



PURE POSSIBILITIES





ROTTNEROS

Because we care



Rottneros is a part of nature. Our raw materials come from nearby forests. Sustainability is at the forefront of any new investments made and developments carried out. Our processes are built with the future in mind and are constantly developed to achieve even higher quality and efficiency. At the end of the day, it is all about assuming responsibility. From single tree to end product.



Rottneros – your speciality fibre supplier

We are the small global specialist in fibre supply with a long history in pulp production. Our outstanding technical knowledge in fibres and end use applications, is the basis for our technical support. Together with our technicians we can help you find the best suitable fibre, whether it is for speciality paper, folding box board or any other application you have in mind.

We offer a very wide range of different fibre grades from our two pulp mills in Sweden. In High Yield Pulp our main grades are CTMP, both hardwood and softwood, as well as Stone Ground Wood Pulp. In chemical pulp we offer both bleached and unbleached softwood kraft pulp. On the basis of these main grades we have a large number of products with specific properties to meet a huge variety of demands.

Wood fibre has a long and proven track record of being an economical, strong and versatile material. Wood fibre is also a sustainable material. It is naturally biodegradable, easily recyclable and comes from a renewable source. This makes wood fibre and products made of wood fibre a sustainable solution, today and in the future.

To further minimize our environmental foot print, we have the last years invested heavily in cleaning our effluent waters and air emissions. To keep transports down we source most of our raw material in close proximity to our pulp mills. Furthermore, the majority of our outbound logistics are made efficiently via train and vessel. A proof of our strong commitment to reducing our impact on the nature is that our ECF and UKP grades are preapproved to be used with Nordic Ecolabel Swan marked paper products.

Regardless of your fibre need, Rottneros can help you find the right product for your existing and future products.

We can offer all of our products both as FSC® and PEFC® certified.
All our fibres are approved and certified for direct food contact.



