CLOUTH | SPRENGER
A CLOUTH GROUP MEMBER

CERADIA®-COATING BLADES

for paper production

SPECIAL ASPIRATION
VISIBLE QUALITY



WHAT ARE THE KEY PERFORMANCE CHARACTERISTICS O

A good coating blade is essential for the production of coated paper in order to achieve consistent and even application of the coating colour. A high quality coater blade performs at high production speeds under high shear forces with abrasive coating mediums and provides long life and maximum productivity.

FOCUS ON COATING BLADES

Manufacturing and sales of coating blades for the paper and board industry are the main focus of Clouth Sprenger. In other words: Coating blades aren't a by-product but our absolute core business. The high-quality wear resistant layers of our Ceradia® coating blades have a leading market position.



The Demanding Daily Routine: Ceradia® Coating Blades at Work



Quality Requirement: No Scratches or Streaks

Clouth Sprenger GmbH – A Clouth Group Member

Clouth Sprenger GmbH, a member of the Clouth Group, is a medium-sized company founded in 2003 acting as a supplier of special tools for the paper industry. At the production site in Moers, coating blades and creping blades with high-quality wear protection coatings are made.

Advice that Secures Benefits

Like any other company being part of the Clouth Group, Clouth Sprenger GmbH is focused on realizing its customers' demands. The aim, always, has been to improve the quality of the finished product and to achieve longer runtimes to save costs and conserve available resources. The result is a competent and practice-oriented advisory service.
But, we don't just explain what is possible, we let you experience it live: On-site trials in your production with diverse coating blade variants give you the certainty of using the optimum product that effectively increases productivity.



F A COATING BLADE?

CLEAN COAT FOR HIGH QUALITY

Compared to a natural paper a coated paper has a smoother and glossier surface. To achieve the desired quality parameters the coating layer must be as uniform as possible.

This is where Ceradia® products come into play. Together with other process parameters they have an important influence on the quality characteristics of coated papers. This includes better smoothness, printability, higher paper and printing gloss.

Individuality as a Design Feature

In the first place, Ceradia® coating blades make possible a more consistent quality at a high level and thereby they – because of their customised coatings – reduce the necessity of interventions in the process.

Thanks to intensive research Clouth Sprenger is capable of producing quality coating blades for almost any application in its portfolio. At the same time the flexibility to meet special customer requests leads to the continued growth of our product-range. Material and production innovations are our daily focus which provides our customers with a key advantage.



Quality Control at our Factory in Moers

QUALITY
AT MAXIMUM SPEED



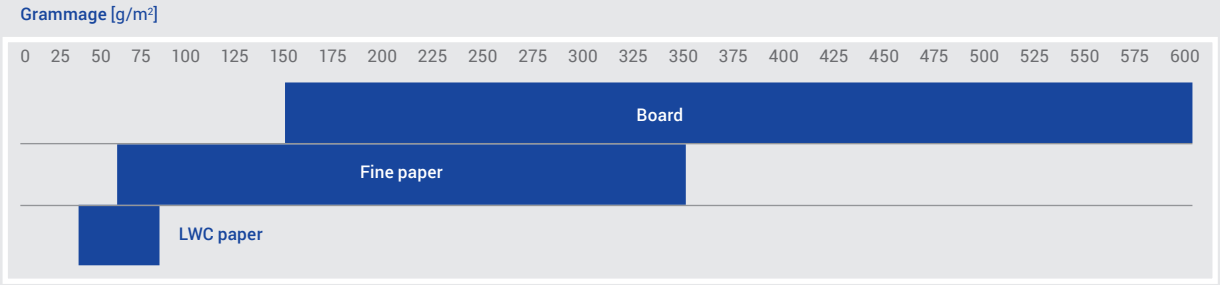
The coating blade and rod system are the most important and most widely-used metering elements in coated paper production. Using blades or rods is dependent upon the individual application. For the topcoat on a board machine for example, a blade is preferred due to the high smoothness requirements. Almost exclusively, coating blades are used on fast running coated machines in wood-free and LWC papers.
Even the lowest coating weights can be realised evenly with the coater blade.

Possible coat weights
Coat weights applied depend on the end use of the paper and in most cases are between 5 gsm and 20 gsm per application.

