



AVIATION & TRANSPORTATION

COMPOSITES THAT MOVE

ISOVOLTA Aviation & Transportation has been specialising in the manufacture of materials for the interiors of passenger aircraft cabins and cargo applications for more than twenty years. We have an international reputation as supplier to the aircraft, railway and other transportation industries. Our wide range of products also meets the very

highest standards of mechanical, thermal and chemical strength. From prepregs and technical laminates, through machined parts to decorative laminates, we offer our customers a unique combination of decorative and technical products – a one stop source for transportation interiors.

A QUICK GETAWAY

The secret of safety and wellbeing

Whether on land, water or in the air, travelling today is not nearly as hazardous as it was 100 years ago. Since then comfort, design and safety have improved tremendously and have even become the decisive factor in the choice of supplier. An attractive, distinctively designed ambience is an important consideration, particularly in passenger transportation. Passengers should be able to look back with pleasure to their time en route and retain a positive memory of their journey on board.

However, behind all the show there is more than one might think at first sight. Decorative laminates are far more than colourful wallpaper for passenger aircraft cabins. Decorative sheets are technically demanding products which have to meet high safety, manufacture and design specifications, whether international flammability requirements e.g. FAR 25.853, or aircraft manufacturers' specifications for example, whether individual design specifications or our customers' manufacturing processes. Decorative sheets must always offer maximum performance in every field.

Having set up our own design department and by liaising closely with our customers' own designers we are able to customise our decorative laminate designs according to individual wishes, and even produce special customer-specific designs.

Our production processes on modern impregnating systems are optimally adapted to the special processing technologies of our customers – high pressure laminating presses, autoclaves, vacuum bag, crushed core. Moreover, beside the excellent quality control, well equipped physical and chemical laboratories enable rapid and targeted product development in accordance with customers' wishes. We test our products in our own fire test laboratory to ensure that the strict flammability, smoke emission and toxicity (FST) and heat release guidelines are upheld.

TECHNICAL LAMINATE AND PREPREGS COMPETENCIES

Resin systems

- ⚡ Resin development in own laboratory with research centre
- ⚡ Production in own resin factory
- ⚡ Design and development of individual optimally coordinated resin systems

Processes

- ⚡ Impregnation on state of the art horizontal and vertical impregnating systems
- ⚡ Machining (cut to size)
- ⚡ Pressing in many different press formats

DECORATIVE LAMINATE COMPETENCIES

Innovation

- ⚡ Design and development of modern embossings and modern chemical systems
- ⚡ Research into new pigments
- ⚡ Customer Engineering & Design

Processes

- ⚡ Flatbed screen printing
- ⚡ Rotation screen printing
- ⚡ Digital printing



Decorative Laminates for demanding applications to sidewall panels ①, ceilings ② and cabin facing walls (e.g. partition panels) ③ or heavily used surfaces such as galleys and lavatories ④ as well as trolleys and storage cupboards.

SYMBIOSIS OF TECHNOLOGY AND DESIGN

SOVOLTA Aviation & Transportation is the only supplier globally that manufactures prepgs as well as technical and decorative laminates for the transportation market. Thanks to an integrated coordination production system our customers no longer have to choose between technology and design. Our portfolio includes decorative laminate sheets, technical laminates, thermoplastics, prepgs and NTF, and moreover such services as design support, testing in the fire test laboratory, application training, AOG service, logistical support and a customer store.

DECORATIVE LAMINATES

The decorative products from ISOVOLTA Aviation & Transportation can be used universally in all passenger aircraft cabins. They are suitable for any surface that is not upholstered or carpeted.

PRODUCTS FOR AVIATION

Airdec® F Series
Very lightweight, either pliable, stiff or conformable, vacuum-formable decorative laminates which meet the most stringent flammability, heat release rate, and smoke and gas emission requirements for aircraft interiors. It is available either in a continuous roll format or sheet format in various dimensions for economy of use.

Airdec® G Series
A lightweight, medium weight or heavy weight, integrally coloured glass fibre reinforced decorative laminate, which is dimensionally stable and extremely durable. It is available either in a continuous roll format or sheet format in various dimensions and meets the most stringent heat release, smoke emission and toxicity requirements for aircraft interiors.