The mark of
responsible forestry
FSC® C107740





Our quality pulp made from finest fibres

LONG-FIBRE SULPHATE PULP



Robur flash ECF

from spruce and pine



Robur flash UKP

from spruce and pine



HIGH YIELD PULP



SGW

(Stone groundwood pulp)
from spruce



CTMP SW

(Chemi-Thermo-Mechanical Pulp)
from spruce and pine



CTMP HW

(Chemi-Thermo-Mechanical Pulp)
from aspen and birch

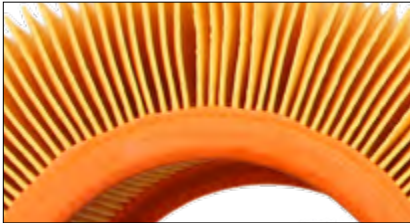




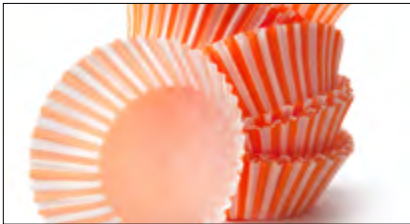
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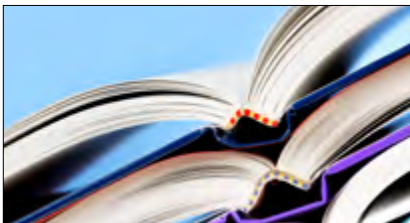
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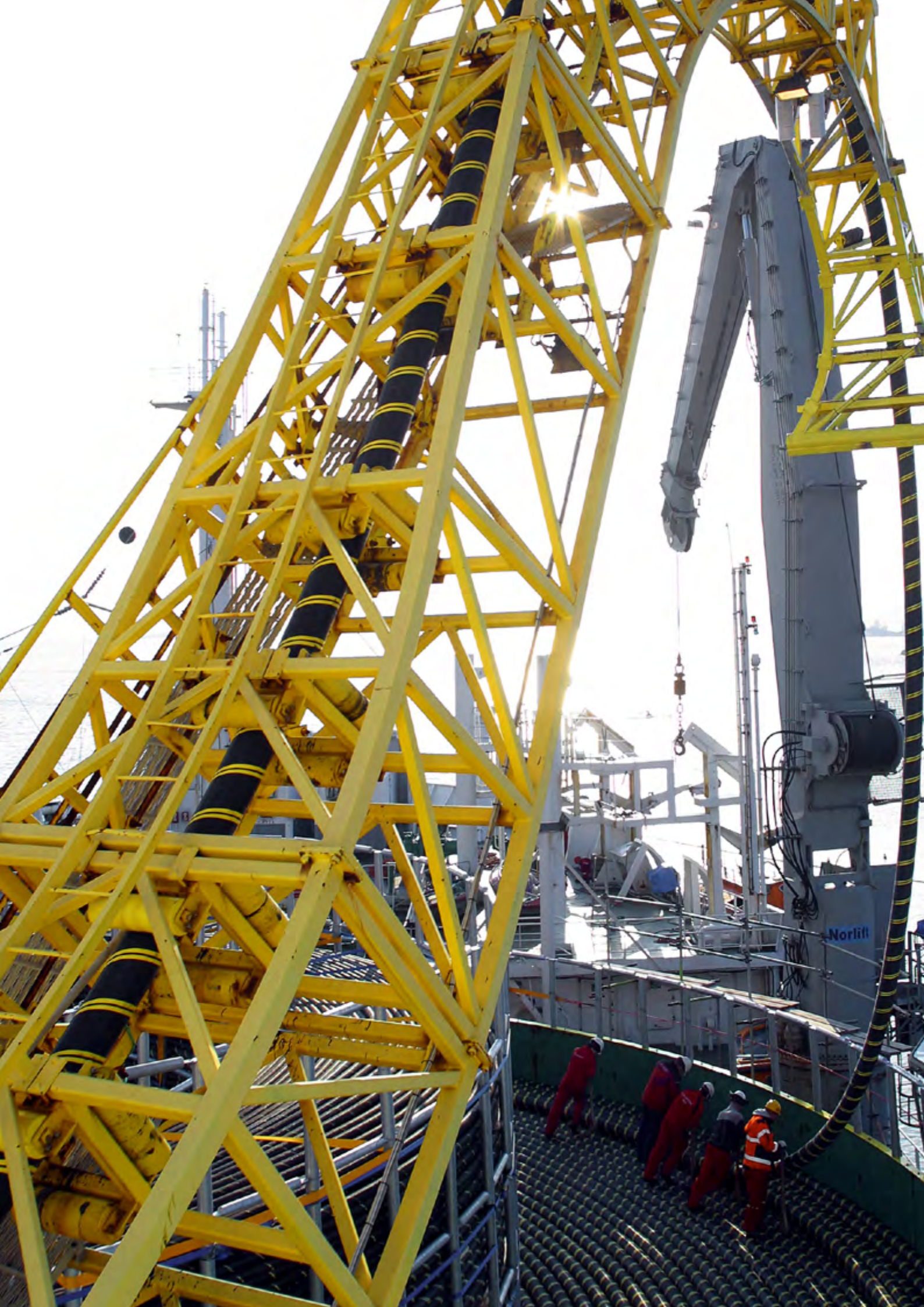
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Unique **E-GRADE** fibres for paper with extremely low conductivity

Our E-grade pulp is a world-class product used for manufacturing electrical insulation paper for high-voltage sea cables, transformers and capacitors. This type of paper must possess extremely good electrical insulation properties and therefore must have a low conductivity. Besides it has to be free of any impurities and particles which may jeopardize the demands for high dielectric strength of utmost importance for high voltage applications.



Pulp for Electrical insulating paper and board (EPB)

Our pulp is manufactured using an advanced production process which involves extensive cleaning, ensuring extremely low levels of conductivity. That is why our Robur Flash UKP-E is used and well-known all over the world.

A range of E-grades, adapted to specific needs, are produced at our Kraft Pulp mill. All types meet very high standards with regard to conductivity. Our environmentally friendly pulp is specially designed for insulation of electrical appliances and has excellent dielectric, conductive and saturation characteristics. For example, it is perfectly suited for the following paper subgrades:

- Capacitor papers
- Cable papers
- Battery separator papers
- Transformer boards or presspahn

A number of unique properties

Robur Flash UKP-E is widely used in electrical applications and is characterised by:

- Uniquely low conductivity
- Fulfilling extremely high demands in purity
- High strength

Strength that lasts

Robur Flash UKP-E is expected to fulfil its job in the toughest of environments. The demands are not only challenging but long-lasting. A very critical factor is having strength which does not decrease over time. Thanks to the characteristics of the fibre and the purity Robur Flash UKP-E keeps its strength and meets the challenges – year after year.







