

# Amber Composites/Axson Italia

Speciality solutions in high performance composites.

Jed Illsley – International Sales Manager - October 2010

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# 1. Axson /Amber partnership

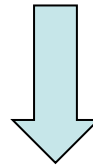
**AMBER** COMPOSITES



# Axson /Amber partnership

**AMBER**COMPOSITES

UK based Composite  
materials manufacturer



Ambers's Italian  
Distributor

# AMBERCOMPOSITES



## **Amber Composites Ltd**

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## 2. Amber group's automotive heritage and experience



Since 1988 we  
Have been  
supplying .



- Component and tooling pre-pregs
- Honey comb and syntactic cores
  - Adhesive and surface films
  - Bonded panels



# Other Amber Group Applications



A range of tooling and specialised pre-preg applications



# Amber Composites/Axson alliance

- Partnership 20 years old
- Originally established in France
- Developed through Germany, Netherlands, Nordic countries, and Spain.
- 2 years working together in Italy, as well as a direct presence previously.
- Proven track record in europe supplying F1 DTM, and performance automotive.
- Currently supplying 8 F1 teams.

**AMBER**COMPOSITES

**Axson**  
TECHNOLOGIES



# 3. Facilities At Amber Composites

Our site at Langley Mill is the only facility in Europe with co-ordinated manufacture of the following products.

- Epoxy and cyanate-ester pre-pregs , woven and UD
- Adhesive films
- Aluminium, Nomex and syntactic cores
- Epoxy surface films
- Epoxy surface coats
- Pre-cut materials kits



**ISO19001 and ISO14001 accreditation**

# The “hot melt “ pre-preg process

Resin Introduction



Film Production



Fabric Application



# The “hot melt “ pre-preg process

Finishing



Quality testing



ISO19001 and ISO14001 accreditation

# Our Hot melt UD process

Fibre selection



Creel set up



Fibre feed



Fibre to Resin application



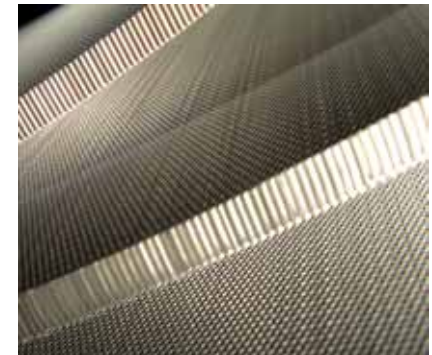
# Global despatching



# 4. Key High performance Automotive Products



- Feature Products
- C740 Cyanate-ester Pre-preg
  - HX -series tooling pre-preg
  - Honeycomb and Syntactic cores.



## MULTIPREG C740

135°C (275°F) Curing High Temperature Resistant Cyanate Ester Component Prepreg.

C740 is a Cyanate Ester resin system of medium viscosity for cures at 135°C, pre-impregnated into high performance fibers such as carbon, glass and aramid.



## MULTIPREG C740

The system is capable of withstanding very high temperatures and is inherently flame-retardant.

After a suitable postcure the glass transition temperature can be increased to as high as 344oC.

Components will be able to withstand short duration thermal spikes up to **330oC**.





## Multipreg C740 Key Characteristics

- Excellent drapeability – complex shapes easily formed
- 30 days shelf life at ambient temperatures
- Inherently flame retardant with low toxic gas and smoke generation
- Good electrical properties
- Maximum Tg (DMTA – peak  $\tan \delta$ ) 344°C (651°F)
- Thermal durability up to 250°C (482°F) after post-cure
- Excellent surface finish, Low volatile content



## Multipreg C740 – Customer application

Amber Composites Announces High Temperature Prepreg To Be Deployed on Leading Unmanned Aircraft



“Our partnership with Amber Composites has exceeded our expectations. In our five years working together, Amber has not only consistently provided excellent high-quality materials, but also useful technical and design guidance”,

*Hans Georg Schiebel, Owner of Schiebel*

“The handling with the material is very good and the surface of the cured part is perfect - the result was absolutely amazing. We have got a absolutely perfect surface finish, much better than your competitors product”

