THE a VISION

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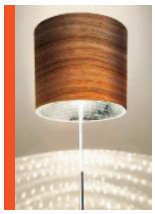
Trends & Innovation news dedicated to abrasive producers [by Ahlstrom Munksjö]

DISCOVERING A WORLD OF EXPERTISE

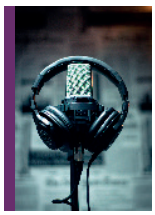


OPPORTUNITY

The standards of excellence for wood veneers

SPECIAL FEATURE

Behind the scenes of our world renowned R&D centers

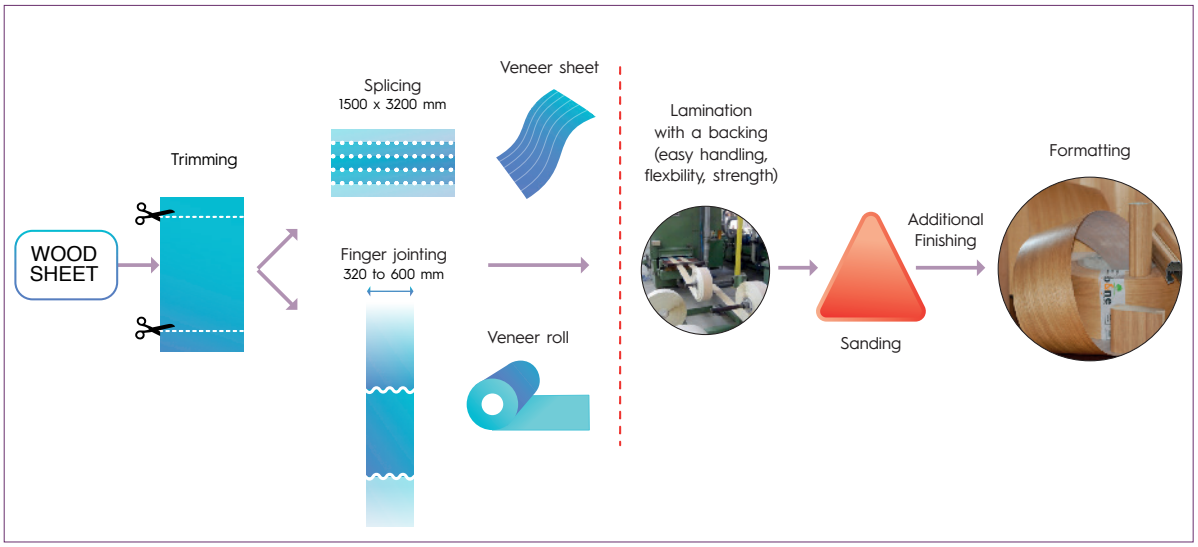


BREAKING NEWS

A new show is coming... the coffee talks !

SANDING VENEER : PRECISION FOR EXCELLENCE

Ahlstrom-Munksjö gives you an insight into the market for wood veneer, a high-end finish made from many different species (oak, spruce, etc.). Veneer in rolls and sheets, with an initial thickness of 0.55 mm, is used to cover wood panelling, doors, window frames, and many decorative and everyday features. Veneer uses up fewer natural resources than synthetic solutions such as laminates or solid wood, making it an eco-friendly option.



A perfect finished product is only possible with a sanding step performed to obtain a finer than fine result without damaging the veneer. Indeed, reducing the thickness of such a fragile, delicate material by half requires a great deal of precision in the operation and exactly **the right abrasive for the species concerned**.

The sanding step has a dual purpose:

- **to reduce the thickness of the veneer** to reach between 0.28 and 0.40 mm, whilst achieving just the right balance of rigidity/flexibility needed for the given use (with P80/P120 antistatic cloth belts);
- **to guarantee a surface quality suitable** to receive the customer's finish (P150/P180 and P220 paper-backed belts).

Using an abrasive that is not in perfect condition would risk leaving marks, even piercing the veneer, which further sanding would not be able to make good. Hence the importance of being sure of the even distribution of the grit, the conductivity of the belt and the efficiency of the dust extraction system.

EBENE

This French manufacturer produces flexible wrapping veneers from natural woods, for surfaces, profiles and edge banding (sheets, rolls, reels). It is thanks to the cooperation of this firm that we are able to show you this exceptional know-how.

https://www.ebene-veneers.com/

The expert's tips

Precise tools are an absolute must to respect this precious material. Here are some tips to achieve the perfect finish without amplifying its fragility.