Fibres for Filters with true quality for a sustainable tomorrow

The filtration and separation media industry faces increasing demands on filter performance. We know how important it is to balance cost-effective production with maintaining the highest quality. As a matter of fact it is possible to optimise both and also reduce the environmental impact at the same time. We produce a range of virgin fibres that we can match to your specific needs at each stage of the manufacturing process.



A wide range of possibilities

As a leading supplier we can support you with the most comprehensive product range – fibres specially developed for air as well as liquid filtration applications. All grades fulfil the criteria for use in food production environments according to accepted standards.

As a filter media manufacturer you optimise filter characteristics, balancing factors such as differential pressure, removal performance, filter strength and service life. Our product portfolio includes different fibre processing techniques, from chemical Kraft Pulp to a range of specially designed High Yield Pulp.

It is all about the perfect balance

Wood-based products are one of few raw materials that are part of a natural and sustainable ecosystem. They are safe, non-hazardous materials, both during and after use, and they are biodegradable, recyclable and burnable. That is what we call the perfect balance.

A filter media producer uses a wide range of fibre types: polymers, glass, kieselgur based etc. A wood based source is mercerized fibres based upon the sulphate process with additional cleaning. Rottneros has developed a CTMP pulp with similar characteristics as the mercerized.

The Rottneros pulp CP075 is used by many filter media producers to partly or completely replace mercerized pulp, the production costs are through that change drastically reduced.

We produce different grades of long-fibre Kraft Pulp and High Yield Pulp. Our comprehensive range offers solutions to a wide range of specific client and application demands.

A comparison between Rottneros filter fibres, mercerized fibres and a commercial automotive engine air filter is shown in the graphs.

Other application areas

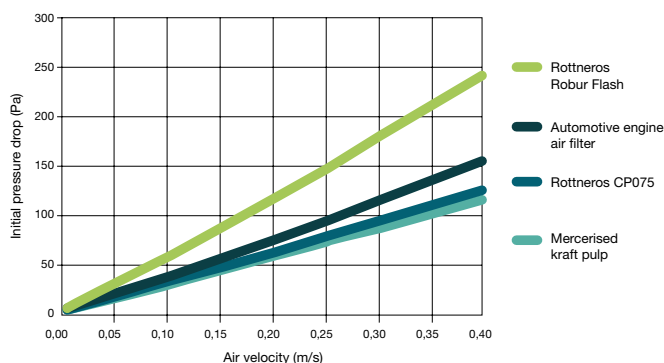
Rottneros Robur Flash ECF is, due to its high porosity, and strength, world wide used for plug wrap paper for cigarettes.

Superb technical performance

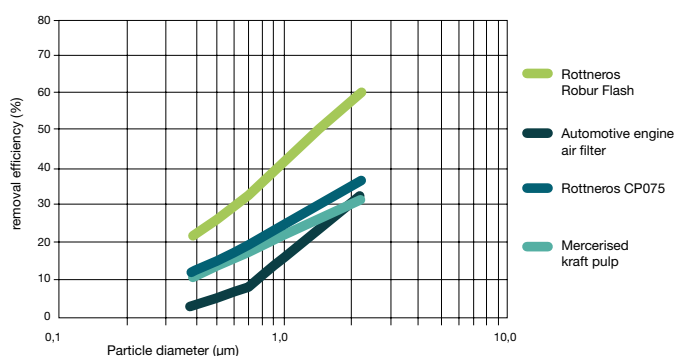
Rottneros fibres for filtration are characterised by:

- High porosity
- Large active surface area
- High fibre strength
- Low weight in relation to performance
- Cost-effective media performance

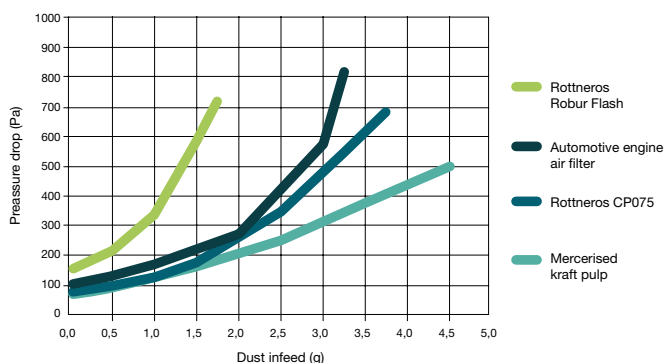
Initial pressure drop for handsheets of the different pulps



