

Technical Information about Imago™

Imago™, from KnollTextiles, is made through a patented process, in which fabric is encapsulated, in a high-performance resin called PETG (polyethylene terephthalate glycol-modified). This is a glycol-modified version of PET, which is a member of the polyester family and widely used for soft drink bottles.

Through the outstanding properties of PETG, Imago offers excellent performance attributes, combining very high strength with amazing flexibility. It will not shatter. It can be bent, punched, drilled or sawed. The KnollTextiles fabrics featured in Imago provide a range of designs, surfaces and colors, as well as varying degrees of opacity.

Some Imago standard products come with a “hard coat” finish on each side. This hard coat surface provides additional resistance to scratching, as well as allowing for clean up from dry-erase markers when combined with a patented finish. Imago products with this hard coat patent finish are shown on the price list. These products are well suited for markerboard use (even some permanent inks can be removed with isopropyl alcohol). When heat bending with a hard coat finished sheet, additional care may be required.

Other Imago standard products come with surfaces textured in a number of ways. These products hide scratches through their texture, though they should not be specified for markerboard use. In the event a temporary marker is used, many strong cleaning solutions (see below) may be effective in removing the markings, without harm to the Imago. However, you must keep liquid away from contact with unprotected edges of Imago.

As with any material, the fabricator should thoroughly test the specified Imago for use in the project’s application.

Material Properties

The following material properties are dependent on sheet thickness:

- **Weight:** lbs/48” x 96” sheet

Sheet Thickness (gauge):

1/16”	1/8”	3/16”	1/4”	3/8”	1/2”
13lbs	26lbs	39lbs	52lbs	78lbs	104lbs

- **Impact Strength:** Un-Notched (23° C) ASTM D4812 Nonbreak

Note: Imago material did not shatter or fracture during this strength test. Under imposition of extreme weight /pressure impact, Imago, instead, exhibited varying levels of elongation/distortion. This does not mean that Imago cannot be fractured under any conditions (e.g., hit on a corner by forklift).

- **Radii Minimum for Cold Bending:**

Sheet Thickness (gauge):			
1/16"	1/8"	3/16"	1/4"
9"	18"	27"	36"

Note: Imago sheets which are bent under non-heat molding conditions should be held in channels or another appropriate system for restraint. The memory in the Imago sheets will naturally cause it to flatten without such appropriate restraint. Cold bending sheets above 1/4" presents practical fabrication difficulty.

- **Structural Use:** Imago is not recommended for use in structural applications inconsistent with its impact strength, flex modulus, and other properties. Contact KnollTextiles if you have questions regarding a specific application.

- **Custom Size:** Imago is available in a 4x10 foot sheet as a custom order

- **Thickness:** Gauges below 1/8" are not generally recommended for horizontal work surfaces (refer to Flex Modulus section)

- **Tolerance:** *Gauges 1/16", 1/8", 3/16", 1/4"*
 Width: 4' plus or minus 1/4"
 Length: 8' plus or minus 1/4"

Gauges 3/8", 1/2"
Width: 4' plus 1/4" or minus 2"
Length: 8' plus 1/4" or minus 2"

All Gauges
Gauge: gauge plus or minus 0.012"
Squareness of sheet: plus or minus 1/8"

The following material properties are not as dependent on sheet thickness; they include:

- **Fabric Bow/Skew:** Fabric line may show movement of up to two inches per 48".

- **Sound Transmission:** ASTM E90-97 STC = 25
 OITC = 20db @ 1/8" (transmission loss)

Note: Test results based on Imago with hard coat and without surface texturing

- **Heat Resistance:** Avoid prolonged exposure to 150°F+ temperatures to avoid softening
- **Water Resistance:** Avoid immersing unprotected edges of Imago in liquid, which may be wicked, or carried, by any exposed yarn from the fabric. Silicon adhesives or other appropriate material should be applied to edges when the sheet may be exposed to liquid.

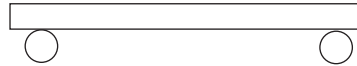
- **Thermal Expansion:** 0.0002 inches change in length for every 5° F change
- **UV Resistance (Regular UV inhibitors):** 3,000 hrs/36 months total exposure. All Imago products come with this as a standard
- **Dielectric Constant:** ASTM D150 2.40 MHz
- **Dissipation Factor:** ASTM D150 0.02 MHz
- **Light Transmission:**