Airdec® TR Series
Glass fibre reinforced decorative laminates, specially designed for use on trolleys. It meets the latest and most stringent heat release, smoke emission and toxicity requirements.

Airdec® SF Series
A decorated thermoplastic sheet laminate that can be thermoformed into a variety of aircraft interior parts and meets the most stringent heat release, smoke emission, and toxicity requirements for all passenger aircraft cabins. It exhibits excellent part stiffness and impact resistance and accurate reproduction of mould detail in conventional thermoforming operations and is available in various thicknesses.

Airdec® FL Series
A lightweight, medium weight or heavyweight laminate for heavy traffic floors which is available as fibre glass reinforced (rigid), thermoformable or flexible aircraft flooring products.

Airdec® AD Series
A lightweight, non-flammable, ink-jet printed laminate for aircraft interior advertising graphics, placards, signs, etc. which are 144 square inches or less in area. It is available with changeable or semi-permanent pressure sensitive adhesive.

Window shade
An opaque decorative high pressure laminate specially designed for window shade application which already complies with the flammability requirements of tomorrow.

PRODUCTS FOR RAILWAY

Raildec TE
Very lightweight vacuum-formable decorative laminate which meets the most stringent flammability and smoke and toxic gas emission requirements for transportation vehicle interiors. It is available in a continuous roll format or sheet format for economy of use.

Raildec TG
A lightweight integrally coloured glass fibre reinforced decorative laminate which is dimensionally stable and extremely durable. It is available in a continuous roll format or sheet format for economy of use and meets the most stringent flammability and smoke and toxic gas emission requirements for transportation vehicle interiors.

Raildec RP
A flexible, adhesive-backed, flame-barrier decorative laminate for covering or re-covering a variety of flat or simply contoured transit vehicle interior parts which must meet transportation requirements for flammability, smoke emission and toxic gas emission. It is graffiti and stain resistant and is the same as RAILDEC TE, RAILDEC TG, and RAILDEC SF LT in surface appearance and surface properties.

Raildec SF LT
A decorated thermoplastic sheet laminate that can be thermoformed into a variety of transit vehicle interior parts and meets transportation requirements for flammability, smoke emission and toxic gas. It exhibits excellent part stiffness and impact resistance and accurate reproduction of mould detail in conventional thermoforming operations and is available in various thicknesses.

Prepregs for the manufacture of various panels ⑤, e.g. for side panels, ceilings, floors, hatrack boxes, dado panels and doors

Technical Laminates as cargo lining, floor or component reinforcement ⑥ e.g. at hanging points

PREPREGS

The ISOVOLTA Aviation & Transportation AIRPREG® series of prepregs offer excellent flammability properties and low heat release for applications in aircraft interiors. Excellent surface quality and high mechanical performance combined with outstanding fire, smoke and toxicity properties offer a wide variety of applications in aircraft, railway and ship interiors.

AIRPREG® PY – Standard resin system
modified phenolic resin system for a wide series of applications. It is used in many qualified prepregs.

AIRPREG® PA
modified phenolic resin system specially developed for autoclave processing. This resin system generates improved mechanical properties when being processed in autoclaves.

AIRPREG® PC
modified phenolic resin system specially developed for processing in presses (crushed core) where short processing cycles can only be achieved through higher cure temperatures with lay-ups and de-moulding in presses that are still hot (hot in / hot out).

AIRPREG® PE
modified epoxy resin system qualified for certain applications in aircraft interiors where high impact values are linked with FST requirements.

AIRPREG® CT
modified cyanate ester resin system, developed for applications where high demands on surface component quality are combined with FST requirements. Also suitable for high temperature applications.

TECHNICAL LAMINATES

AIRVOLT® LAMINATES are high performance composites based on a low heat release phenolic resin system for aircraft applications. Based on their high mechanical strength and stiffness AIRVOLT LAMINATES meet all of the stipulated requirements for highly demanding constructions. In high humidity applications or even after immersion in water AIRVOLT LAMINATES show low absorption of water and maintain their characteristic mechanical properties. Owing to their excellent fire, smoke and toxicity properties AIRVOLT LAMINATES are especially suitable for aircraft interiors (e.g. cargo liners).