Initial removal efficiency for handsheets of the different pulps



Pressure drop change at infeed of dust for handsheets of the different pulps



Fibre	Rottneros Robur flash ECF	Rottneros Robur flash UKP	Rottneros CTMP CP075
Wood species	Softwood	Softwood	Softwood
Bleaching	ECF/Unbleached	Unbleached	TCF
Drying	Flash dried	Flash dried	Flash dried
Porosity	High	High	Very high
Rel. strength	Very high	Very high	Moderate





Pulp for Special paper focusing on excellent end results

Greaseproof paper, wallpaper, shoe insoles and label packaging are all examples of specialised paper applications where Rottneros has the potential to meet your toughest demands.



Greaseproof paper

For easier cooking

Greaseproof paper simplifies kitchen work worldwide while improving hygiene levels. The most important functional property is the resistance to grease, fat and oil. Additionally, it is more environmentally friendly than materials such as aluminium and teflon. It can be used in a number of ways, in cooking and baking and as a barrier in different types of packaging with high demands on fat resistance. Barrier properties such as air permeance and water vapour transmission rate are of great importance.

Greaseproof paper is a high density product, thanks to the high level of refining that creates multiple bonding sites on each fibre. Our high-quality and specially designed Kraft Pulp, Robur Flash, provides the perfect balance between tensile strength and tearing, even for highly refined products, guaranteeing a strong and reliable greaseproof paper.



Label Packaging & Shoe insoles

Standing the test of time

Our tailor-made pulp fibre blends have proven to be an excellent base material for many of the leading jeans labels manufacturers throughout the world. Made out of natural cellulose fibre and other additives, it can be printed, laminated, coated or screen printed to suit current trends. Thanks to high stitch strength and abrasion resistance it is both hard-wearing and flexible. It's main features are the leather-like feel and of course that it can be easily stitched onto jeans. Other benefits are good dimensional stability, retained quality after printing and it is lightweight.

Rottneros world-leading flash dried pulp provides an open fibre structure, where the long softwood fibres guarantee excellent strength and absorption, which is an important property of the end products in this segment.

The insole of a shoe has to keep performing to the end of every trek. High bulk and absorption rate are two of the most critical factors when creating an end product with a large amount of cushioning. Cellulose lasting boards are made from a mixture of pulp, latex and chemicals. When mixing pulp with other raw materials, steady blending and absorption are important. The speed is an important factor as high absorption speed contributes to homogeneous blending.

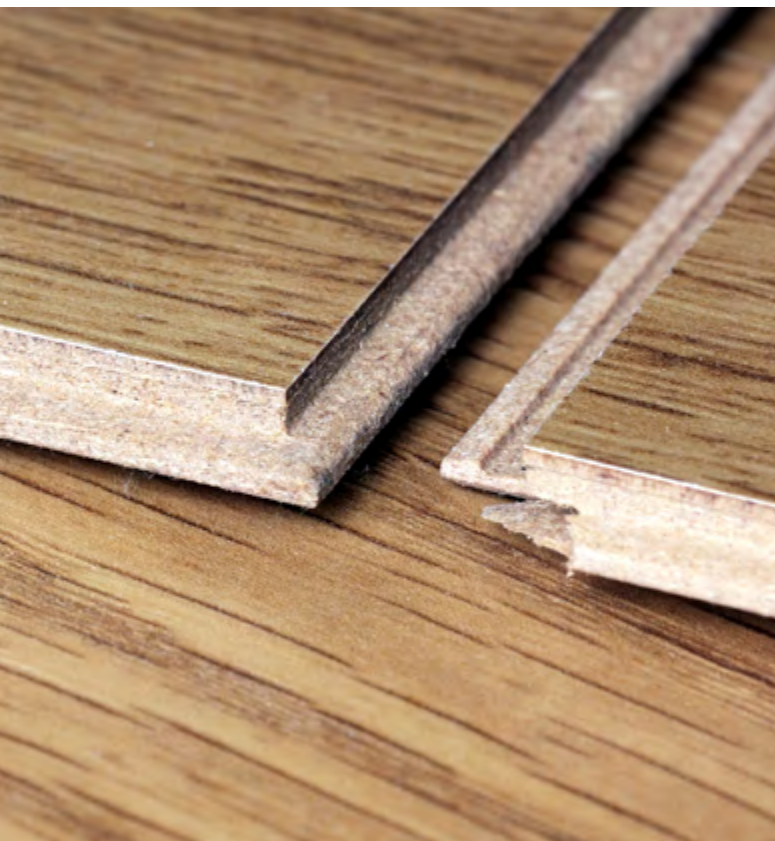
Our specially designed saturated grades ensure you receive a light, flexible, durable and versatile end product.