Possible coating applications
- One side
- Double side
- Single coated
- Double coated
- Triple coated

Possible surface effects
- Matte
- Semi matte
- Glossy

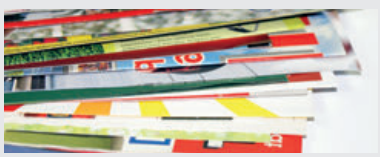
Due to individual requirements, the combination of coat weight, coating layout and desired surface properties have to be determined per grade:



LWC paper
Light-Weight-Coated paper is a wood containing double-side single-coated roll-offset or rotogravure paper with a grammage of 35 gsm to 80 gsm. It is used for example in the printing of TV magazines.

Fine paper
Fine papers have high or the highest quality requirements in case of surface strength, evenness of formation and printability. These papers whose grammage is between 60 gsm and 350 gsm are single or double coated and mainly used for the printing of brochures.

Board
Board grammage is normally between 150 gsm and 600 gsm and is one side, double or triple coated. Its use is from high quality postcards to packaging solutions.









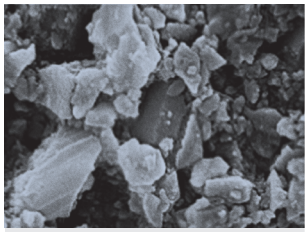
KNOWING THE IDEAL WHITE

The formulation of the coating medium is usually a company secret but is normally based on 4 parameters:

- PAPER GRADE
- TYPE OF PAPER MACHINE
- TYPE OF COATING APPLICATION
- REQUIRED QUALITY STANDARD

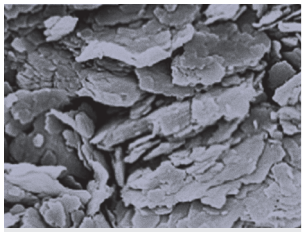
Main components of the coating medium are – beside binders and specific additives – different pigments. They are characterized by differences in whiteness, size distribution, form, density and abrasiveness.

Calcium Carbonate



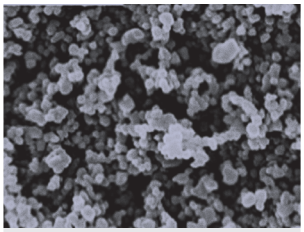
Calcium carbonate is the most widely used pigment for coated paper production. With whiteness of approximately 90 % - 97 %. Since the calcium carbonate made coating pigments have a globular structure they have excellent flow characteristics. This enables a high solids content in the coating medium. Precipitated calcium carbonate (PCC) is modified by chemical processes. This enables particle size and the crystalline structure to be engineered.

Clay



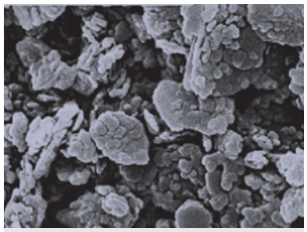
Clay, also known as "China Clay", is a fine white stone which develops as an alteration of feldspar. Its whiteness is approximately 82 % to 95 %. As a pigment for coating mediums it is characterized by its excellent opacity. In addition it has some inert characteristics which allows it to be used in acid as well as in alkaline production processes.

Titanium Dioxide

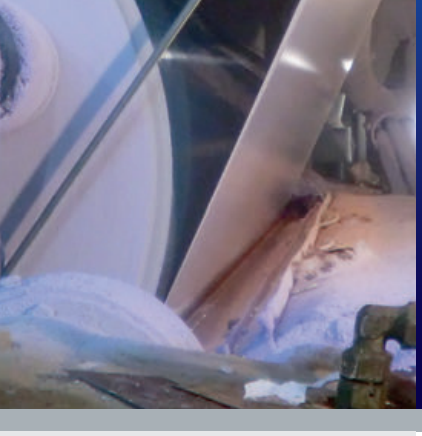


Due to the extreme high whiteness of 94 % to 98 %, titanium dioxide is interesting as a pigment for coating mediums. Further attributes are its high opacity and potential brightness. However, compared to calcium carbonate and clay it isn't a main additive in the paper production since it is quite abrasive and expensive.

