



JEC EUROPE

27-29 March 2012

Paris - Porte de Versailles

CELCE – Hall 1 - Stand M84

MEDIA KIT

The European Confederation of Flax and Hemp, CELC unites **the flax and hemp industry**, forming a reference platform that aims to inform manufacturers of the advantages these fibres can bring to composites. CELC's presence at the international **JEC EUROPE 2012**, will provide an opportunity to see the latest **selection of viable, innovative semi-finished composite**.

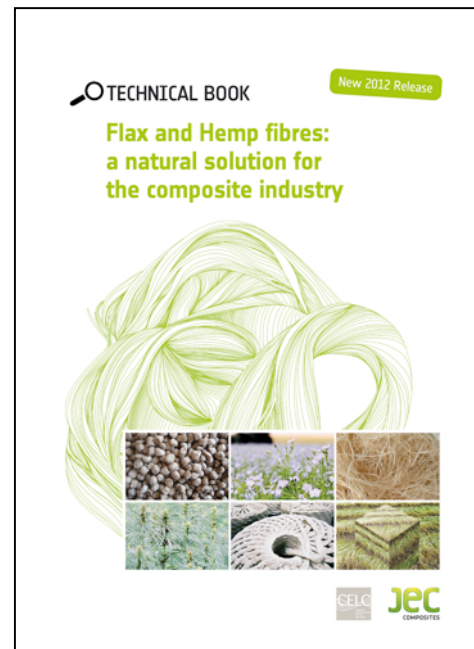
“The appeal of natural products and plant fibres is growing, and this is bringing about radical changes in our production methods and consumption habits. One of the major challenges for companies in making the transition will be to replace our limited – and greenhouse-gas-emitting – fossil resources with renewable energies and materials. Agri-based products, and more specifically plant fibres (flax and hemp), provide excellent opportunities in this respect.”

François Loos, President of the French Environment and Energy Management Agency (ADEME)

In response to this and to the eco-design initiatives taking place within industry, CELC's Technical Section has been working in cooperation with its European Scientific Committee, CSE, on the first technical and scientific publication on renewable natural fibre based composite solutions, **“Flax and Hemp fibres: a natural solution for the composite industry”**.

Published with the JEC GROUP, a reference point in the composite sector, this work is the result of sustained R&D, a highly organised production chain, and thorough research. It emphasizes the importance of an open innovation approach to meet industry needs.

Ten CSE's including their President Ignaas Verpoest, address twelve different topics in order to explain the intrinsic and mechanical properties of flax and hemp as used in polymer reinforcement, and to assess their environmental advantages.



An exclusive preview of this unique reference book will be available on the CELC stand. Industry specialist will be present to talk about the many environmental and technical advantages of flax and hemp reinforcements.

FLAX AND HEMP REINFORCEMENTS: SUSTAINABLE COMPOSITE INNOVATION

The values of reliability and innovation of natural flax and hemp fibres are built into the process from growing the raw materials to the manufacturing of semi-finished products.

Supported by a network of production and marketing organisations, the European Flax and Hemp industry today guarantees manufacturers operational, and high-performance green-chemistry solutions.

The mechanical performance of these natural fibres has, for the first time, been tested and analysed in the book co-published with the JEC Group.

THE INCREASING USE OF NATURAL FIBRES FOR COMPOSITE REINFORCEMENT

The use of composite materials reinforced with renewable agri-sourced **European flax and hemp** fibres is **now active in many industrial** sectors, including automotive (from 2015, 95% of the weight of a vehicle must be recycled) and transport, using **thermoplastic** and **thermosetting** matrices. The potential of these reinforcements has also been recognised by other industrial sectors such as, the aerospace and rail. **Their strength and low weight** offer a viable alternative to metals.

Many industrial application segments

- Automotive/Transport
- Sports & Leisure
- Marine
- Housing
- Consumer goods
- Signage and Street Furniture
- Aerospace
- Rail
- Packaging

A BROAD RANGE OF SEMI-FINISHED COMPOSITE PRODUCTS FOR INDUSTRIAL PROCESSES

Today, a large range of semi-products attest to the technological maturity of flax and hemp reinforcements and to the transformation skills of the industry. The industry is using scaled-up R&D to expand its offering into the market for semi-finished products for commodity and high-performance composites.