Wallpaper

Keeping in perfect shape

High opacity is essential when it comes to wallpaper. It ensures that the substrate doesn't shine through. When applying paste you don't want the paper to twist or reshape. Good dimensional stability ensures the shape remains perfect at all times – even in wet or damp conditions. Rottneros High Yield Pulp, GS360, is an excellent choice for you.



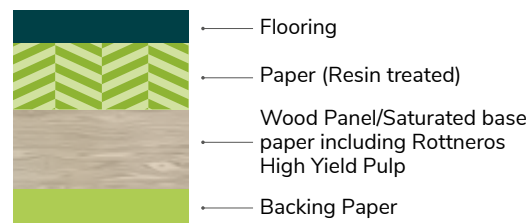
Laminate flooring

Ready for repeated pressure

Decorative laminates are one example of an end product where saturated paper is used. They are made of paper impregnated with thermosetting resin.

The laminate is composed of a sheet of decor paper and sheets of saturated base paper. The number of sheets is decided by their base weight and by the required thickness of the panel, six to seven sheets is the norm. Rottneros High Yield Pulp is an excellent choice when producing saturated base paper.

Typical flooring laminate construction



Typical decor paper construction



The characteristics of saturated paper is:

- A minimum pore volume to be filled with resin
- Capacity to absorb resin solution in a manner adapted to the impregnation conditions
- Good capacity for distributing the resin solution during actual compression in the press





High Yield Pulp for Moulding with consistent quality

The demands of the moulding industry are diverse, therefore the solutions have to be adaptable. We always make sure we understand your needs. We have the knowledge, the experience and the technical abilities to adapt the properties of our High Yield Pulp for your equipment. We are convinced that creating the perfect end product is always a joint effort.



When it comes to food, purity of the material is fundamental. We only use 100% virgin fibre pulp, free from chemicals such as mineral oil or PFAS.

Sustainable and renewable

Rottneros Packaging has developed a food packaging tray with our high quality pulp, manufactured entirely with Swedish wooden raw material, and it is both recyclable, renewable and degradable.



The potential is much greater

Rottneros Packaging produces an environmentally friendly food tray made of 100 % virgin fiber pulp produced by Rottneros Mill.

In addition to the environmental benefits, the potential for adapting design, patterns and functionality of the packaging is much greater than if plastic or board was used.

Environment

Our wood-based products are part of a natural and sustainable ecosystem with their beginnings in the forest. Having the pulp wood supply as close to the mills as possible reduces both our environmental footprint and our transport costs.

Our pulp (CTMP) is produced in a process that is environmentally friendly because of its high use of raw materials at a rate of 90-95 per cent, and its low chemical consumption.

We know just what it takes

Moulded products call for expertise and intricate technology. For example the dewatering speed is crucial for the finish of the product and the shaping of the edges has to be exact to ensure a high-quality, precision end product.

When it comes to food, purity of the material is fundamental. We only use 100% virgin fibre pulp, free from chemicals such as mineral oil or PFAS. For ensuring the right protection and shelf life, our trays can be laminated with conventional or biodegradable barrier films.

Quality guaranteed!

Our automatic process and manual controls by educated employees gives you a high quality product in stability, shape, colour and functionality.

Superb technical performance

- Favourable cost structure compared to existing packaging materials
- Excellent design possibilities
- Excellent product finish
- High environmental value
- High productivity


We use handmade tools for customized products in design and functionality, produced in Sweden.



The products can withstand high heat and are ideal for convenience foods – both hot and cold dishes.







Fibre for Board that meets the demands of the future

We see board as a priority market. We have invested heavily in our facilities in recent years in order to offer you exactly the products you need, to give your board the properties you prioritise. Our new pulp qualities have been very well received on the market.



The widest range of pulp on the international market

The different varieties of High Yield Pulp, Stone Groundwood Pulp (SGW) and Chemi Thermo Mechanical Pulp (CTMP) as well as Robur Flash UKP and ECF produced at our mills allow us to meet our customers demands for producing world-class board.