Talcum

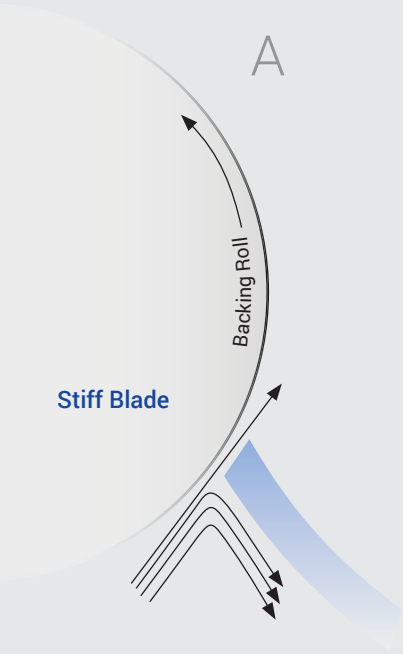


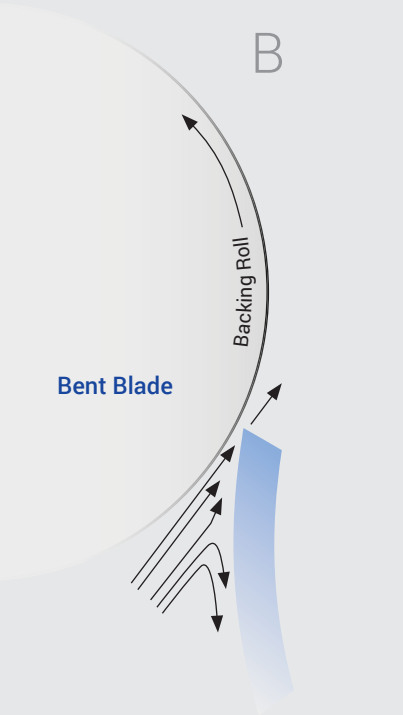
The original method for achieving a higher whiteness was the use of talcum pigments in coating colours. Talcum has a whiteness of only 70 % to 87 %, but can, due to its physical properties, offer grade-specific advantages in converting. So can for example – especially when producing LWC – avoid the occurrence of so called core bursts. The use of talcum as a coating pigment is less important today.



COATING BLADE

‘Stiff’ but still flexible





STIFF BLADE AND BENT BLADE

Coating blades are classified into two main groups Stiff Blade and Bent Blade

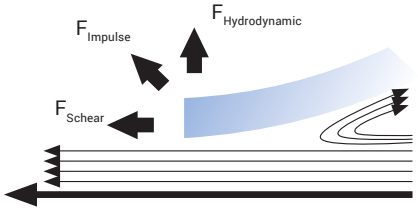
With a stiff blade which operates at constant effective angles of 20° to 45° the application of the coating medium is only controlled by blade pressure. With a bent blade which operates at comparatively low working angles of up to 12 ° the coating medium application is controlled by the adjustment of the effective angle against the backing roll.

Advantages in application for stiff blades
(Pic. A)
- Easier control of coat weight
- Lower coat weights possible
- Better performance at high production speeds
- Easy to adjust

Advantages in application for bent blades
(Pic. B)
- Less prone to coating failures
- More glossy and smoother surfaces possible
- High coat weights possible
- Good CD profiles

FLUID MECHANICAL PRINCIPLES

The dosage with blades follows fluid mechanical principles. Hydro-dynamic, impulse and shear forces together with the balanced blade pressure, determine the amount of coating colour. When metering with a blade these effects and factors are found in the following process parameters:



Machine speed
With increasing machine speeds the coat weight increases temporarily but continuously as well. Therefore, for each speed range a favourable control mode (stiff blade or bent blade) and modified blade geometry has to be chosen.

Colour rheology
The colour rheology and the solids content, are critical factors for the coat weight. Just a slight increase of the solids of 1 or 2 percent can lead to a complete loss of coat weight control. A decrease of solids in the same range may mean that the desired coat weight cannot be achieved at all. Besides the error in coat weight, in both cases quality losses may be experienced.

Geometry of the dosing system
If the effective working angle under the blade tip is increased the coat weight will decrease and if the angle is reduced it will increase. With bent blade this effect is used for automatic coat weight control.

Blade pressure
By bending the coating blade under different loading, the resulting pressure can be varied. With stiff blade this is used for automatic coat weight control. In addition, it should be noted that too high a blade pressure may cause production problems such as sheet breaks, while too low a pressure may cause unstable CD-profiles.

