

The Boeing Company

Fire, Smoke and Toxicity Compliance on the flight deck of the 787 Dreamliner with KYDEX[®] 6200 LTA thermoplastics

The Company

Boeing (www.boeing.com) is the world's leading aerospace company and the largest manufacturer of commercial jetliners and military aircraft combined. Headquartered in Chicago, IL (U.S.), the company has passenger and cargo aircraft customers in more than 90 countries and directly employs more than 160,000 people around the globe. The company also leverages the talents of hundreds of thousands of skilled people working for suppliers worldwide.

Boeing has been the premier manufacturer of commercial jetliners for more than 40 years and has nearly 12,000 commercial jets in service worldwide (roughly 75% of the world fleet). As an industry leader and innovator, the company continually expands its product line and services to meet emerging customer needs, including creating new and more efficient commercial jetliners.



The new Boeing 787 Dreamliner

The Challenge

Responding to the needs of airlines around the world, Boeing has taken a leading role in the development of a super-efficient jetliner – the new 787 model – with entry into service slated for mid-2009. In addition to improvements in speed, cargo capacity, and passenger comfort, the Boeing Dreamliner 787 will deliver greater fuel efficiency and better environmental performance – using 20 percent less fuel for comparable flights than today's similarly sized jets.

Working with an international team of top-tier suppliers, Boeing's goal has been to bring efficiency and performance to every component of the Dreamliner 787 – down to high-tech crew seating for the cockpit. Here, the company has partnered with IPECO (www.ipeco.co.uk), a leading designer and builder of crew seats for the aircraft market since 1972, and with Cox Wokingham Plastics, Ltd. (www.cwpl.net), a specialist in providing vacuum forming and thermoforming solutions for a wide range of industries, including aerospace/aircraft seating and interiors.

Together, they began work to create crew seats that would meet FAA standards and Boeing's own specifications for fire rating and toxicity requirements. In addition, the material selected for the seats would need to exactly match Boeing's corporate colour requirements.

Material Draws

Alan Mitchell, sales director at Cox Wokingham Plastics (CWP), looked at several companies to try to find the perfect material for the new jet's crew seating application. However, it was proving difficult to find a solution that would meet fire-smoke-toxicity (FST) standards and could be produced in small volumes of custom colors. But Mitchell found his answer when he partnered with Kleerdex Company, maker of highly durable, fire-resistant KYDEX[®] thermoplastic sheet.

Working closely with all three companies – Boeing, IPECO, and CWP – the Kleerdex technical support team engineered a product especially for the Dreamliner 787's crew seats: KYDEX[®] 6200 LTA. "The working relationship was the key to success for this application," according to Ronn Cort, International Business Manager for Kleerdex. "We spent more than 12 months, multiple meetings, thousands of emails, and countless hours working through all of the testing and approvals, and formulating a custom color to perfectly match Boeing's corporate metallic silver and greys."

Manufactured in Kleerdex's ISO 9001:2000 and ISO 14001 certified facilities, KYDEX[®] 6200 LTA is a proprietary thermoplastic sheet specifically formulated to meet the stringent FST requirements for use on commercial aircraft. For Boeing and its partners, this Kleerdex product offers distinct advantages.

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Distinct Advantages

- In flammability testing, KYDEX® 6200 LTA sheet meets government vertical burn requirements under FAR 25.853(a) and FST requirements under BSS 7239, as well as requirements per ASTM E-162 and ASTM E-662.
- KYDEX® 6200 LTA compliance with flamespread and smoke density requirements make it ideally suited for a variety of aircraft applications, such as seatbacks, window reveals, bulkheads and ceiling components.
- Kleerdex's ability to customize KYDEX® 6200 LTA to match specific colors enables Boeing to accurately match its corporate colours wherever KYDEX® 6200 LTA is used.
- No other provider was able to meet both the FST requirements and Boeing's custom colour requirements in the time frames and volumes required.
- KYDEX® 6200 LTA has excellent formability and fabrication quality, making it easy to work with and providing good definition, tight tolerance, and easy trimming in the manufacture of crew seating components.
- Because Kleerdex makes its own colouring compounds, it is able to control colour accuracy on the fly – so unlike with third-party colourant providers, adjustments can be made when and if needed with little-to-no impact on time and cost.
- With KYDEX® 6200 LTA, colour is integrated into the sheet during production. So, CWP and IPECO are not required to do additional colour finishing when using KYDEX® 6200 LTA to make the crew seating parts, saving time and expense.
- With short lead times and the ability for Kleerdex to do small manufacturing runs economically, KYDEX® 6200 LTA can be produced as needed, giving Boeing and its partners both cost-effectiveness and the ability to order product as demand requires.
- Like all KYDEX® sheet products, KYDEX® 6200 LTA also offers excellent chemical resistance and ease of cleaning, for added durability.
- As with all KYDEX® sheet products KYDEX® 6200 LTA is produced in keeping with Kleerdex's commitment to and regard for safety, health, and environmental protection.

The Results

The use of KYDEX® 6200 LTA enables Boeing to produce high-tech crew seating that meets all of its requirements – delivering "the right, specified material at the right commercial price for every partner in the supply chain," according to Alan Mitchell of seating parts-maker CWP.

In fact, CWP is so impressed with Kleerdex – in particular, its ability to respond quickly and deliver custom product in a short time – that they are confident in specifying KYDEX® thermoplastic sheet as appropriate for future projects.

"The level of technical and sales support we receive from Kleerdex has been critical to developing the crew seating solution for Boeing's high-profile new 787 jet," says Mitchell. "We've built a series of strong and mutually valuable relationships on Kleerdex's willingness to work proactively with each partner and provide access to its facility throughout the process."

For more information about KYDEX® 6200 LTA thermoplastic sheet or this commercial jet application developed for the Boeing Dreamliner 787, please contact Ronn Cort, International Business Manager at +1.570.387.6997 x584 or by email: cort.ronn@kydex.com.



Compliance with flamespread and smoke density are critical for airline interior components

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