

Amtrak

Fire, Smoke, and Toxicity Compliance Plus Superior Technical Support with KYDEX® 6200 LTR Rail Grade Sheet

The Company

Created by Congress in 1970 as the national railroad of the United States, the National Railroad Passenger Corporation — better known as Amtrak (www.amtrak.com) — provides intercity passenger rail service to more than 500 destinations in 46 states on a 21,000-mile route system. In fiscal year 2008, Amtrak served more than 28.7 million passengers, representing the sixth straight year of record ridership.

As the industry leader, Amtrak has nearly 19,000 employees and owns equipment including 1,505 railroad passenger cars, 419 locomotives, 80 Auto Train vehicle carriers, and 101 baggage cars. Its newest, high-profile service includes the fleet of 20 Acela Express trains — the fastest trains in North America, with a top speed of 150 mph on a portion of its route between Boston and New Haven, CT, and an average top speed of 135 mph between Boston and Washington, D.C.



The Challenge

Driven by rising fuel prices, highway traffic, airline issues, and environmental awareness, Amtrak continues to experience increased ridership. For example, July 2008 marked the most passengers carried in any single month in Amtrak's history to date (2,750,278).

With growth comes an ongoing commitment to continually improve the reliability and safety of Amtrak trains. For instance, the Federal Railroad Administration (FRA) has established allowable flame spread and smoke generation requirements for materials used in rail car interiors. However, in response to industry concerns, many transit authorities and railcar manufacturers are adding toxicity standards to those requirements. It is likely that the FRA will eventually mandate toxicity values, requiring rail lines to use materials that are fully compliant with fire-smoke-toxicity (FST) standards.

The Solution

For Amtrak, a key to success has been the company's long-term relationship with KYDEX, LLC, maker of highly durable, fire-resistant KYDEX® thermoplastic sheet. Amtrak has worked closely with KYDEX for nearly 20 years and utilizes KYDEX® 6200 rail grade sheet for ceiling panels, window masks, seat backs, and armrests in many of its passenger and dining cars.

"As a thought leader in the industry, Amtrak helps to set the standards in the rail market," according to Blair Slaughter, Principal Engineer at Amtrak. "We consider KYDEX to be an invaluable partner and resource — always there to listen to our issues and provide all the technical support we need to develop the best solutions in the industry."

For instance, Amtrak's thermoformers were purchasing KYDEX® sheet and shipping it to another company for lamination with Tedlar®, a decorative polyvinyl fluoride (PVF) film that is resistant to graffiti, lipstick, and other surface-staining materials. KYDEX developed the capability to laminate Tedlar® directly to KYDEX® sheet during the extrusion process — ensuring quality while saving valuable time and reducing cost for Amtrak and its thermoformers.

To support burgeoning safety requirements, KYDEX has adapted its rail-grade product over the course of five years, 250 iterations and half a million dollars in testing, to create FST-compliant KYDEX® 6200 LTR. Manufactured in KYDEX's ISO 9001:2000 and ISO 14001 certified facilities, KYDEX® 6200 LTR is a proprietary thermoplastic sheet that offers Amtrak distinct advantages.

KYDEX, LLC
ISO 9001 and 14001 Certified

Customer Service
6685 Low St, Bloomsburg, PA 17815 USA
Phone: 800.325.3133, +1.570.389.5810
Outside the US: +1.570.389.5814
Fax: 800.452.0155, +1.570.387.7786
Email: info@kydex.com

Technical Service
Phone: 800.682.8758 ext. 581
Fax: +1.570.387.8722
Outside the US: +1.570.387.6997 ext. 581

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Distinct Advantages

- KYDEX® 6200 LTR meets stringent flamespread, smoke density, and toxicity requirements, making it ideally suited to a wide variety of rail applications. It satisfies toxicity values under Bombardier SMP 800C, the virtual standard for toxicity in the U.S. rail industry. It also meets FRA 49 CFR 238 Appendix B and NFPA 130 requirements per ASTM E-162/662.
- KYDEX® 6200 LTR has excellent formability, fabrication, and tooling quality, making it much easier to work with than fiberglass reinforced plastic (FRP) and providing good definition, tight tolerance, and easy trimming in parts manufacturing.
- Unlike the few other thermoplastics that meet FST requirements, KYDEX® 6200 LTR is highly durable and chemical resistant, to stand up to normal wear and tear, cleaning equipment and solvents, and other abuse to which railroad interior surfaces are routinely subjected.
- Rail interior parts made with KYDEX® 6200 LTR are often lighter weight than FRP parts and a suitable replacement for metal, high-pressure laminate, and other materials.
- Compared with FRP, KYDEX® 6200 LTR provides a much wider range of colour and texture options. In addition, the ability to cap KYDEX® 6200 LTR with Tedlar® PVF provides enhanced graffiti and stain removal, making parts easier to wipe clean. It also provides the ability to incorporate decorative finishes while still meeting FST requirements.
- With short lead times and the ability for KYDEX to do small manufacturing runs, KYDEX® 6200 LTR can be produced as needed, giving Amtrak both cost-effectiveness and the ability to order product as requirements demand. For instance, KYDEX can deliver custom colours in half the time of other thermoplastic manufacturers.
- As with all KYDEX® sheet products, KYDEX® 6200 LTR is produced in keeping with KYDEX's commitment to and regard for safety, health, and environmental protection.

The Results

Working with KYDEX and long-time thermoforming partner C.W. Thomas (www.cwthomas.com), Amtrak is currently evaluating the performance of KYDEX® 6200 LTR sheet through in-service trials, so that the company can integrate the newer product into its vehicles ahead of any future toxicity regulations.

In side-by-side tests of seats made with KYDEX® 6200 sheet and KYDEX® 6200 LTR, Amtrak anticipates finding that the seats made with KYDEX® 6200 LTR will demonstrate comparable durability in addition to providing FST compliance. Then, Amtrak and C.W. Thomas will be able to use KYDEX® 6200 LTR for new applications and replacement parts. The alternative option, FRP, is heavier, more difficult and expensive to process, and prone to cracking.

In addition, KYDEX® 6200 LTR has lower heat release values per ASTM E-1354 than FRP. While heat release is not yet mandated by the rail industry, as with toxicity it is likely to be a requirement in the near future — making KYDEX® 6200 LTR sheet a smart choice as Amtrak and its partners lead the way in migrating to materials with both lower toxicity and lower heat release.

For both Amtrak and C.W. Thomas, KleeDEX's commitment to meeting their needs translates into a confidence in the product and service that extends beyond a single project.

For more information about KYDEX® T thermoplastic sheet, the applications developed for Amtrak, and other rail or mass transportation uses, please contact Mike Karr, North American Business Manager, at +1.570.387.6997 x585 or by email at karrm@kydex.com.

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6685 Low St, Bloomsburg, PA 17815 USA
 Phone: 800.325.3133, +1.570.389.5810
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