By using a BLACK B antistatic backing with a high-performance pre-coating containing carbon black (resistivity 10^5 Ohms/sq), the dust will be efficiently extracted, whatever the humidity conditions in the workshop: the belts will clog very little and therefore need to be replaced less often, and there will be no risk of hammering of the platen. Besides, the black precoating makes the surface perfect for fine grits.

This market also uses cloth to give its product the «right thickness». Did you know that the **TEX-STYLE™** composite backing **offers the same strength as a cloth backing and the same perfect surface as paper**?

GROUP R&D CENTERS
top-flight expertise at your service

Research and development is the undisputed strength of the group and especially its abrasives division. **Numerous innovations have originated at the R&D centre, to provide us with solutions to many a challenge.** This is possible thanks to a dedicated team of experts carrying out research in complementary fields, long-established know-how and cutting-edge tools.

In this special feature, **we open the centre's doors to give you a look behind the scenes** and a better idea of the potential that is at your disposal.

KEY FIGURES

- **2 laboratories with complementary specialities:**

  Apprieu, which specialises in paper technologies and cellulose and synthetic fibres

  Pont-Évêque, which is dedicated to polymers, nonwoven materials and surface coatings
- **70 people working at the research centre, not counting the R&D relays in the plants**
- **725 patents** in force, divided into 123 families
- **15000 raw materials identified** in our database to boost product formulation and innovation

KEY ASSETS

Fom stiff to super flexible, a wide panel of backings for all sanding applications

- **Antistatic** backings
- **Latex and waterproof papers** produced directly in line
- Papers with very **high tear strength**
- Heavy papers with very **high dimensional stability**
- **Expertise** in saturating and saturated papers
- **Offline coating** and **printing technology**

AREAS OF EXCELLENCE DEDICATED TO ABRASIVES

1. Dimensional stability
2. Surface texture
3. Antistatic properties
4. Mechanical properties
5. Color expertise and design (mass dyied or coated, plain or printings)

SOLUTIONS FOR SUSTAINBILITY

- **Formaldehyde banished** since 2013!
- Formaldehyde-free **composite backings** that combine the best properties of paper and cloth to shorten the supply chain (**TEX-STYLE™**)
- **Energy-saving** solutions (2-SAVE)
- **Ready-to-use** solutions to clean up processing workshops (EZ-BOND)

SOME EXAMPLES OF RESEARCH FIELDS THAT GO BEYOND ABRASIVES

- Agri-food packaging and non-stick cooking paper
- Electrical insulation applications, battery separators
- Filtering products
- Printing papers for bottle labels
- Protective interleaving papers for metal and glass plate
- Organic fluid collection cards
- Non-stick release paper for adhesive labels
- Nonwoven geotextiles
- Opaque thin print papers
- Clear envelope window paper

INNOVATION IN THE GROUP:
a human achievement above all else

Meet Thierry MAYADE, abrasives R&D manager since 1998. With 24 years of experience under his belt, spent developing numerous innovations, he tells us about the group's strengths and values.

The A Vision » Thierry, can you tell us about the two centres and what makes their approach to R&D unique?

Thierry M. » Of course! At Apprieu, we deal with abrasives with a specially dedicated team, and the centre specialises particularly in paper technologies. It is also assigned to cellulose and synthetic fibres, which, when they don't come from mineral fibres, are derived from polymers. These polymers are precisely Pont-Évêque's field of expertise, along with nonwovens and surface coatings.

The centres work on a wide range of complementary subjects (see previous page) with lots of synergies. And that's really unique! With this concentration of experts in different fields, who are in regular contact with each other, we cover almost all the group's activities. And at the same time, we are able to make a very strong contribution to the abrasives division.

T.A.V » Can you tell us more about the teams?

Thierry M. » We have over 70 researchers and lab technicians. And **because it's a very stable workforce, we are able to capitalise on their know-how built up over many years**, whilst also opening up to the future, with the young PhD students we recruit.

T.A.V » How do you explain this stability in the workforce?

Thierry M. » Quite simply by a favourable work environment that is conducive to meeting technical challenges and innovating! **We are all passionate about what we do, and thanks to a willingness to work together** and share, backed up by cutting-edge equipment, this potential can really express itself!

T.A.V » What are your missions?

