

## Norduyn

KYDEX® T Helps Win Crystal Cabin Award

### The Opportunity

Reducing operating costs is a major focus of the global airline industry. By decreasing the amount of in-flight weight, airlines can realize significant savings. With this in mind, Norduyn, manufacturer of high-performance composites for the airline industry, and LSG Sky Chefs, an in-flight services provider, teamed up to create the lightest, most durable trolley available.

### The KYDEX Solution

Traditionally made of aluminium, the goal of Norduyn and LSG Sky Chefs was to redesign their N9000/Quantum Series Galley Carts with a durable, single-body shell made of fire-retardant, lightweight composites over a foam core. The recessed worktable area required the durability to withstand repeated cleanings with harsh chemicals. After carefully reviewing a variety of material options, KYDEX® T became the clear choice for this specific component.

### The N9000/ Quantum Series Galley Carts: The Lightest Aviation Trolleys in the World

The N9000/Quantum Series Galley Carts, winner of the 2010 Crystal Cabin Award in the Greener Cabin, Health and Safety category, are constructed entirely from composites and have 34 percent fewer parts than standard trolleys – making them the lightest trolleys in the world. In fact, when Boeing switched to N9000/Quantum trolleys they saved 850 kilograms per 747 aircraft – equivalent to 80,000 Euro in fuel savings and 13,600 fewer tons of CO<sub>2</sub> emissions per year. In addition to significant weight savings, the financial benefits are impressive; N9000/Quantum trolleys are projected to deliver a return on investment in just three years. Available in a full range of colours and configurations, the appearance of the galley carts is customizable to complement the unique features and branding of individual airlines.

*“We have worked hard to produce a high-quality product for our customers that is not only improved through technology, but also meets the daily needs of airlines and crews.”*

– Mathieu Boivin, CEO of Norduyn

*“We had a huge amount of interest for Quantum at our booths where we provided airlines with a simulation of the savings they could achieve.”*

– Erdmann Rauer, Senior Vice President Sales and Marketing of LSG Sky Chefs

Additional benefits of the N9000/Quantum aviation trolleys include:

- Sturdy, retractable worktable
- Recess in worktable to safely place drawer on top
- Longer life due to increased impact resistance
- Reduced risk of crew injury due to lighter weight
- Reduction in spare parts inventory due to fewer parts and moulded screws
- Less maintenance due to fewer parts and increased durability
- Flexible, sturdy composite construction results in excellent shock absorbent properties
- Easily cleanable label area for catering content labels
- Embedded, easy to trace RFID chips
- Less energy and/or dry ice required to keep contents cool due to improved insulation
- New ergonomic dry ice release mechanism
- Quiet, easy to close door with slamming lock mechanism
- Two locking devices for custom lock and seal
- New brake mechanism with optional brake pedal set at the rear on half-size trolleys
- Half size: 1030mm H x 305mm W x 405mm D
- Full size: 1030mm H x 305mm W x 810mm D
- TSO C 175 air worthiness certification from CMI Aviation Authority of Canada



#### KYDEX, LLC

ISO 9001 and 14001 Certified

#### Customer Service

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[www.kydex.com](http://www.kydex.com)

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### The Advantages of KYDEX® T

A high-impact, fire-rated proprietary thermoplastic sheet, KYDEX® T is cost competitive with ABS/PVC (FR-ABS) but with advanced properties. KYDEX® T has significantly higher impact strength and extensibility and is less hygroscopic, which means it typically does not require pre-drying.

KYDEX® T is easy to form with excellent part definition and deep-draw characteristics and is among the most rigid of thermoforming materials, with a modulus of elasticity of 2,482 MPa. Thermoforming with KYDEX® T delivers improved uniformity with decreased wall thinning, resulting in greater impact and higher breakage resistance. In addition, integral colour provides increased resistance to a broad range of chemicals and cleaning solutions.