Our latest innovation Bulk Booster®, made from Stone Groundwood Pulp, is a great example of our dedication to provide world-class pulp for board production.

Board is a product that normally consists of several layers. General factors and requirements to take into consideration may be:

- Mechanical strength – tensile strength, bending stiffness, compression strength, delamination properties, convertibility
- Formation and printing properties
- Purity and cleanliness including taste and odour especially for unbleached kraft (UKP)
- Grammage
- Converting demands
- Other pulp/waste paper used in the furnishes

Quality and desired properties

With our Robur Flash UKP and ECF you can increase the modulus of elasticity (E-modulus) by further refining, which will increase the strength of the product. This is an important

property for the top and bottom layers, where bulk is less important. Our High Yield Pulps, on the other hand, give high bulk, so they are better suited to the middle layer of the board, where the modulus of elasticity is less important.

By modifying each layer you can create a strong board with great stiffness properties, and at the same time achieve excellent formation with good printability.

Mathematical formulae can be used to accurately guide material and process choices. Their basic recommendations:

- Use strong chemical pulps in the top and bottom layers to increase bending stiffness. This will enable you to increase modulus of elasticity (e.g. through reining). High bulk is not important here.
- Use mechanical pulps, such as SGP and CTMP in the main layer to increase bulk (i.e. the thickness of the layer). Here, modulus of elasticity has only minor impact. High bulk increases distance between top and bottom layers, and thereby the bending stiffness of the board.

Increase bulk in board made from waste paper

Waste paper can contain up to 40% filler and fibres are partly degraded. This is why boards made from waste paper often lack bulk i.e. caliper. You can easily calculate how to improve the board by adding Rottneros High Yield Pulp to the fibre mix, creating bulk.

Example:

- Board made from waste paper has a bulk of 1 cm³/g (40% filler and coating clay, 40% long fibre and 60% short fibre)
 - Target bulk assumed to be 1,4 cm³/g
 - Rottneros High Yield Pulp (CTMP) with a bulk of 3 cm³/g
- To reach the target replace 20% of the furnish with Rottneros High Yield Pulp.

Layer	Demand	Raw material	Suitable rottneros fibre
Top	Brightness, formation, moduls of elasticity, convertibility	Bleached chemical fibre	Robur Flash ECF/UKP
Sub (for white lined chipboard)	Brightness, opacity	Bleached mechanical fibre	Bleached stone groundwood fibre
Main	Bulk, z-directional strength (bonding)	Folding boxboard: SGP (stone groundwood fibre) TMP, CTMP White lined chiopboard: recycled fibre	Unbleached and bleached stone groundwood fibre and CTMP Unbleached CTMP to increase bulk
	Purity	Liquid packaging board: unbleached kraft, CTMP	Long fibre CTMP to save grammage Robur Flash UKP
Bottom	Modulus of elasticity, strength	Chemical fibre	Bleached long fibre sulphate, Robur Flash ECF/UKP





Pulp for Tissue when quality matters

The process of creating the perfect tissue starts with the right choice of high-quality pulp. The mixture of pulp, be it for Away From Home or home markets, is not only fundamental for the properties of the end product, it is also crucial for ensuring cost-efficient production.



Specially designed pulps for tissue

Tissue is widely used in a number of different product areas. The thickness introduces many challenges and thereby places tough demands on the manufacturing process.

The Rottneros product portfolio includes both specially designed High Yield Pulp and Kraft Pulp for tissue and we constantly aim to boost your productivity with optimised solutions. Our latest innovation Absorption Express®, made from High Yield Pulp, is a great example of our dedication to produce world-class pulp for tissue applications.

High bulk and excellent absorption

Our High Yield Pulp grades all have an open structure that meets the special demands of tissue applications. High Yield Pulp in tissue applications make positive contributions to

important properties such as absorption and bulk. In certain tissue grades, they can also improve strength as well as handfeel. Depending on end use and specific demands High Yield Pulp can replace other virgin pulps as well as recycled materials.

Ultimate quality

For the most exclusive products, such as premium napkins, brightness and strength are important. Our specially developed Kraft Pulp, Robur Flash, provides both excellent strength and brightness. Robur Flash gives excellent results also in the TDA (through air drying) process. You will never have to doubt the lasting quality of your high end products.

A production that keeps going

A balanced mix of our High Yield Pulp and Kraft Pulp creates a robust network of long and short fibres, which guarantees a safe and efficient production, without unexpected stops.

