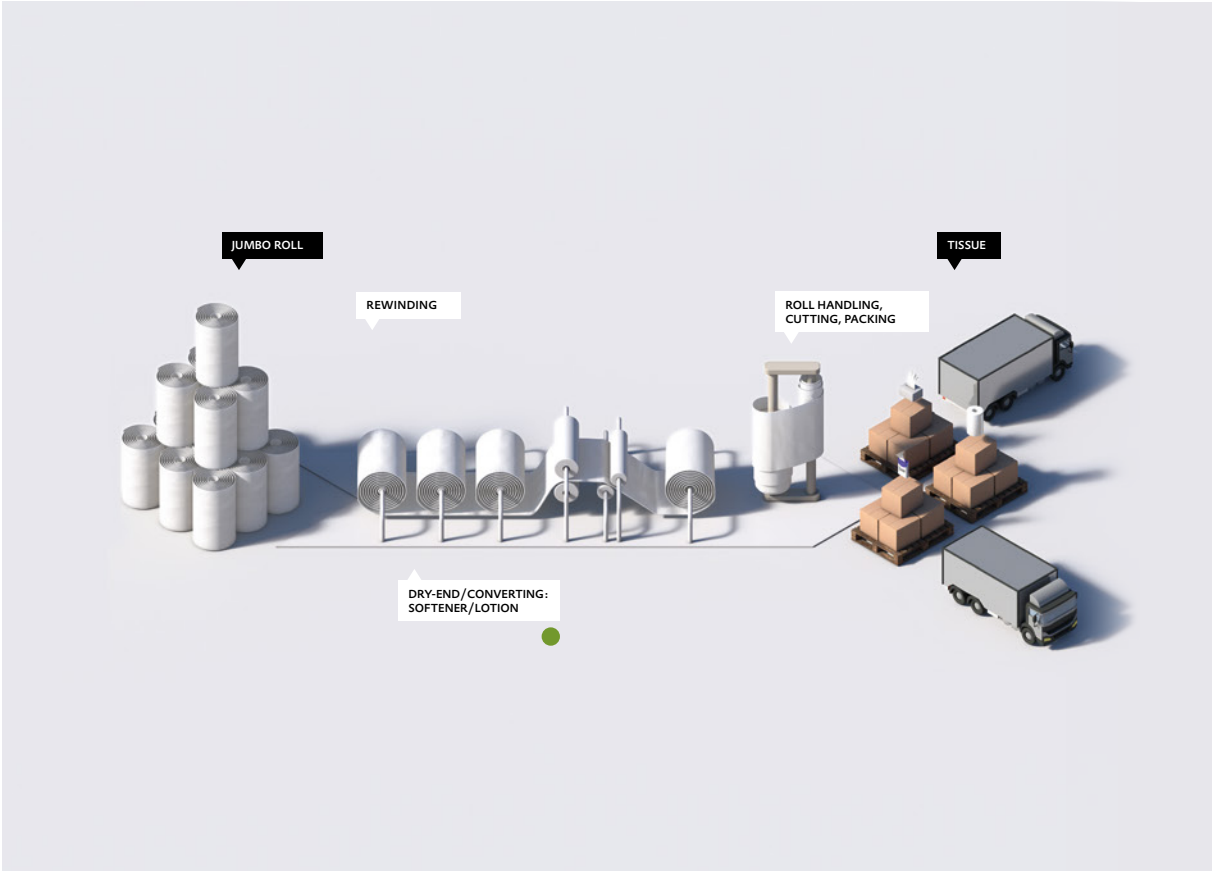
## DEFOAMER BOOSTER

TEGOPREN® 4506  
 TEGOPREN® 5801  
 TEGOPREN® 5803  
 TEGOPREN® 5888  
 TEGOPREN® 6814

 WETTING AGENTS  DEFOAMER


 = Enhanced sustainable properties



# TISSUE CONVERTING



The tissue converting process has a variety of performance requirements and application techniques, which enables to manufacture unique solutions. Our AROSURF® lotion concentrate is recommended for the converting process, as it offers ready to use solutions and development of customized solutions.

## LOTIONS

- AROSURF® PA 935
- AROSURF® PA 852
- AROSURF® PA 910
- AROSURF® PA 920
- AROSURF® PA 930
- TEGOTEX® CS 0510 

 LOTIONS  
 = Enhanced sustainable properties

## PULP MANUFACTURING

The pulp producing process involves several stages. Our DYNOL™ and TEGOPREN® wetting agents and defoamer boosters are used as intermediates in the process of pulp production to improve water recycling and optimize the efficient use of chemicals and foam control.

## TISSUE MACHINE

The sheet manufacturing process requires a combination of mechanical and chemical processing for improve runability and finish performance. Our specialty additive, AROSURF® Softener/Debonder, can be introduced in multiple stages of the of the wet end (headbox, stuff box, or machine chest) process where it imparts increase bulk, improve softness, and antistatic properties for ultimate performance.