Thierry M. » We provide **technical assistance concerning our papers**. In the case of abrasives, we are working on a «living» material (cellulose fibres that can be sensitive to humidity), that is going to be combined with other, inert materials (grit and resin). So there are a lot of technical parameters that can impact the effectiveness of the product and therefore a lot to study to find the ideal paper depending on the use, the type of resin, etc.

We also design new products for the range, as we did with **TEX-STYLE™**, which is a composite backing that is a substitute for cloth. In collaboration with the TCS (Technical Customer Support) team, we also support the plant in the formulation of specific products.

With the context we're currently seeing with difficulties obtaining some raw materials, we are thinking proactively about other solutions. Even if current paper formulations remain relevant and unchanged, we still have a duty to engage in some lateral thinking and look for new ressources, both to **secure supplies and make them always more sustainable.**.

T.A.V » Do you share knowledge and challenges between your two centres?

Thierry M. » Definitely, and the sharing also concerns **our knowledge of raw materials, the essential ingredients of our product formulations**. At Apprieu, we have a permanent stock of 3,000 different raw materials, which allows us to really push the boundaries in R&D. It is also part of a wider database of 15,000 items, for which we have identified both the scope of application and the potential suppliers. This is really a very powerful knowledge tool, covering pigments, functional fillers, binders and additives, and it perfectly complements our technical equipment.

T.A.V » Can you tell us more about that technical equipment?

Thierry M. » The research centre is well known for its unique range of equipment, which includes all the latest technologies, many of them rare in industry. For example, our electronic microscopes or a pilot paper machine...

Thank you, Thierry. We're going to continue the visit by taking a look at your technical tools.

ALL ABOUT analysis equipment

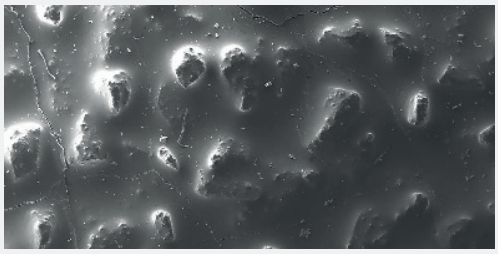
Some unique analysis equipment is concealed behind the centre's doors, where innovation remains a major development focus. Some equipment you will be familiar with, such as optical microscopes, whilst other things are very special and the group's pride and joy, given how rare and advanced they are. Come and see the technical reasons behind the quality of our expertise.

1 QUALITATIVE ANALYSIS AND DISTRIBUTION OF MATERIAL

Scanning electron microscope (SEM)

Unique feature:
Much more powerful than an optical microscope, the process relies on the interaction between electrons and the material of the sample observed. Analyses are at a scale of less than a micron, with high resolution images available. We can analyse both the surface and the cross section of backings or a coated abrasive.

Useful for:



SEM picture showing the cracks after flexing

Identifying the composition of the ingredients and their distribution. For example, we may want to check the homogeneity of the latex impregnated in the paper against the initial requirements and the final product expectations, but also the evenness of the penetration of the resin if we are looking at abrasive papers..

The bonus:
Use a SEM EDX analysis module as a complement to study the atomic composition of a sample.

Fourier-transform infrared spectroscopy (FTIR)

Unique feature:
Thanks to infrared rays, which react to groups of atoms, it is possible to identify the nature and distribution of the molecules in a material.

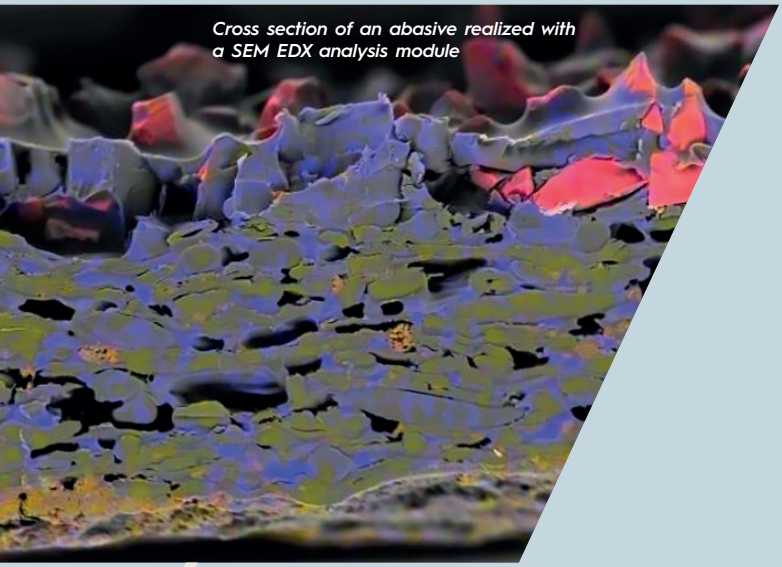
Useful for:
Recognising various contaminants, etc.

