

## **Frequently asked questions about Storm Case products.**

### **Question: How many Storm Case products are there?**

**Answer:** As of November 2004, there are currently 13 different models of various sized Storm Cases. Through continuous innovation and market analysis, we continuously add new models and/or options. Shortly, there will be 3 new models (iM2050, iM2075, iM3200) added to the product line extending the range to 16 different sizes for the Storm Case product line.

### **Question: What colors are available for Storm Case products?**

**Answer:** As the standard offering, many of the stock Storm Case models are available in black, gray, yellow, olive drab, and orange (excluding the iM3100, iM3200, & iM3300 which are only available in black and olive drab). Also, there are several custom colors you can get for your Storm Case depending on quantities you will be purchasing. For more information on custom colors and stock colors, please contact us.

### **Question: Which Storm Case model should I purchase?**

**Answer:** The Storm Case model for your application depends on the size of the contents and sensitivity of the equipment. Generally, it is recommended that you add an additional 1-inch around the content's perimeter dimensions for non-sensitive equipment; and 2 inches around the content's perimeter dimensions for sensitive equipment. This additional space allows for the cubed or custom foam to aid in cushioning, protecting, and securing the equipment.

### **Question: What is the case material for the Storm Case and why is it better?**

**Answer:** The Storm Case is an injection-molded case. Storm Cases utilize a new HPX® high performance resin. This protective shell protects beyond various competitor materials and has shown that during internal testing the impact resistance of Storm Case HPX® resin outperforms the competition. Some competitors use a blowing agent in the shell molding process that aids in reducing material shrinkage in thick sections of the part; however the downside is that bubbles and small voids form in the part that can cause failures when the case suffers impact. Besides offering better impact resistance, Storm Cases average 12% lighter in weight compared to the competition in an apple to apple full product line comparison.

**Question: What are the differences in Storm Case Press & Pull latches versus the competitors?**

**Answer:** The Press & Pull latch designed for the Storm Case is very different and very easy to use. It is mechanical in nature and allows for a strong, snap fit, and an easy release at the press of a button. Initial internal tests on pull strength alone show a significant performance benefit for this latch. The Storm Case latch performed admirably to 900 pounds of pressure while the competitor's latch failed at only 450 pounds of pressure. Additionally, competitor case latches generally utilize one-piece or complicated multi-piece ABS plastic latches that use a pure compression fit to close the case. Problems arise in re-opening these cases. The fit is so tight that releasing the latches is not only difficult, but so much pressure is accumulated that when they do release they spring up at great speed and often impact the users hand. The market name for these latches is very descriptive of the issue, "Knuckle Busters".

**Question: What is the Vortex valve and how does it work?**

**Answer:** The Vortex Valve is an automatic pressure relief valve that regulates air with changing altitude and temperature, while keeping water out. Storm Case pressure equalization vents (Vortex valves) are the result of a unique molded housing and a special "Gortex" gas-permeable micro-porous membrane that can repel liquids and micro-particles while allowing gas (air) molecules to pass right through the membrane. Liquids, dust and dirt particles are repelled while pressure differentials are automatically equalized by the exchange of air through the membrane. The self-regulating Vortex valve is completely automatic, as there are no buttons to push or moving valve parts.

**Question: What if the application requires an airtight case, what should I use?**

**Answer:** When an airtight, (non-breathing) Storm Case is needed, use Storm Case's manual pressure relief valve. The valve is closed for shipment and storage but may be opened to relieve pressure differentials before opening the catches. The manual valves of the competitors offer no visual indication from a distance whether the valve is open or shut with no locking function, so potentially the valve can be screwed completely out of the case. The Storm Case system is different and again, demonstrably superior. The manual valve is designed to turn 180 degrees to either purge or seal the case, and the knob acts as a pointing device to allow the operator a very easy view as to the open or closed position of the valve.

**Question: What is the difference between the Storm Case handle and the competitors?**

**Answer:** A main feature that distinguishes the Storm Case handle from the competition is the comfort grip. We utilize an over-molding process that places a softer, durable cushioning layer on top of an ultra-stiff, ultra-strong core to provide a soft comfortable grip without compromising strength. The competitors only offer a one piece fixed or folding handle(s), usually made of ABS plastic, which is functional but hard to the hand and will lead to early fatigue if carried for any length of time with sufficient load. Also, cosmetically the Storm case handle presents a high tech finished appearance.