## HX-series tooling pre-preg range

Specification	Typical Application	Out life @ 20c	Min cure temp.	End use temp.	Freezer life @ -18c
HX42	Aerospace and marine tooling	5 days	40c	200c	6 Months
HX50	Automotive and autosport tooling	3 days	60c	190c	6 Months
HX70 (Fast Cure)	Very fast autosport tooling	30hrs	30c	190c	6 Months
HX90N (increased flatness)	High precision aerospace tooling	2 days	40c	180c	6 Months

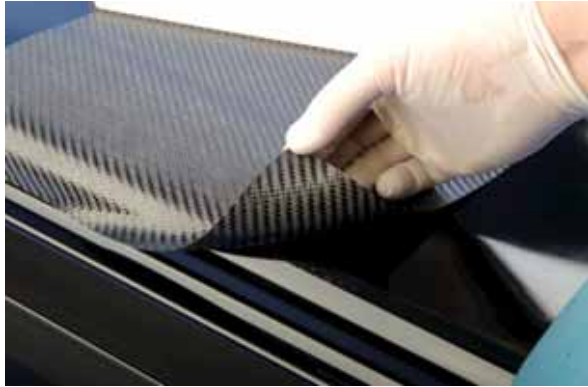
## Multipreg HX50 Tooling pre-preg

### Features-

- Excellent handlability
- Superior finish
- Fast overnight processing – 6 hrs @ 55c
- Availability stock from Amber stock in Italy from Axson.
- Proven reliability and documented process route
- Very competitive



## Multipreg HX50 Tooling pre-preg

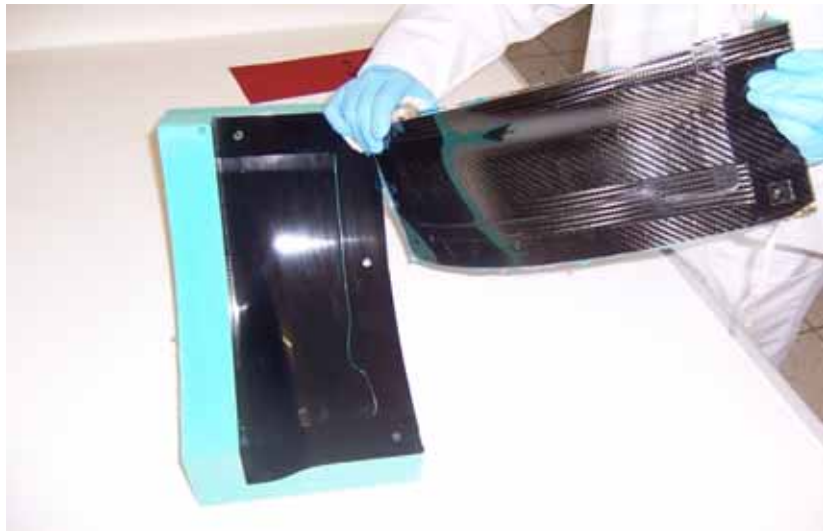


Standard  
autoclave  
processing

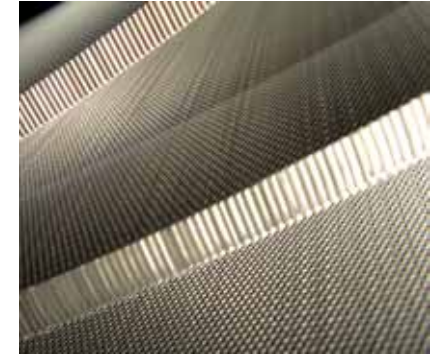


## Multipreg HX50 Tooling pre-preg

Excellent  
results!