With form times similar to FR-ABS, KYDEX® T is the smart and easy solution:

- FAR 25.853(a) compliant
- RoHS compliant
- UL 94 5V-0 compliant
- Available in: thicknesses from 0.71mm and up, eight textures, unlimited colours, custom blank sizes and low minimums



### The Full Line of KYDEX Aircraft Grade Materials

Ideal for production of aircraft interior components, KYDEX® thermoplastic sheet provides the springboard for successful designs. As an industry leader in short runs and quick lead times, KYDEX offers products compliant to FAR 25.853(a) and (d) and the Airbus ABD0031 and Boeing D6-51377 requirements. KYDEX® FST is the industry-leading thermoplastic sheet for the production of modern commercial aircraft interiors. Meanwhile, KYDEX® FST-IM, an injection molding resin, is designed to complement KYDEX® FST with colours that match precisely. For decorative surfaces, KYDEX® 6565(d) offers greater extensibility and a broader processing window than press-laminated or bonded materials and can be fused during production to a KYDEX substrate.

KYDEX proprietary thermoplastic sheet for aircraft interior components is available in a range of high performance grades that satisfies FAA fire retardancy requirements. Resistant to a wide range of concentrated chemicals, KYDEX® thermoplastic sheet can be cleaned safely and repeatedly using harsh cleansers with no staining or fading.

With outstanding physical, mechanical and thermal properties, KYDEX materials are readily thermoformed, fabricated and machined to create a broad variety of two- and three-dimensional aircraft components including air ducts, armrests, bulk-head laminates, escape slide pack boards, galley parts, instrument panels, lavatory floor pans, life vest shrouds, lighting housings, moulding strips, passenger service units, side wall panels, toilet shrouds, tray tables and window reveals.

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### About KYDEX, LLC

KYDEX is a worldwide leader in specialty thermoplastic sheet manufacturing. Uniquely able to produce custom products for applications requiring high performance and regulatory compliance, KYDEX provides aircraft-grade thermoplastic materials to many of the leading airlines and aircraft interior designers throughout the world. KYDEX has a proven track record of delivering consistent, high-quality product in accelerated timeframes.

To learn more about KYDEX, please visit [www.kydex.com](http://www.kydex.com).

### About Norduyn

Founded in 1933, Norduyn specializes in high-performance composites and is involved in the design, certification and manufacturing of innovative products for commercial, business and military aviation markets. With a high level of technical expertise in lightweight composites technology and competitive manufacturing costs, Norduyn holds several patents for recent innovations. Their more than 50 years of regulatory expertise enables timely certification of new product solutions.

To learn more about Norduyn, please visit [www.norduyn.com](http://www.norduyn.com).

### About LSG Sky Chefs

LSG Sky Chefs is the world's leading partner of airline catering and integrated in-flight services. Working to make in-flight operations less complicated, LSG Sky Chefs leverages their almost 70 years of experience to enable airlines to offer outstanding and unique onboard experiences. Headquartered in Neu-Isenburg, Germany, LSG Sky Chefs is a group of 130 companies, with more than 200 customer service centers in 51 countries. In 2009, they produced 405 million airline meals for more than 300 airlines worldwide.

To learn more about LSG Sky Chefs, please visit [www.lsgskychefs.com](http://www.lsgskychefs.com)

### About the Crystal Cabin Awards

The Crystal Cabin Awards are the only international awards for excellence in aircraft interior innovation. With the goal of motivating companies and research facilities to develop new products and modern designs, the awards honour outstanding cabin products and concepts that provide benefits to the customer, final consumer and parts manufacturer. Presented in association with the Aircraft Interiors Expo in Hamburg, the 2010 awards had 64 applicants from 13 nations submit their ideas to the judging panel of international aviation experts including engineers, corporate executives, scientists and airline representatives. Winners were awarded within six categories – Entertainment and Communication; Materials and Components; Greener Cabin, Health and Safety; Passenger Comfort; Industrial Design and Interior Concept; University. The 2010 Crystal Cabin Awards were sponsored by Airbus, Aircraft Interiors Expo, the Aircraft Interiors International Magazine, Bishop GmbH, DIEHL Aerosystems Holding GmbH, FERCHAU AVIATION Division, HTG Media Hamburg, Jetliner Cabins. The Crystal Cabin Award is a registered Trademark ®.

To learn more about the Crystal Cabin Awards, visit [www.crystal-cabin-award.com](http://www.crystal-cabin-award.com).

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