General factors and requirements to take into consideration

The requirements for tissue paper are often numerous and stringent. The properties that need to be considered include:

- Bulk
- Absorption
- Handfeel
- Dry strength
- Wet strength
- Appearance
- Brightness

One of the Group's foremost products in the field is Absorption Express which, as the name suggests, offers superior absorption, as well as high bulk.







Pulp for Printing and writing with high bulk

Printing and writing papers in various forms are an integral part of our everyday lives. They are used in a number of applications such as magazines, directories, pharmaceutical instructions and books. To meet the wide variety of demands, several different raw materials are used. Rest assured, no matter what specific challenges you face, we can optimise the pulp for you.



For paper with that little bit extra

Different properties are required depending on whether the product is a magazine, book, gift wrap or gift card.

For thin packaging and printing paper, as well as number of special applications, opacity is important when low light transmission is needed, such as when the print should be visible through the sheet of paper. Similar, the purity of the pulp is important when manufacturing thin paper.

Choose an optimal combination

We offer a wide range of High Yield Pulp as well as Kraft Pulp for the graphic paper industry. This allows us to produce a pulp with exactly the properties you prioritise to produce a world-class paper. With our wide product portfolio you don't have to compromise. You can have it all.

When the bulk is crucial

Rottneros range of pulps for printing and writing papers in general allows an improvement at the bulk for the papers.

The demands for different paper grades and applications areas as well as grammages lead to specific choices of fibre combinations. A general overview is given below.

Different papers, shifting demands

Producing journal paper, book paper and other coated and uncoated printing and writing grades put different demands on pulp composition. With today's ever changing demands on graphic papers, it is crucial to be able to adapt fibre furnish to suit customers' needs. The following factors are all critical:

- Formation
- Bulk
- Brightness
- Surface smoothness
- Tensile/Tear strength
- Opacity

The importance of the paper components are schematically shown in the table below.

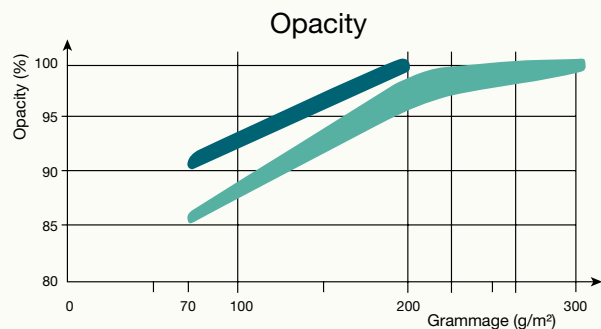
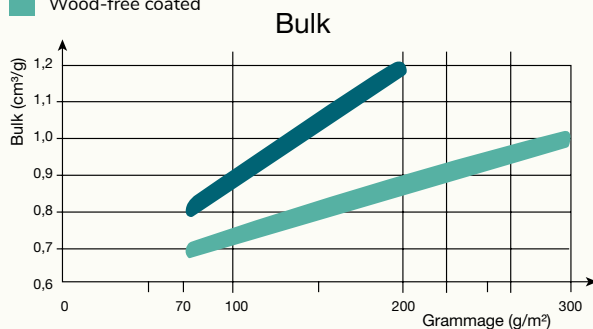
Fibre combinations			
	Typical grammage range	Main demands	Recommended pulps
Pulps for bulky book and offset papers	60-100 g/m ²	Bulk printability	CTMP aspen/spruce spruce
Pulps for nearly wood-free coated paper	70-200 g/m ²	Bulk surface smoothness	CTMP aspen/spruce
Pulps for thin wood-free speciality papers like instructions, thermal paper	20-60 g/m ²	Opacity surface smoothness	Stone groundwood pulp
Pulps for LWC and ULWC	45-65 g/m ²	Opacity printability	Stone groundwood pulp

Contribution of paper components				
	Rottneros stone groundwood pulp (SGP)	Rottneros CTMP aspen/spruce	Robur Flash ECF	Filler
Strength	+	+/++	+++	-
Brightness	+	++/+	+++	+
Opacity	+++	++	+	+++
Formation	++	+	o	o
Bulk	++	+++	+	-
Surface smoothness	+	+/o	+	o

Our unique combination of High Yield Pulp and Kraft Pulp helps you to achieve both these parameters at once. In short, you will have a high-quality paper you can trust.