AIRVOLT® 1B Laminat
High performance laminate based on a matrix of modified phenol pressed in multilayers with fibre glass, for use in aircraft interiors, meets FST requirements in accordance with FAR 25.853 and FAR 25.855.

AIRVOLT® 1C Laminat
As 1B Laminat but with white Tedlar on one of the two sides.

AIRVOLT® 1L Laminat
As 1B Laminat but for industrial applications.

AIRVOLT® 1X Laminat
As 1B Laminat; however the individual prepreg layers are laid at a 0°/45° angle to ensure more consistent mechanical properties in warp and weft direction.

RHM Patch
Quick repair laminate for cargo compartment panels with hot-melt adhesive and white Tedlar sheet on the visible face, meets FAR requirements.

Drawing parts
Manufactured in accordance with aviation standards from the above listed laminates for use as a reinforcing element for applications in aircraft interiors as well as cargo linings.

For more detailed information on material characteristics, e.g. FST properties, dimensions, fabrics, resins, curing cycles and storage conditions please either refer to the respective technical data sheet or contact our Sales department or visit www.isovolta.com.

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TRANSPORTABLE **ADDED VALUE**

The result of innovation and service

The highly specialised teams at our Technology Centre work in close collaboration with international experts, organisations, research laboratories and manufacturers in the railway, air and other transportation industries. We can therefore assure our customers that our products already meet tomorrow's requirements.

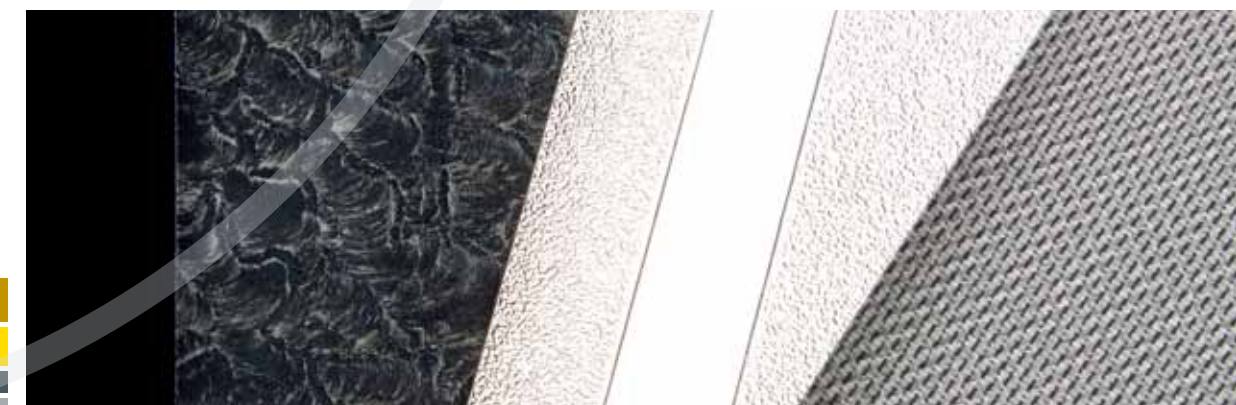
Our in-house teams from Research & Development, process technology and the testing laboratories also work closely together. This is how our engineers develop new processes, modern embossing and pigments, test new surfaces and research modern chemical systems in order to adapt the properties of decorative sheets to constantly changing requirements. The expertise and experience of our fire test laboratory which is capable of carrying out all the flammability tests in accordance with FAR 25.853 (Smoke Chamber, OSU Heat Release Chamber, Vertical & Horizontal Burn, Toxicity) and our testing laboratories, which are fitted with the latest equipment for mechanical testing, round off the research and development projects of the R&D and processing department.

Using our own application machine we are also able to simulate almost all our customers' manufacturing processes and to incorporate them in our developments from the start. As a special service we also offer application training which assists our customers to design the processing process more efficiently.

A distinctive feature of ISOVOLTA Aviation & Transportation is all-round competence in the preparation and implementation of new design ideas. To advise our customers we have an entire team of specialists in various fields, such as design, graphics, colour design and surface engineering. Design studios and airlines around the globe value this unique service.

In addition we offer our customers:

- AOG Service
- Refrigerated warehouse and customer store
- Logistical support



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