WIDE PRODUCT RANGE

Ceradia®-Coating Blades from Clouth Sprenger



CERADIA®- BLADES: DICISIVE FOR PRODUCT QAULITY

A good coating blade is essential for the production of coated paper in order to achieve consistent and even application of the coating colour. A high-quality coater blade performs at high production speeds under high shear forces with abrasive coating mediums and provides a long life and maximum productivity.

OUR CERADIA®- BLADES AT A GLANCE

CERADIA® OMNIA	allrounder with a high wear resistance and a long running time
CERADIA® NIVEL	designed for a flawless precoat
CERADIA® EXZELLENT	designed for a premium top coat

BLADES FOR CLEANING

CERADIA® OPTIMUS	specifically designed for the cleaning blade position

FOR ALL PRODUCTS

Standard dimensions* **Thickness:** mm (inch)	**Width:** mm (inch)	Key features	Suitable holders
0,381 (0.015)	76,2 (3), 100 (4)	Hardened, tempered, blue polished and straightened	Ready to install with or without punched tabs.
0,457 (0.018)		Individual angle to customer specification	
0,508 (0.020)		Straightness tolerance max. 0,05 mm over 1000 mm	
		Straightness tolerance max. 0,05 mm over 1000 mm	

* Other widths and thicknesses available on request

For particulary applications where a high surface quality of the paper is required, we also offer all Cermet blades in the variant „High-Line“.



COATING BLADE TYPES

Ready for any use



COATER BLADES:
made of steel

with a ceramic coating

with a Cermet coating

To be able to offer the optimum coating blade solution for the production of coated papers, the Clouth Group's product range includes various carrier and coating variants. We source our steel from the most renowned suppliers in Europe. Here, our partner Voestalpine deserves special mention.

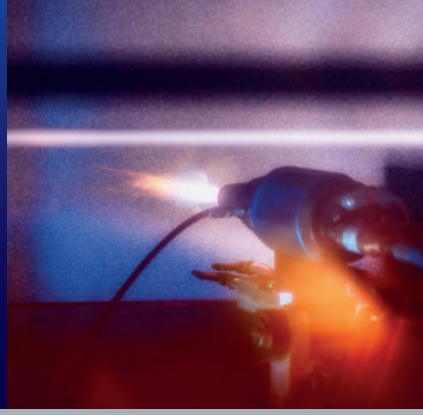
STEEL; CERAMIC; CERMET

Coater Blades made of steel	with a ceramic coating	with a Cermet coating
Steel coating blades have proved themselves over a long time. They quickly adapt to different machine conditions due to their wear characteristics and achieve a good surface quality. However, this is difficult to control due to the high level of wear and is usually not very consistent.	Ceradia® ceramic coating blades are offered with a very wear-resistant aluminum oxide based coating and an even more durable chrome oxide coating. These materials are ideal to achieve the best possible results when applying coating mediums with clay pigments and they meet the current standard.	Ceradia® Cermet coating blades make use of a carbide-metallic (ceramic + metal = Cermet) wear resistant layer. With its low porosity this interlocking matrix exhibits a very high wear resistance allowing for a minimisation of streaks and scratches in the application of the coating colour. Cermet coating blades in different designs are suitable for almost all applications, especially for high-solid coating colours with calcium carbonate.

Upon request, we offer our Ceradia® products with stainless steel as the carrier material.

STEEL, CERAMIC OR CERMET?

Blade life in comparison





Cost: Performance Ratio

Throughout industry, investing in higher quality brings economic benefits. Ceradia® coater blades help you achieve improved product quality and higher productivity.

QUALITY AND INDIVIDUALITY

As we at Clouth Sprenger attach the greatest value on quality, we leave nothing to chance. Without exception, we ourselves carry out all manufacturing processes for our coating blades. This also applies, for example, to the spraying process with which we determine the fractioning of the grain size of our coating blades. This manufacturing from a single source also gives us the possibility to react quickly and specifically to any extra customer demands. This is how individually optimised solutions are created in close cooperation with our customers.

FAST ROI

Steel coating blades are lower priced than coating blades with ceramic or cermet wear-protection. However, it is not only the purchase price which determines the most cost-effective solution, but the advantages and disadvantages of each material taken into account over the entire lifetime of the blade.