Comparison of wood-free and nearly wood-free coated paper

- Nearly wood-free coated
- Wood-free coated



High yield pulp



SGW

Stone Groundwood pulp) from spruce



CTMP HW

Chemi-Thermo-Mechanical Pulp from aspen, birch or spruce.



CTMP SW

Chemi-Thermo-Mechanical Pulp from spruce or pine.

Main products

Bulk Booster
Opacity Extreme
Absorption Express

Other products

Available in Freeness level 85-700 and bleaching grade 60-80.

Main products

CAS 781
CA 783
CA 870

Other products

Available in Freeness 350-475 and bleaching grade 70-83

Main products

CS 075
CP 075
CS 870

Other products

Available in Freeness 100-700 and bleaching grade 65-75

Product naming

G= Groundwood
C= CTMP
S= Spruce
P= Pine
A= Aspen

Long-fibre sulphate pulp



Robur flash ECF

Standard Grade, bleaching grade 87
Filter Grade, bleaching grade 88,4,
porosity >300l/m²/s



Robur flash UKP

Standard grade, kappa 27
N-Grade, low voltage insulation and transformer board
E-Grade, Cable paper and high voltage applications



Our pulp is manufactured using an advanced production process which involves extensive cleaning, ensuring extremely low levels of conductivity. In fact, no one else has managed to do this better.



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GLOSSARY

AOX

Absorbable organic halogens.

BCTMP

Bleached Chemi-Thermo-Mechanical Pulp: bleached mechanical pulp where the raw material is impregnated with chemicals. Stronger than TMP. The term is common in North America and Asia (see CTMP).

BEK

Bleached Eucalyptus Kraft pulp.

BOD

Biological Oxygen Demand, biological method for measuring oxygen-demanding substances.

BULK

Volume, inverted value for density expressed as cm³/g.

CHEMICAL PULP

Paper pulp produced by boiling raw timber with chemicals. The pulp can be bleached to a higher brightness and a higher strength than mechanical pulp. Chemical pulp is usually sulphate pulp, but can also be sulphite pulp.

COD

Chemical Oxygen Demand. Chemical method for measuring oxygen-demanding substances.

CTMP

Chemi-Thermo-Mechanical Pulp. Development of TMP, where the mechanical pulp is impregnated with chemicals. Stronger than TMP. The term is used in Europe for both bleached and unbleached pulp.

ECF

Elemental Chlorine Free. Sulphate pulp bleached using chlorine dioxide, instead of chlorine gas.

GROUNDWOOD PULP (SGP)

Mechanical pulp based on roundwood as a raw material.

HIGH-YIELD PULP

Groundwood pulp, TMP and CTMP/BCTMP.

LATENCY

The deformed condition of pulp fibre.

LIGNIN

Polymer compound consisting mainly of phenyl- propane units; the main binding agent for wood fibre. It comprises about 1/3 of the wood.

LONG-FIBRE PULP

Pulp where the raw material is softwood, which has longer cellulose fibre than hardwood.

MARKET PULP

Pulp sold on the market and transported to the customer. Market pulp accounts for about one third of pulp production worldwide. The remaining two thirds are produced at integrated paper and board mills, or used internally within a group.

MECHANICAL PULP

Pulp produced using a mechanical process for fibre separation and processing. Has a higher level of bulk, stiffness and opacity than chemical pulp. Groundwood pulp, TMP and CTMP/BCTMP are types of mechanical pulp.

NBSK

Northern Bleached Softwood Kraft: bleached long- fibre sulphate pulp. The leading indicator of world market prices.

NOx

Nitrogen oxide, a term for emission of nitrogen oxides (NO and NO₂) to air.

OPACITY

Degree of opaqueness.

POROSITY

Air permeability, analysis method for determining the permeability for gas or liquid.

SCM UB

Timber measured under bark, used to measure raw timber.

SHIVES CONTENT

Proportion of unseparated fibers found in the pulp.

SHORT-FIBRE PULP

Pulp where the raw material is hardwood, which has shorter cellulose fibre than softwood.

SULPHATE

Method for producing chemical pulp.

SULPHITE

Like sulphate, but using a different cooking technique, different chemicals and with a different chemical recovery.

TCF

Totally chlorine-free bleached sulphate pulp.

TMP

Thermo-Mechanical Pulp: mechanical pulp produced using a technique in which the chips are preheated with steam, but without chemicals.

UKP

Unbleached Kraft Pulp, unbleached sulphate pulp.