**Question: What are the features and benefits of the extended handle and wheels?**

**Answer:** To enable ease of transport some of the cases feature inline wheels and extended handles, the cases with these features are referred to as the Storm Trak™ Series. The extended telescoping handle simply extends or hides and locks away with the simple push of a button. The Storm Case extended handles are sleek, high strength, and wide tubular designed. Competition either offers big, bulky or thin-rod designs. Also, our inline wheels are shielded bearing rugged urethane wheels offering long-life of smooth operation for transport. The core of the wheel is made from nylon and the outer 'tread' or 'tire' is made from polyurethane. The outer tire provides a smoother quieter rolling action than if it was hard plastic. The shielded ball bearing wheels are low-friction, which means rolling the case for long distances is easier because there is less drag than in a wheel that has plain bearings.

**Question: What is the difference in the Storm Case hinge compared to the competitors?**

**Answer:** The Storm Case utilizes a unique hinge configuration. It consists of a three-point hinge that uses two pins. The pins are inserted from opposing sides of the case and extend within a channel through the first two hinges into the middle one. The structure is significantly stronger than the two-point hinge and stronger and more attractive than the “piano hinge”. Also, the entire backside of the case is designed to further protect the hinges and allow for a stable flat base for the case to stand upright.

**Question: Why don't the hinge pins fall out?**

**Answer:** The hinge pins are press fitted into the case while the case is hot, so as the case material cools, it compresses around the pins. Since the pins are bigger than the slot, they cannot fall out or be pulled out. Plus the hinge pins have a center block stop to prevent the pins from being pushed out by force once they are installed. This added security feature of the hinge pins prevents any potential of the hinge coming loose or the case falling apart.

**Question: What are the “teeth” by the latches inside the Storm Case?**

**Answer:** There is a small area inside the case under each latch that has been engineered to aid in anti-shear movement. As the case closes and is latched shut, these small teeth molded into the case interlock and provide a further level of protection to the case to avoid any potential of separating horizontally if the case was dropped on its edge.

**Question: What is the standard foam supplied with the Storm Case?**

**Answer:** All Storm Case products are offered in foam or no foam configurations. The 2lb polyurethane foam of the Storm Case product is offered in multi-layers to enable easy customization. The iM2050-2975 models consist of multilayer cubed foam that enables the user to pull out cubes as needed for customization. The iM3100-3300 models offer solid foam layers which can easily be customized with a blade.

**Question: What are some other options available with the Storm Case line?**

**Answer:** There are numerous options you can get for the Storm Case line. We are constantly updating our offerings to meet the market demands; and if you see anything that is not available from the below list, please contact us.

**Standard Options:**

1. Bezel kits
2. Aluminum frame system for panel mount applications. Available installed or shipped loose.
3. Lid stay
4. Dual metal bars mounted on internal case sides. Keeps case securely open.
5. Lock
6. Solid brass locks with three user settable tumblers. By Master Lock®
7. Manual purge valve
8. Manual valve with 180° on/off operation that won't unscrew from the case. Black only. Installation charge may apply.
9. Padded divider sets
10. Black interior water-resistant, PVC coated, denier nylon fabric cushioning system with movable dividers for customization.
11. Replacement foam
12. Full set of genuine Storm Case multi-layer cubed foam. (except iM3100, iM3200, & iM3300 which solid/non-cubed foam)
13. Shoulder straps
14. Removable black shoulder strap for ease of transport.

**Custom Options (Minimum quantities and setup charges may apply, please call for additional details):**

1. Non-label (blank) option
  - a. Storm Case comes with no product label, no hang tag, in blank product box and master pack. No foam only.
2. Custom colors
  - a. Custom colors available for cases.
3. Custom labels
  - a. Heavy duty frosted polycarbonate labels with extra-strength adhesive.
4. Molded-in 3D graphics
  - a. Raised or sunken in logo in the label area. Graphic is engraved in the plastic.
5. Foil stamping
  - a. Foil artwork is stamped into the case lid. The foil stamp is available in many standard colors.

**Question: What additional foam options, can I get for the Storm Case product line?**

**Answer:** Storm Case offers a range of interior foam cushion options to meet unique applications. For complex designs, Hardigg's water jet foam-cutting system uses a computer-controlled motion system for precise handling of complex, curved and detailed shapes. If you have a custom or OEM fit application that requires a specific configuration, please contact us.

