

B/E Aerospace

Thermoformed seat components with aircraft-rated thermoplastic alloy

WINSTON-SALEM, NC - B/E Aerospace Inc. is the world's largest manufacturer of interior products for aircraft cabins. It is also the largest supplier of aircraft seating in the world, with more than 1 million seats in service. In first class, business class, and main cabin seating, B/E develops highly engineered seats that afford passengers outstanding levels of comfort and safety.

With global production facilities, B/E has more capacity than all other aircraft seat makers combined. It can manufacture more than 200,000 seats per year, enough to meet over 50 percent of annual aircraft seating needs worldwide.



B/E Aerospace thermoforms KYDEX sheet into aircraft seating components such as armrests, food trays, shrouds, footwells, shoe boxes, and container holders.

The Benefits of KYDEX® Thermoplastic Sheet

An important component of seating design at B/E is KYDEX® proprietary thermoplastic sheet from Kleerdex Company, LLC, Bloomsburg, PA. Dick Douglas, Director of Strategic Purchasing at B/E, says the company utilizes KYDEX sheet to thermoform seating components such as underseat and privacy shrouds, armrests, food trays, foot wells, shoe boxes, and container holders.



KYDEX sheet meets the performance and aesthetic requirements of B/E seating. In addition to chemical resistance and impact strength, the material is supplied in 250 custom colors for just-in-time production schedules.

B/E uses three grades of KYDEX® sheet: KYDEX® T, KYDEX® 6565, and KYDEX® 110 due to their process and performance benefits. The sheets are highly thermoformable, which makes them easy to fabricate into different shapes and sizes. The material achieves minimal thin-out on outside corners and in deep recesses, so there is no need to adjust tool design or process parameters to compensate for material loss. The thermoformed sheets can be CNC-trimmed, die cut, and drilled, and attached to other seating components with adhesives or mechanical fasteners.

KYDEX sheet resists food spills, cleaning concentrates, and corrosive chemicals. The stiffness and impact resistance of the grades mean parts like food trays hold up well under repeated use, while foot wells, shoe boxes, and container holders withstand kicks, scuffs, and occasional bangs from food carts, carry-on luggage, and other items that pass through aircraft aisles. All KYDEX sheet grades that B/E specifies meet federal standards for flame retardance. Some grades, Douglas says, approach polycarbonate ratings for low smoke and toxicity.

"We have a great deal of experience with KYDEX sheet on our thermoforming machines," says Douglas. "Our process know-how enables us to optimize product engineering and get the best results from part design. KYDEX sheet has proven to be a cost-efficient material that meets all of our product needs."

B/E thermoforms KYDEX sheet parts in gauges ranging from 0.78mm to 4.77mm (0.031" to 0.188"), though Douglas says most components average 1.19mm (0.047") thick. One of the thickest parts is shrouds, which range from 3.17mm to 3.98mm (0.125" to 0.157"). Underseat shrouds are mostly for cosmetic purposes, but in first class and business class seating, shrouds



Food trays of KYDEX® sheet are durable as well as aesthetic. They resist cracking and chipping and withstand repeated cleaning with no staining or fading.

Kleerdex Company, LLC

ISO 9001 and ISO 14001 Certified

Customer Service

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are also installed to be pulled up for privacy on B/E's special MiniPod lie-flat seats, which let passengers stretch out and sleep comfortably on long flights. MiniPod seats are specified for business class cabins on wide-body aircraft like the new Airbus A380 and Boeing 777.

While B/E provides seats for all classes of air travel, it's best known for premium seating in first class and business class sections. Airlines use the comfort and roominess of premium seating as a passenger inducement and continually promote design improvements. "Our use of KYDEX sheet, as a result, has grown substantially," says Douglas.

"We use only custom colors in our products," notes Hannah Gardner, strategic purchasing specialist. "There are 250 active colors that we specify for KYDEX sheet, 107 of which have come through in the past two years alone. Kleerdex is able to deliver exactly the color we need for production."

According to Douglas, 70 percent of seating installations are new. B/E does retrofit and replacement work (trays tables are replaced often) but keeps no stock items. Every work order B/E receives involves the use of parts fabricated for a specific installation. Timely delivery of materials is therefore essential.



MiniPod lie-flat seats are the latest in passenger comfort for business class and first class travelers.



MiniPod seats can be extended so passengers can stretch out and sleep comfortably during long flights. The seat shrouds (which afford privacy) and other seating components are thermoformed of KYDEX sheet.

The company specifies KYDEX sheet with Matte, Smooth Nap and Haircell surface textures, and utilizes three grades, each of which is available in 14 gauges from 0.70mm to 12.70 mm (0.028" to 0.500").

KYDEX® T, which B/E uses the most, is a flame-retardant grade (FAR 25.853(a)) that is cost-competitive with flame-retardant ABS and ABS/PVC sheet, but has higher impact strength and extensibility. It is among the most rigid thermoforming materials available, yet is reportedly easy to form with outstanding deep-draw properties and part definition.

KYDEX® 6565, used for underseat and large-surface-area components, was developed for the aviation industry. It carries FAR 25.853 (a) and (d) fire ratings, has excellent deep-draw properties and part definition, facilitates secondary operations, and resists cleaning concentrates.

KYDEX® 110 is a proprietary thermoplastic alloy with a metallic appearance (silver, copper, or bronze) that combines fire-retardance (UL Std. 94 V-0/5V), formability, rigidity and chemical resistance.

B/E is also the world's largest producer of food and beverage preparation and storage equipment for commercial airliners and business jets, and is reportedly the only manufacturer with the capability to integrate oxygen equipment with passenger service units. The company is also a major after-market distributor of aerospace fasteners.

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