Dry preforms

- Pellets
- Non-woven mats
- Roving
- Technical textiles
 - Weaves
 - Balanced weaves / tapes
 - UD tapes
 - Non-crimp fabric /multiaxial

Prepreg preforms

- Compound
- Prepregs
 - Thermoplastic
 - Weaves
 - Yarns / Roving
 - UD tapes
 - Thermosetting
 - UD Weaves
 - Balanced weaves / tapes
 - Roving

There are two groups of composite semi-finished products: **dry preforms** and **prepreg preforms**.

PROVEN MECHANICAL PERFORMANCE

Depending on the process used, flax and hemp reinforcements can give composites the following advantages:

- Low density (1.5 compared to 2.54 for glass fibre)
- Higher specific rigidity than glass fibre
- Better vibration damping than carbon or glass fibre
- Better heat insulation than carbon fibre
- Better acoustic insulation than carbon or glass fibre
- Biodegradability
- Bio-based resource

SAFER SEMI-FINISHED PRODUCTS:

- Lower environmental impact
- Local renewable resource
- Low abrasion
- No skin irritation during handling
- End-of-life optimisation for components:
 - Recycling through incineration (waste to energy)
 - No residues after incineration
 - Carbon neutral
 - 100% biodegradable with biomatrix

LES RENFORTS LIN & CHANVRE 2012_ 2012 FLAX & HEMP REINFORCEMENTS

Préformes secs_ Dry preforms

FIBRES COURTES_ SHORT FIBRES



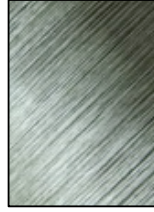
F.R.D
Fibra©
Green©
100% flax or hemp

SCA TEILLAGE NEUBOURG
100% flax



DEHONDT GROUPE
Lintex©
100% flax

ROVING



SAFILIN
Low twist roving
100% flax



DEHONDT GROUPE
Nattex Roving©
100% flax

MAT NON TISSÉ _ RANDOM MAT



ECOTECHNILIN
Fibriplast©
flax/PP recycled

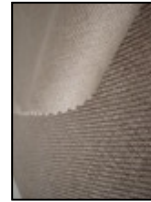


Fibriboard©
flax/Bioresin



Fibricard©

TISSÉ _ WEAVES



LIBECO LAGAE
100% flax



DEHONDT GROUPE
Twinflax©
100% flax



GROUPE DEPESTELE
Lincore©
100% flax



DEHONDT GROUPE
Nattex Fabrics©
100% flax

TISSÉ _ MULTIAXIAL _ NON CRIMP FABRIC



CRST
100% flax

Préformes pré-imprégnées_ Preimpregnated preforms

COMPOUND

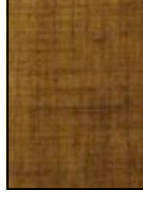


GOUPE DEPESTELE
Lincore CP©
flax/PVC
flax/PLA
flax/ABS
flax/PP

AFT
hemp/PP
hemp/PVC
hemp/ABS

ECOTECHNILIN
flax/PP recycled

THERMOSET PREPREG



LINÉO
Flaxply© Flaxpreg©
lin prepreg/epoxy



DEHONDT GROUPE
Nattex Prepreg©
flax/PE
flax/Epoxy

UD PREPREG



PROCOTEX
flax/PP
flax/PLA
flax/epoxy

THERMOPLASTIC PREPREG



DEHONDT GROUPE
Nattex Prepreg©
flax/PE
flax/Epoxy



GOUPE DEPESTELE
Lincore©
flax commingled PLA
flax commingled PP
flax commingled PA