## CONVERTING

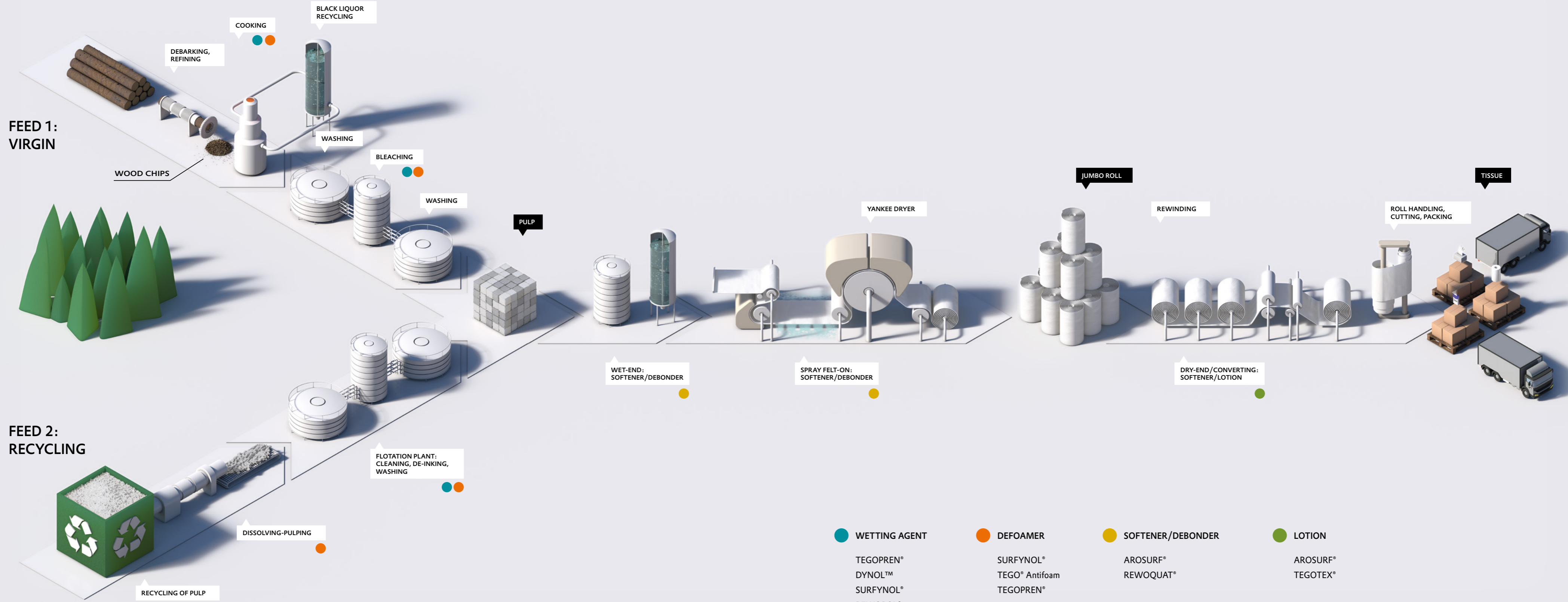
Our AROSURF® lotion concentrates recommended for converting may be diluted or further formulated to ready to use softeners/lotions. Due to the variety of specific requirements and application techniques like spray, kiss roll or rotor damping, we offer assistance for the development of customized solutions.



# TWO WAYS OF PULP MANUFACTURING

# FROM PULP TO TISSUE

# TISSUE CONVERTING



FEED 1:  
VIRGIN

FEED 2:  
RECYCLING

PULP

WET-END:  
SOFTENER/DEBONDER

SPRAY FELT-ON:  
SOFTENER/DEBONDER

YANKEE DRYER

DRY-END/CONVERTING:  
SOFTENER/LOTION

JUMBO ROLL

REWINDING

ROLL HANDLING,  
CUTTING, PACKING

TISSUE

WOOD CHIPS

DEBARKING,  
REFINING

COOKING

BLACK LIQUOR  
RECYCLING

WASHING

BLEACHING

WASHING

FLOTATION PLANT:  
CLEANING, DE-INKING,  
WASHING

DISSOLVING-PULPING

RECYCLING OF PULP

- WETTING AGENT  
TEGOPREN®  
DYNOL™  
SURFYNOL®  
REWOPOL®

- DEFOAMER  
SURFYNOL®  
TEGO® Antifoam  
TEGOPREN®

- SOFTENER/DEBONDER  
AROSURF®  
REWOQUAT®

- LOTION  
AROSURF®  
TEGOTEX®

**Europe | Middle East | Africa**

**Evonik Operations GmbH**  
Goldschmidtstraße 100  
45127 Essen  
Germany  
Phone +49 201 173-2665  
Fax +49 201 173-1990  
www.evonik.com

**Asia | Pacific**

**Evonik Specialty Chemicals Co., Ltd.**  
55, Chungdong Road  
Xinzhuang Industry Park  
Shanghai, 201108  
PR China  
Phone +86 21 6119-1125  
Fax +86 21 6119-1406

**The Americas**

**Evonik Corporation**  
2 Turner Place  
Piscataway, NJ 08854  
USA  
Phone +1 804 727-0700  
Fax +1 804 727-0855

This information and any recommendations, technical or otherwise, are presented in good faith and believed to be correct as of the date prepared. Recipients of this information and recommendations must make their own determination as to its suitability for their purposes. In no event shall Evonik assume liability for damages or losses of any kind or nature that result from the use of or reliance upon this information and recommendations. EVONIK EXPRESSLY DISCLAIMS ANY REPRESENTATIONS AND WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS, NON-INFRINGEMENT, MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE (EVEN IF EVONIK IS AWARE OF SUCH PURPOSE) WITH RESPECT TO ANY INFORMATION AND RECOMMENDATIONS PROVIDED. Reference to any trade names used by other companies is neither a recommendation nor an endorsement of the corresponding product, and does not imply that similar products could not be used. Evonik reserves the right to make any changes to the information and/or recommendations at any time, without prior or subsequent notice.

**Website**



www.evonik.com/  
tissue-additives

**Customer portal**



intoperformance.  
evonik.com

Inv.-Nr.: 05-2023