**Question: What are some foam material types that can be purchased for the Storm Case line?**

**Answer:** There are multiple types of foam materials available for the Storm Case line. The most common are Polyurethane (PU) and Polyethylene (PE). The standard foam provided with the Storm Case line in multi-layer format is Polyurethane (1.6-2.0 lbs. per cubic ft). Polyurethane is soft, open cell foam. Polyethylene, available as a custom insert, is a firm closed-cell foam. Polyethylene and polyurethane are also available in custom antistatic forms for those applications that require the foam to inhibit the build up of static electricity and help dissipate any static charge.

**Question: What is the warranty for the Storm Case?**

**Answer:** The Storm Case comes with a warranty for life against defects in workmanship and breakage under normal use conditions. The cases are guaranteed to be watertight. Please see the full Storm Case Lifetime Warranty for complete details, which is included with each case.

**Question: What is the lid depth for each of the Storm Cases?**

**Answer:** The lid depth for the Storm Case is 1.5 inches for the iM2050 & iM2075 series, while the lid depth of the iM2100-iM3300 is 2.0 inches.

**Question: Can you stack Storm Cases?**

**Answer:** The cases do stack, however the cases do not have a universal stacking pattern. Only like-size cases stack, for example a iM2300 stacks on a iM2300, but not on other sizes.

**Question: What is the difference between the Storm Case gasket and the competitors?**

**Answer:** The silicone gasket material for the Storm Case line does not take as much compression set at low temperatures as compared to the neoprene foam rubber used by the competitors. This means leaks are less likely to develop with the silicone gasket compared to the neoprene gasket.

**Question: What tests or specifications do the Storm Case products meet?**

**Answer:** The Storm Case meets several military, ATA, and federal specifications. For a complete individual list of these specifications, please see below.

TEST	Specifications Met	Description
Drop Test	Fed-Std-101C, Method 5007.1, Paragraph 6.3, Procedure A, Level A.	A series of 26 drops, one on each corner, edge, face, from 19” to 30”, depending on the gross weight of the case with loads of 15 lbs to 70 lbs (depending on case size).
Falling Dart Impact	ATA 300, Category I, “General Requirements for Category I and II Reusable Containers”	A dart weighing 13.22 lbs with a 1.25” hemispherical end was dropped on each case from 19.68”
Vibration (loose cargo)	FED-STD-101C, Method 5019	Each case was vibrated for 20 minutes per axis. 1-inch peak to peak at approximately 4.50 Hz.
Vibration (sweep)	ATA 300, (Jan 15/96) which states in Appendix II, B.4 This test also exceeds the specifications listed in MIL-std-648C and may also fulfill ISO 8318 and ISO 2247	“Vibration Test for Category I containers – Vibration tests shall be conducted on Category I containers in accordance with ASTM Designation D-999, Procedure B, within the range of 5 to 50 cycles per second for a period of not less than two (2) hours.”
Simulated Rainfall	MIL-STD-810F, Method 506.4, Procedure II of 4.1.2 Fed-STD-101C Method 5009.1, Sec 6.7.1	Four inches of rain per hour for 20 minutes each side. This was followed by a 4-hour test at 4” per hour on the top, with the case initially heated to 18°F higher than the water temp.
Immersion	MIL-STD-810F, method 512.4 Fed-STD-101C	A 1 meter (3.281 feet) immersion for 1-hour, with the case initially heated to 40°F higher than the water temperature.

**Question: What is a bezel kit?**

**Answer:** Storm Case bezel kits are supplied as an aluminum rectangular frame system for mounting the equipment into the case’s base at various heights. Bezel and panel mounts are used for a variety of applications. A standard use is to contain and mount electronic, test and measurement equipment within the case to be utilized as control device or data collection unit

**Question: What are the differences between the Storm Case bezel kit and the competitor’s bezel kits?**

**Answer:** The Storm Case bezel/panel mount incorporates molded corner pieces that will fit at any depth within the case, and utilizes extruded aluminum for the bezel sides. These

aluminum sides screw directly to the side of the case (rubber “o”-rings are used to keep the unit water tight). The panel is screwed directly to the bezel. This offers greater flexibility for placement in the case, and much better durability in case of impact. Some competitors offer plastic rectangular bezels with threaded screw provisions or metal triangular shaped bezels with threaded screw provisions screwed or welded to the interior that will only fit at one specific depth within the compatible case.