# Aluminum Honeycomb



<b>Aluminum Aerospace Grades 5052 Aluminum Alloy (AAA)</b>	<b>Aluminum Aerospace Grades 5056 Aluminum Alloy (AAA)</b>	<b>Aluminum Commercial Grades 3003 Aluminum Alloy (AAC)</b>
3.1-1/8-07N-5052	4.5-1/8-10N-5056	1.8-3/4-25N-3003
4.5-1/8-10N-5052	6.1-1/8-15N-5056	3.4-1/4-15N-3003
5.2-1/4-25N-5052	8.1-1/8-20N-5056	3.7-3/8-25N-3003
8.1-1/8-20N-5052		3.7-3/8-25P-3003
10.0-1/8-25N-5052		5.2-1/4-25N-3003
		5.2-1/4-25P-3003

Other grades available on request. Sheet sizes are nominally 1250mm x 2500mm.

# Nomex<sup>®</sup> Honeycomb



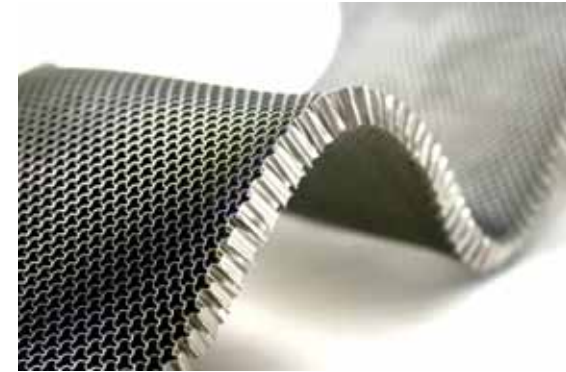
Nomex <sup>®</sup> Aerospace Grades (ANA)	Nomex <sup>®</sup> Commercial Grades (ANA)
ANA-3.2-29 3.2mm 29kg/m <sup>3</sup>	ANC-3.2-48 3.2mm 48kg/m <sup>3</sup>
ANA-3.2-48 3.2mm 48kg/m <sup>3</sup>	ANC-4.8-32 4.8mm 32kg/m <sup>3</sup>
ANA-3.2-64* 3.2mm 64kg/m <sup>3</sup>	ANC-4.8-48 4.8mm 48kg/m <sup>3</sup>
	ANC-4.8-48-OX 4.8mm 48kg/m <sup>3</sup>

Other grades available on request.

Sheet sizes are nominally 1250mm x 2500mm \*1220x2440mm.



# Aluminum Flexcore



Aluminum Flexcore®	5052/F80-.0013N-4.3
	5052/F80-.0025N-8.0
	5056/F80-.0014N-4.3

Other grades available on request  
Sheet sizes are nominally 1220mm x 915mm

# Epoxy Syntactic cores



<b>Amlite SC72A</b>	<b>Product Description</b>
Color	Dark Charcoal Grey
Density	0.57g/cm <sup>3</sup>
Tg(DSC)	118°C (244°F)
Out life	At least 30 days @ 20°C (68°F)
Cure Schedules	1 hour @ 120°C (248°F)

<b>Amspand ES72A-1</b>	<b>Product Description</b>
Color	Charcoal Grey
Density	Fully expanded 0.10 to 0.40g/cm <sup>3</sup>
Tg(DSC)	110°C (230°F)
Out life	30 days @ 20°C (68°F)
Cure Schedules	1 hour @ 120°C (248°F)

## 5. Partner collaborations

We really value customer collaborations, and see them as key to driving our product development. Partner challenges in the past have led to the development of the following products –

- HX70 fast curing tooling pre-preg
  - C740 cyanate-ester pre-preg
- E650 low temperature curing pre-preg
  - 8020SF Surface film sheet
- Plus customer development products that are still unique to the development customer.

With our unique position manufacturing and supplying a very wide range of materials and processes, we have a great deal of process knowledge to offer our customers.

**We welcome any future challenges within this rapidly developing composite market.**

## 6. Future Development

- Increased investment in processing development and quality control of high performance structural pre-pregs.
- Improvement of logistic chain.
- Constant development of new tooling media requiring close partnership with Axson for master materials.
- Investment in people leading to better market presence and excellent technical support.
- Greater control of supply chain helping to maintain costs and allowing innovative alternative solutions.

Thank-you for your attention

Any Questions ??????