

Screen Printing Guidelines

Cat-i Glass is dedicated to providing our customers with the best possible screen printed products while meeting important deadlines. We appreciate your assistance in following the guidelines outlined below to ensure your receipt of an accurate and on-time screen printed glass product.

Applications:

Cat-i Glass Pre-Press Department is PC/Windows based using the following software packages:

- Adobe Illustrator - **.AI**
- Adobe InDesign - **.INDD**
- AutoCAD - **.DXF or .DWG**
- CorelDraw - **.CDR**

Native files generated from the above software packages are associated with the file extensions noted above. If the artwork has been created in a program other than the listed products above, the file should be saved as a **.PDF** or **.EPS** file extension. It is always best to send files that need screen print in AI format. **Files created in CAD or other CAD like programs will cause artwork to look choppy especially if there are logos, icons, radii, or circles.**

Indexing/Datum Corner:

All files submitted should have an indexing and/or datum corner reference. When the file is drawn as a second surface image (ink is viewed through the glass) indexing and dimensioning should be drawn from the top right corner as shown in Figure A. When the file is drawn as a first surface image (ink is viewed on top of the glass) indexing and dimensioning should be drawn from the top left corner as shown in Figure B. This is required due to the printing process. Datum corners will be changed if needed to accommodate our print process.

Figure A

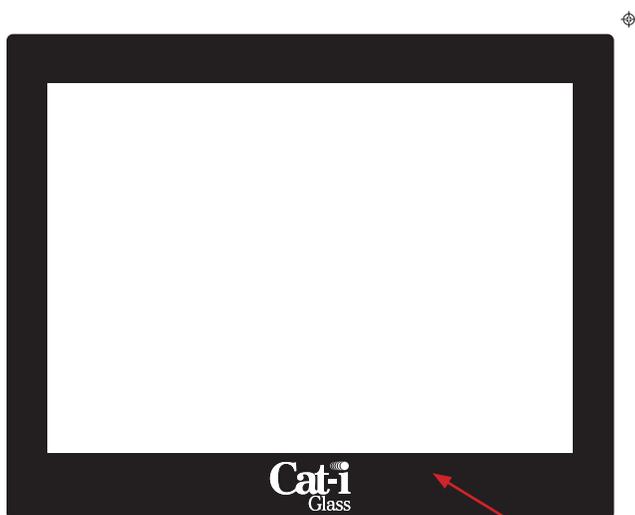
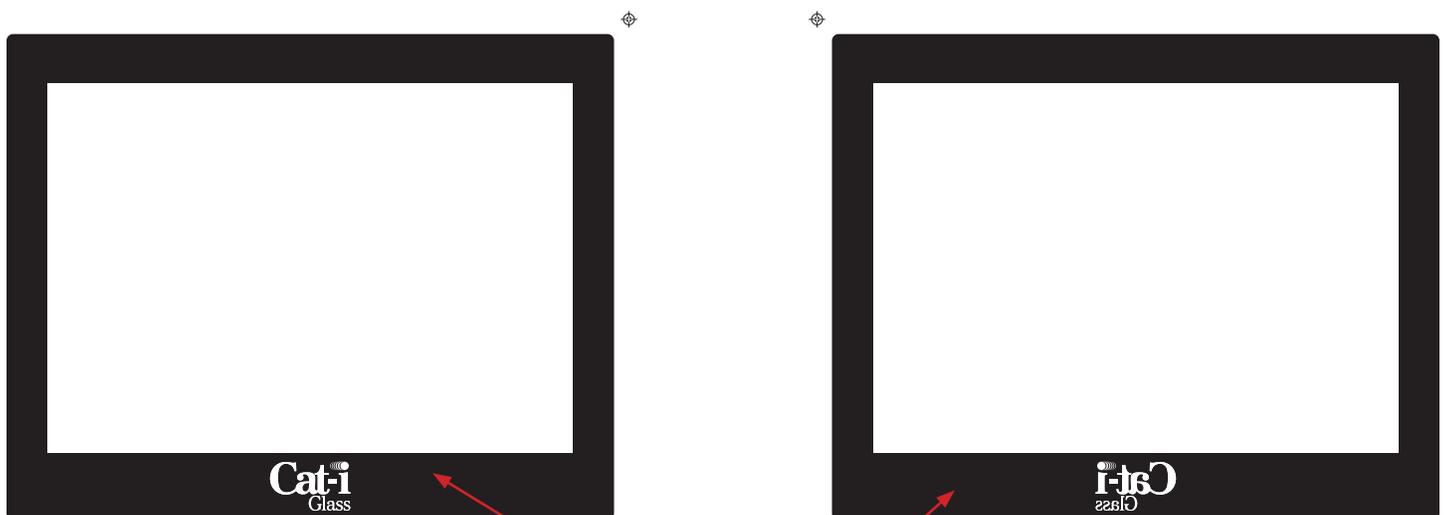