**Question: What are some of the standard features and benefits of Storm Case versus the competition?**

**Answer:**

<b>Feature</b>	<b>Competition</b>	<b>Storm Case</b>	<b>Storm Case Advantage</b>
Case Material	Polypropylene or ABS	HPX High Performance Resin	Better Impact Resistance
Latches	Narrow “Knuckle Buster” Design May pop open when dropped	Press & Pull Operation with Extra Strength Wide Design Wont pop opened when dropped	Pain Free Latch Operation That’s Twice as Strong More Secure Case Closure
Purge Valve	Manual Pressure Adjustment Valve Screws Out (Could get lost)	Vortex Valve Valve Won’t Fall Out	Automatically Adjusts to Changing Environments No Lost Valves
Carry Handle	Hard, One Piece Construction or Thinly Padded with Harder Rubber	Durable Inside Core with Soft Overlay	More Comfortable to Carry
Extended Handle (Larger Cases)	Bulky, Heavy, or Thin-rod Design	Sleek, High Strength, Tubular Build	Stronger and Lighter
Nameplate Area	Adhesive Labels	Adhesive Labels Custom 3-D Logo Option	Easy Customization Permanent, Molded-In Logos That Can’t Fall Off
Cubed Foam System	Single Layer of Cubed Foam	Multilayer Cubed Foam	Highly Customizable to Your Individual Needs

Panel Mount System	Plastic Frame Screwed to Interior, Variable Height	Extruded Aluminum Rails with Molded Corner Pieces Watertight, Sealed Rivet Attachment for Custom Fit	Stronger Panel Mount Construction Permanent, More Secure Panel Attachment
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**Question: Do Storm Case containers outgas?**

**Answer:** Storm Cases do not outgas. Storm Case shells are molded from HPX resin material that is considered inert and meets the requirements of F.D.A. 21 CFR 177.1520 for a nontoxic, food contact material. As supplied, no appreciable volatiles should be present (such as those emanating from fugitive plasticizers, surfactants or flame retardants etc.). The gasketing used is a silicone material bonded with an alcohol cure silicone adhesive. The alcohol cure adhesive was specifically chosen to avoid the odor and potentially corrosive effects of the more common acetic acid cure adhesive.

**Question: What kind of paint could be used to apply to the case surface?**

**Answer:** For stenciling on the case surface, we recommend that a 2-part epoxy ink be utilized. Flame treating should be done prior to application.

**Question: What glue is recommended to adhere to the multiple components on the Storm Case line?**

**Answer:** For bonding foam-to-foam utilize a 3M Spray 90 adhesive (a contact type adhesive). For bonding foam-to-shell utilize a 3M Spray 90 adhesive, it is recommended that the shell is flame treated prior to application of adhesive. Do not flame treat foam.

**Question: Can the Storm Cases be silk-screened?**

**Answer:** Storm Case with its high performance HPX resin can only be silk screened, painted, printed or stenciled with inks specifically intended for this purpose. The surface to be printed must be activated by either a flame treatment or corona plasma discharge method. Suitable inks are available from multiple companies in both air dry and two part epoxy formulations. Fast setting U.V. curable inks are also available.

**Question: Will Salt Spray effect the springs in the Storm Case latches?**

**Answer:** Today, worldwide customers are utilizing Storm Cases in various salt-water applications. A very corrosion resistant stainless steel material is used for the latch spring and will not rust.

**Question: What is WVTR and how does it apply to the Storm case?**

**Answer:** WVTR is "water vapor transmission rate", and usually applies to any container equipped with a mechanical (AGM style) or passive (Vortex style membrane) two way pressure relief valve (PRV) that will exchange air (and water vapor) at a rate that is dependent on the expansion and contraction of the case caused by ambient temperature and pressure changes. In cases where air transmission is a concern we recommend the use of our manual pressure relief option. The use of this manually operated valve eliminates any air exchanges (except of course when the case is opened) and provides a water and airtight container. To prove a container equipped with a manual PRV is air tight we would normally perform a Vacuum Decay test per Fed-Std-101, method 5009.

**Question: Are Storm Cases impervious to petroleum products?**

**Answer:** The high performance HPX resin performs well in terms of chemical resistance. The latch and handle materials offer excellent resistance to motor oils, gasoline, brake fluid, transmission fluid, and power steering fluid. Brake fluid will lower the tensile strength by about 50% if immersed for an extended period time of 90 days at 140 deg F (60 degrees C) - but this is not likely to occur and normal intermittent exposure is not an issue. Acetone, methylene chloride, and MEK are not a problem if the exposure is short term, for example if the case was cleaned with one of these liquids (not recommended, but might occur). Immersion for several days at room temperature with acetone, methylene chloride, and MEK will cause swelling and tensile strength reduction.