In practice:
Combined with a microscope, FTIR allows molecular imaging, which means that we can not only see the chemical nature of the constituents of a material, but also how they are distributed through it.

Image processing

Unique feature:
A complement to the results produced by the machines already mentioned. Applying processing algorithms allows us to determine a wide range of data in the form of figures. This means we can support you checking grit density and orientation for example.

Useful for:
Obtaining more detailed analyses based on microscope images, in particular to check compliance with the backing qualities announced. Based on that, we can then make recommendations to optimise performance.



Cross section of an abasive realized with a SEM EDX analysis module

2 QUANTITATIVE ANALYSIS

Quantification of different elements can be done by doing simple assays on paper with reagents, but also using specialised equipment such as X-ray fluorescence (XRF) or inductively coupled plasma-optical emission spectroscopy (ICP-OES).

The techniques used will depend on the elements to be analysed and their quantities as percentage or ppm (mg/kg).

CUTTING-EDGE METHODS AND HIGH TECH EQUIPMENT for even better performance

We either use standardised techniques or we develop unique methods for abrasives such as the resin or grit adhesion test. Here are just a few examples to illustrate the high level of skills and demanding requirements we work to.

Mechanical strength tests

Unique feature
destructive or non-destructive.

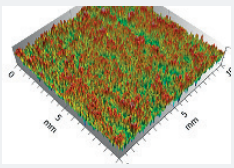
Useful for
testing the mechanical properties of a backing on its own or once processed into an abrasive paper.

In practice

- Tensile, creep, stress relaxation tests; Particularly relevant for measuring the percentage deformation of sanding belts.
- Tear and burst tests;
- Fatigue tests: tension or folding cycles. The force is applied repetitively, to get a better understanding of the strain on the abrasive paper and the properties of the material. The tests can be done at a high temperature to reproduce real operational conditions.
- Resin or glue adhesion tests, done using a turbula® in wet conditions and a longotte in dry conditions.

Physical measurements of structures of surfaces

Unique feature
may be done on the paper alone, once it has been processed or even on the sanded part.



3D topography of an abrasive paper backing showing the roughness of the surface

In practice

- Analysis of «topography» to check the evenness of the surface of the sample;
- Surface energy by measuring contact angle, to see how resin spreads over a backing;
- Different solvent barrier and water repellency tests
- Surface resistivity tests to measure antistatic properties
- Colorimetry

Aging tests

Unique feature
involves artificially altering environmental conditions

Useful for
simulating the use of products in different climates and anticipating how they will evolve according to weather variations.

In practice
over a short experiment time, products are subjected to extreme changes that reproduce the impact of the climate (ultraviolet radiation, tropical humidity, immersion in water, etc.). 3 criteria (temperature, light and humidity) can be varied to provide reliable indications of how a material will behave in situ.

Equipment for prototyping papers

Unique feature
concerns the creation of the backing as well as the paper processing.

Useful for
formulating new papers, using them in the abrasive manufacturer's process to assess the impacts through the entire value chain.

In practice
Small-scale, manual workstations

- Sheet moulds to make sheets measuring about 20 cm using a specific recipe;
- Impregnation and surface coating units
- Manual processing equipment to make sheets with resin and grit;

Pilot tools to simulate the industrial process

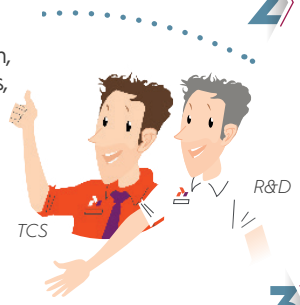
- A pilot paper machine to produce abrasive paper backings with a width of 20 cm.
- A pilot roll coating and impregnating machine.

THE EXPERTS investigate

At the Center, we don't believe in problems... just solutions! To achieve that, we have a standard path we follow....

1 UNDERSTANDING

Together with the TCS team, we put the issue into words, to make sure we've really grasped it;



2 PROPER ANALYSIS

After receiving the samples concerned, we refine the diagnosis by making observations and carrying out tests based on the initial understanding of the problem;

3 HYPOTHESES

We put forward possible reasons, relying on the tools and know-how we have at our disposal. If observation is not enough, we try and see if the problem can be reproduced in the lab so that we can analyse it in more detail;

4 SOLUTIONS

The customer is informed of the conclusions of the 'investigation' through the TCS team, with solutions or recommendations.