Product	% Range (varied by color)
Allure	26-51
Delta	39
Limelight	36-41
Lucere	42-48
Mirage	31-49
Neptune	69-77
Ozone	37
Progeny	29-38%
Reverie	15-37
- **Chemical Resistance:** Imago products can be exposed to most commercial cleaning products, including Windex, PineSol, isopropyl alcohol, and bleach solutions. Caution: Avoid unprotected edges, the cleaning solution may damage the fabric. Imago may be damaged by Acetone, Toluene, or abrasive substances
- **Cleaning:** Crayons, markers, paint, and many other substances can be easily cleaned from Imago products that have a hard coat finish. Non-hardcoat surfaces may require commercial cleaning products, and permanent markers may not be removable.
- **General Handling Notes:** Corners of Imago sheets may be chipped if sheets are dropped, or otherwise subjected to abusive handling.
Please note which side is the face of Imago.
Sheets of Imago are generally shipped with a protective “peel coat,” or mask on both sides.
- **MSDS:** Available upon request: 866.565.5858
- **Specification Writing:** AIA Masterspec: Section 08840 Plastic Glazing: Information from this Imago Technical Information guide may be inserted in 08840, based on usage of material. Please note that PETG takes the place of acrylic or polycarbonate in the Material Characteristics section.

• **Flex Data:** Imago Flex Modulus

Plate deflection due to its own weight

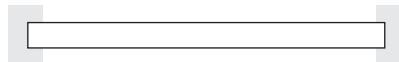
Simply supported on all four edges



Sheet Size (in)	Sheet Thickness	Center Deflection (in)
24 x 48	1/16"	0.520" (33/64")
24 x 48	1/8"	0.435" (28/64")
24 x 48	3/16"	0.238" (15/64")
24 x 48	1/4"	0.115" (7/64")
24 x 48	3/8"	0.065" (4/64")
24 x 48	1/2"	0.029" (2/64")
48 x 96	1/16"	1.312" (1 - 20/64")
48 x 96	1/8"	1.278" (1 - 18/64")
48 x 96	3/16"	1.176" (1 - 11/64")
48 x 96	1/4"	1.012" (1 - 1/64")
48 x 96	3/8"	0.807" (52/64")
48 x 96	1/2"	0.449" (29/64")

Plate deflection due to its own weight

Clamped on all four edges



Sheet Size (in)	Sheet Thickness	Center Deflection (in)
24 x 48	1/16"	0.333" (21/64")
24 x 48	1/8"	0.245" (16/64")
24 x 48	3/16"	0.100" (6/64")
24 x 48	1/4"	0.045" (3/64")
24 x 48	3/8"	0.025" (2/64")
24 x 48	1/2"	0.011" (1/64")
48 x 96	1/16"	0.839" (54/64")
48 x 96	1/8"	0.803" (51/64")
48 x 96	3/16"	0.698" (45/64")
48 x 96	1/4"	0.538" (34/64")
48 x 96	3/8"	0.374" (24/64")
48 x 96	1/2"	0.181" (12/64")

Concentrated load on center • Clamped on all four edges



Sheet Size (in)	Gauge	Center Load (lb)	Center Deflection
48 x 96	1/16"	0.1	0.242" (15/64")
48 x 96	1/8"	0.1	0.058" (4/64")
48 x 96	3/16"	0.1	0.014" (1/64")
48 x 96	1/4"	0.1	0.006" (0/64")
48 x 96	3/8"	0.1	0.003" (0/64")
48 x 96	1/2"	0.1	0.001" (0/64")
48 x 96	1/16"	3.0	0.752" (48/64")
48 x 96	1/8"	3.0	0.618" (40/64")
48 x 96	3/16"	3.0	0.362" (23/64")
48 x 96	1/4"	3.0	0.178" (11/64")
48 x 96	3/8"	3.0	0.097" (6/64")
48 x 96	1/2"	3.0	0.040" (3/64")
48 x 96	1/16"	25.0	1.525" (1-34/64")
48 x 96	1/8"	25.0	1.397" (1-25/64")
48 x 96	3/16"	25.0	1.200" (1-13/64")
48 x 96	1/4"	25.0	0.951" (61/64")
48 x 96	3/8"	25.0	688" (44/64")
48 x 96	1/2"	25.0	0.329" (21/64")
48 x 96	1/16"	100.0	2.421" (2 - 27/64")
48 x 96	1/8"	100.0	2.262" (2 - 17/64")
48 x 96	3/16"	100.0	2.074" (2 - 5/64")
48 x 96	1/4"	100.0	1.856" (1 - 55/64")
48 x 96	3/8"	100.0	1.612" (1 - 39/64")
48 x 96	1/2"	100.0	1.089" (1 - 6/64")
24 x 48	1/16"	0.1	0.152" (10/64")
24 x 48	1/8"	0.1	0.018" (1/64")
24 x 48	3/16"	0.1	0.005" (0/64")
24 x 48	1/4"	0.1	0.003" (0/64")
24 x 48	3/8"	0.1	0.000" (0/64")
24 x 48	1/2"	0.1	0.000" (0/64")
24 x 48	1/16"	3.0	0.473" (30/64")
24 x 48	1/8"	3.0	0.312" (20/64")
24 x 48	3/16"	3.0	0.159" (10/64")
24 x 48	1/4"	3.0	0.098" (6/64")
24 x 48	3/8"	3.0	0.000" (0/64")
24 x 48	1/2"	3.0	0.000" (0/64")
24 x 48	1/16"	25.0	0.956" (61/64")
24 x 48	1/8"	25.0	0.783" (50/64")
24 x 48	3/16"	25.0	0.623" (40/64")
24 x 48	1/4"	25.0	0.510" (33/64")
24 x 48	3/8"	25.0	0.454" (29/64")
24 x 48	1/2"	25.0	0.400" (26/64")
24 x 48	1/16"	100.0	1.522" (1 - 33/64")
24 x 48	1/8"	100.0	1.291" (1 - 19/64")
24 x 48	3/16"	100.0	1.113" (1 - 7/64")
24 x 48	1/4"	100.0	0.986" (63/64")
24 x 48	3/8"	100.0	0.909" (58/64")
24 x 48	1/2"	100.0	0.820" (52/64")