FLAX AND HEMP: A RAW MATERIAL WITH ADDED ENVIRONMENTAL VALUE

- Local resource: 75% of fibre produced in Europe
- Renewable resource
- No irrigation – few inputs
- Energy-efficient production
- Natural and mechanical converting process (retting-scutching/defibrating)
- Global traceability of production
- Reduced greenhouse gas emission
- Almost entirely carbon neutral
- CO2 storage
- Zero waste – all parts of the plant are used
- 100% recyclable

EXPERTISE IN ALL INDUSTRIALISATION PROCESSES FOR COMPOSITES

Thermoplastic matrices

- Compounding
- Compression moulding
- Extrusion
- Injection

✓ Advantages

- Weight optimisation
- Unlimited storage life
- Prefabricated preform not required for processing
- Application of welding techniques
- Reduced preparation, requiring no chemical reaction
- Option to use recyclable (PP) or natural (PLA, PA 11) resins.

Thermosetting matrices

- **Hand lay-up**
- Resin transfer moulding (**RTM**)
- Vacuum assisted resin infusion (**VARI**)
- Filament winding
- Bulk moulding compound (**BMC**)
- Sheet moulding compound (**SMC**)
- **Pultrusion**
- **Autoclave**

✓ **Advantages**

- Easy processability
- Relatively homogenous surfaces
- Easy insertion of accessories
- Low investment

THE FUTURE FOR NATURAL FIBRE REINFORCEMENTS

In addition to the mechanical advantages, using flax and hemp reinforcements leads to:

- Reduced environmental impacts during the production of fibres for composites
- Reduced CO₂ emissions, mitigating the greenhouse effect by
 - lighter weight composites structures
 - improved energy efficiency
- Carbon and energy credits during incineration
- Anticipating regulations on composite waste treatment
 - National charter establishing a medium-term roadmap for recycling composites

These key advantages, linked to ecodesign development, have a direct bearing on innovation in the those sectors that are the largest users of composite materials: automotive, rail and aerospace. The sectors likely to make “green chemistry” a priority – packaging and construction – will find a reliable solution with flax and hemp against a backdrop of tighter regulations.

JEC EUROPE 2012

CELC, a reference point for information - M84

- The book lists CELC members, producers, preparers and processors of flax and hemp fibre and producers of semi-finished products.
- The Flax & Hemp Itinerary at the fair highlights our members' latest semi-finished products
- BE LINEN MOVIE 2 a documentary on flax fibres for the lifestyle sector

The World of Natural Fibres:

M80_Ecotechnilin, F.R.D, Libeco Lagae, Linéo, Safilin

M83_Groupe Depestele

N84_Procotex

X75_Dehondt Groupe

CELC: A SECTION DEDICATED TO TECHNICAL COMPOSITE APPLICATIONS IN ECO-BUILDING AND HOME FURNISHING

Created in 2005, the CELC Technical Section's goals are to:

- serve as an interface to match the needs of the multi-segment industries with the production capacity for technical flax and hemp applications;
- organise a European skills network that includes companies, universities and research centres;
- foster research through participation in European programmes;
- participate in European events and in international trade fairs.



Since November 2009, the Technical Section has had the support of the European Scientific Committee (CSE), which serves both the players in the flax and hemp industry and manufacturers who use the fibres.

Ten research experts pool their knowledge of analytical and characterisation techniques to:

- establish an inventory of existing scientific resources and techniques,
- consider possibilities for development and new research in line with the industry's strategy;
- favour open-ended innovation and facilitate the transfer of technical knowledge.

Company support : a dedicated CELC project manager with a technical and scientific benchmark: technical@mastersoflinen.com

ABOUT CELC

The Confederation of European Flax and Hemp, CELC is the only European agro-industrial organisation that encompasses all production and processing stages for flax and hemp. CELC is the preferred intermediary for 10,000 European companies, which enables it to acquire technical skills in fibres at all stages, from plant to end product.

Created in 1951, CELC is dedicated to research, current analysis, industry collaborations, and strategic direction.

The Linen Dream Lab is a showroom dedicated to textile and technical innovation for flax & hemp fibres.

Services: support for creation, aid in sourcing, materials library.

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