GOOD TO KNOW

EXAMPLES OF QUESTIONS AND CHALLENGES WE'VE DEALT WITH

- I plan to replace my resins system. What shall I consider on the paper side ? How can you support me in the change ?
- My abrasive is too stiff...
- I've got some doubts about abrasion performance...
- The top of the abrasive is blotchy...
- My paper changes colour when it's cured...
- There's a problem with the adhesion of Velcro loops

Do you have a question about a product or its performance?
Are you looking to extend your offer?
Contact us! We have the capacity and know-how to help you work out what's happening.

EXPERTS WITH a visionary outlook

The group has a robust experience in many application fields and its R&D drives on 3 major themes.

1. **Biobased packaging**, using materials made from plant fibers;
2. Development of products for the **energy storage sector**
3. Products that are more and **more respectful** of the environment.

Aware of the ecological stakes facing us today, the centre is focusing more of its research on eco-responsibility, in order to limit its impact on the planet and look serenely towards the future.

TO FIND OUT MORE ABOUT ECO-RESPONSIBILITY:

Ahlstrom-Munksjö is conducting a project aimed at **formalising the environmental impacts of products throughout their life cycle** (production, use, recycling, etc.).

In our abrasive portfolio, the Life Cycle Assessment method will concern products like TEX-STYLE®, EZ-BOND or WET-2-SAVE. If you are interested in this initiative, don't hesitate to contact:

francis.poirot@ahlstrom-munksjo.com

A NEW UPCOMING EVENT: coffee Talks will be starting after the summer

Building on the success of the webinars organised over the last two years, Ahlstrom-Munksjö is innovating this autumn, to offer you a new, interactive programme.

After the *Coffee Breaks* where you benefited from advice from our experts, you were able to attend our first virtual trade fair specifically dedicated to abrasives, *DediCOATED*. Until the next edition comes in 2023, Ahlstrom-Munksjö is developing *Coffee Talks*, **a discussion format based on a set of questions & answers involving one or more specialists** and an audience. The experts will be from all sorts of backgrounds, and the aim will be sharing and mutual enhancement.

Sticking to a recipe that works

On the programme of these Coffee Talks, there will be objectives that are important to us: we aim to provide **targeted expertise, added value, upskilling on innovations and generate discussion and sharing**. The intention is to make these regular events, to maintain close links focused on subjects that interest you: **technical innovation or marketing, sustainable development, market exploration**, and plenty of others that we're sure you'll be able to suggest.

Encouraging a discussion

This is where the novelty lies: **there'll always be an expert on hand to intervene, but he or she will be able to answer any questions that you have on specific subjects**. Thanks to the presence of a moderator and via the chat function, we'll be able to pass on questions asked ahead of the event itself as well as the ones asked live, so that each subject is comprehensively covered. You will get lots of information that directly meets your expectations.

Special effects for our kickoff talk

For our first Coffee Talk we will call upon the famous Designer and Art Director Didier Galerne to analyze coming market trends on interior and exterior surfacing. In a shared discussion with our printing and coating specialists we will see how upcoming coating & printing trends can boost innovation and create opportunities for the abrasive industry. Prepare your questions !

Make the upcoming program

Coffee Talks is your event! **Let us know if there are any topical or important issues you want us to cover**.

You can contact Estelle Seibert, who is the initiator of this project, with your topics or guest suggestions.

IN BRIEF

TRY OUT YOUR IDEAS FOR COATINGS

Are you interested in testing the rendering of a new coating on one of your backings? Thanks to our internal printing unit, E2P, we can test more easily new technical coatings or apply colours to light or heavy papers, and even provide you with samples, in the form of industrial rolls of at least 500 metres, with the required configuration.

Tell your usual contact your ideas and they will arrange for samples to try.

OUR TEAM LOOKS FORWARD TO SEEING YOU IN COLOGNE

If you are going to be in Cologne for the Eisenwarenmesse fair, which runs from 25 to 28 September next, why not take some time out and pop over to see us in a fitting meeting room! You can meet with us at the Dorint An der Messe Köln hotel, just 10 minutes' walk from the exhibition, for a drink and a chat about your needs.
You can make an appointment right here :

THE a VISION

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