Building Code Compliance: Flammability and Smoke

Imago meets the performance requirements established by the United States model building codes for light-transmitting plastics. The provisions of these codes provide adequate regulation for most applications of light-transmitting plastics.

NFPA 101 (section 6-5.3) refers use of light-transmitting plastics for interior applications to authorities and organizations having local jurisdiction. Such authorities and organizations typically adopt the US Model Building Codes, which are supported by the International Code Council (ICC).

Light-transmitting plastics usually melt, burn, and smoke more readily than glass, metals, or wood. As a result, for such materials, there are three specific ASTM tests, which forms the basis for a plastic material to become recognized by ICC. These three ASTM tests are required in the International Building Codes (IBC).

Imago Flammability/Smoke Test Results:

Test	Result	Data
ASTM D2843 Smoke Density Rating	Pass	3 to 33% density vs. 75% maximum allowable
ASTM D635 Combustion Rating	Pass	CC-2 rating (burn less than 2.5"/min.)
ASTM D1929 Self-Ignition Temperature	Pass	850°F ignition vs. 650°F minimum

Imago is a certified light transmitting plastic with ICC listed under evaluation report number ICBO ES ER-5844. This report states that Imago is an approved plastic complying with Section 217 of the 1997 Uniform Building Code (UBC), and is an approved light-transmitting plastic complying with Section 2606.4 of the 2000 International Building Code. For more information: www.iccsafe.org

Note: ASTM E84 / UL723 tests do not accurately characterize the flame and smoke performance of light-transmitting plastics. These tests, virtually identical in methodology and criteria, measure the Flame Spread Index and Smoke Density of a material relative to red oak in ceiling position. Both standards recognize the problem with thermoplastic materials that soften and melt before burning, unlike wood. Materials that fall to the floor of the 12" high tunnel may contribute to ceiling burning which is unrealistic in actual installations. Because of this, the smoke generation may become artificially high in these test conditions.

Imago Flammability/Smoke Test Results

The combination ASTM D635 and ASTM D2843 tests also measure the flame spread and smoke density of a material, but these tests (see above) are designed specifically for plastics.

UL723/ Surface Burning Characteristics: Class A	Flame Spread	0 vs. 25 maximum
ASTM E84	Smoke Generation	66 vs. 450 maximum*

* In accordance with convention for testing light-transmitting plastics, this data was collected while sample remained in the original test fixture position. Results do not include material that ignited on the furnace floor, for reasons noted above, and were measured at the greatest length intended for use (8 feet). Smoke generation results would be significantly improved, 6 (instead of the 66 above), if measured at the point of material ignition on the floor.

Another test is UL94, a vertical flame test of light-transmitting plastics for use in electrical appliances. Imago achieves a V-2 rating on this test.

If used as 15% or more of the surface area of a major component core (typically, a panel) of an electrified office furnishing system, Imago, under UL 1286, sections 18.1 and 18.2, should be marked with a label indicating a smoke development index exceeding 450. This is consistent with labeling of other decorative plastics, such as acrylic, on such systems. This section of UL 1286 requires the use of the test measurement protocol, which does not recognize the inherently different characteristics of thermoplastics (discussed above).

A possible restriction of Imago for use when classified as a light diffusing system (typically suspended from the ceiling) exists in the 2000 IBC section 2606.7, where in non-approved automatic sprinkler systems, usage of plastics may not exceed 25% of the aggregate area of the ceiling in which the panels are installed.

The statements, technical information and recommendations contained herein are believed to be accurate as of the date indicated. Properties reported herein are typical of average lots. KnollTextiles makes no representations that the Imago in any particular shipment will conform exactly to the values shown. KnollTextiles expressly disclaims any and all liability as to any results obtained or arising from any use of Imago or reliance on this information. No warranty is made of the fitness for use of Imago, and nothing herein waives any of the Seller's conditions of sale.