PRODUCTIVITY: EVERY HOUR COUNTS

Compared to steel blades, Ceradia® coating blades offer longer service lives and this at a stable quality level. Other positive effects include a reduced edge wear and a better coating weight control. Altogether, this ensures that an investment in Ceradia® coating blades pays for itself on short or medium term.



MAKE THE MOST OF IT

Our services

Services:

Technological consulting
Start-up assistance
Operator training
Trouble-shooting
Adjustment of coating heads
On-site support during trials
Blade analysis
Lab analysis

VALUE CREATION IN FOCUS

To get the best out of our products and your process, we, in addition to our first-class coated products, offer a wide range of services.
A support during the start-up and the adjustment of coating units as well as technical and operating advice are all part of our service.
Here, our application engineers draw on years of experience in the field of paper/board production and finishing.

You have new demands on the product or maybe there is no suitable solution yet?
No problem! Together with you and our R&D department, we will develop the suitable product for you and will be happy to assist you during the test phase.

You are faced to problems which are not immediately explainable or visible on site?
Here we are happy to support you with one of our high-quality analyses from our in-house laboratory- whether it is determining the geometry, the layer structure or a failure analysis.
By our numerous examination methods and our profound know-how, we will find the cause and an appropriate solution for you!
To achieve this, all teams work hand in hand at a high level of commitment.

ARRIVING SAFELY AT THE CUSTOMER

Custom made packaging

As well as the high quality of our products, we have developed high quality tailor-made packaging systems to ensure that all our coating blades arrive with the customer in perfect condition. All coating blades are packed with edge-protection which protects the ceramic layer from damage as well as the operator's hands from sharp edges. The specially developed cardboard boxes are designed so that no pressure is placed on the blades by stacking or during transportation.





Stabilizing element inside the packaging



Edge protection for coiled CERADIA®-coating blades



BIG AT MAKING SMALL: CLOUTH DOCTOR-CUT®

Cutting device for blades

Our cutting device for composite and metal blades, CLOUTH DOCTOR-CUT® cuts worn blades to a size of 250 mm at a speed of 500 mm/s. It is easy and safe to use without removing pins or rivets.

WE ARE HERE FOR YOU - WORLDWIDE

Locations and branch offices



Clouth Sprenger GmbH,
Moers, Germany



Joh. Clouth GmbH,
Hückeswagen, Germany

Head office of the Clouth Group

INTO THE FUTURE WITH TAILOR-MADE SOLUTIONS

Product development at Clouth Sprenger completely is focused on satisfying the individual needs and wants of our customers.
Its goal always is to make progress in various core areas. In doing so, priority – to the same extent – is given to both, the realization of new customer requirements and a further improvement of line pattern quality as well as the achievement of longer running times in order to save costs.

Company-internal our department of research and development is well connected to both, the application technology department and the quality lab and moreover – with regards to latest developments in the industry – we are always on the pulse of time. Our application engineers at the same time are experts for the Clouth Sprenger range of products as well as the customers' individual needs. Customers can rely on their product recommendation.

In their test series the application technology department and the quality lab precisely and individually adapt the blades to the customer's application conditions which is to meet the challenges in everyday operation – for no coater ever looks like the other!

In addition, the application technology department and the quality lab provide the customers with support regarding to process optimization. Here again, blade analyses provide valuable insights to achieve an efficiency enhancement and a quality increase with respect to the coating process. Moreover, our CERADIA R&D Team also contributes to the individual product adaption and development. In close contact with customers, universities and additional cooperation partners we are constantly doing research on the optimization of wear-resistant coating.



Find your contact person
You can find our production, sales and service locations in your region simply at **www.clouth-group.com** and we will reply to your enquiry in your own language.

QUESTIONS?
WE ARE PLEASED TO ANSWER!

If you have any questions about our company,
please don't hesitate to contact us.
Our experienced staff are here to help you!

Administration

Clouth Sprenger GmbH
Johann-Clouth-Str. 1–5
42499 Hückeswagen
Germany
Phone: +49 2192 853-500
Fax: +49 2192 853-333

Production

Clouth Sprenger GmbH
Pferdsweide 47
47441 Moers
Germany
Phone: +49 2841 99850-0
Fax: +49 2841 99850-20

Printing level: 07/2024. All information without guarantee.

Klimaneutral
Druckprodukt
ClimatePartner.com/15959-2201-1002