Figure B



Second Surface Ink on Back Side of Glass

First Surface Ink on Top Side of Glass

Printed Ink

Size:

It is recommended that all files be submitted in the exact size of the dimensional specifications. If the artwork is not made to size, notation of the scaling ratio must be included in the file.

Fonts:

All fonts need to be outlined and turned into an object. If a specific font is not outlined, the proper font file must be supplied to Cat-i at the time of artwork submission. Please send only the font files that are in use.

Proofs:

After a file is received, Cat-i's Pre-Press Department will generate an electronic proof calling out all critical dimensions as well as the indexing/datum corner location. Upon written customer approval sent via signed electronic file or email, films will be created and double checked at Cat-i before a screen is made.

***** Customers assume full design responsibility of the signed proof. It is the customers responsibility to let Cat-i know of any discrepancies within the proof. If the proof is signed with wrong information the customer will be responsible for the production of parts being made to the signed proof specifications and dimensions. *****

*****Screen Life:**

All films/screens are property of Cat-i Glass Mfg. Screens have a life span of 2 years. If a screen is not used for 2 years it degrades such that it can't be used at all. Cat-i reserves the right to remove and dispose of screens not used in this time frame.***

Important Notes:

All critical areas should be called out i.e. drill holes, thru holes, cut outs, dead fronts, and clear areas. Other important information needed on prints would be the type of ink to be used (Frit, UV, or Enamel) and desired PMS color of ink being screened.

Line Weights:

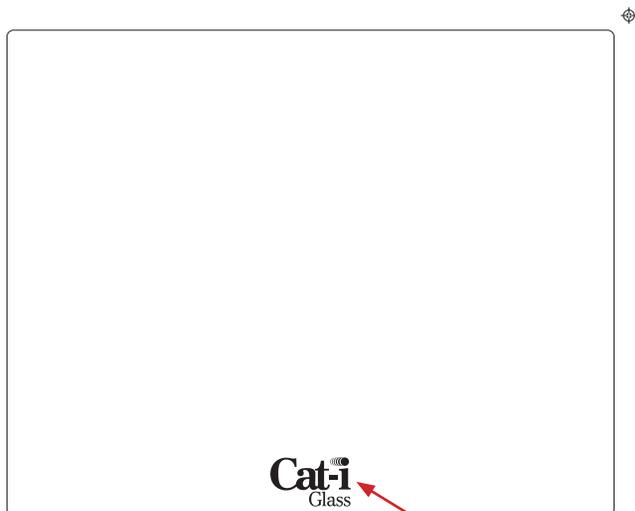
Minimum line weights for images printed as a Positive Image (Figure A) are .005" for UV inks and .010 for Frits and Enamels.

For images printed as a Negative (Figure B) a minimum line weight of .015" is recommended for UV, Frits and Enamels inks.

Non-printed Borders:

Cat-i defines non-printed borders from the edge of the profile not the edge of the glass. UV and Epoxy inks are able to print to the edge of the profile, while Frit inks can not. All parts printed with Frit inks require a Cat-i standard of a minimum of .015" non-printed border from the edge of the profile. See Page 4 for more details.

Figure A



Positive Image

Figure B



Negative Image

Printed Ink

Cat-i
Glass

Cat-i
Glass

Screen Print Graphics:

Sight Glass/Lighting:

Line Definition - .020" Max

Pinholes/Voids - Same as Scratch/Dig Spec.

Voids - Same as Scratch/Dig Spec.

Dark/Light Spots: Point Defects - Same as Scratch/Dig Spec.

Linear Defect - Pass if can not be seen in standard viewing conditions (not back-lit).

% Transmission/Optical Density - Per Customer Requirements (Nominal Tolerance)

Display:

Line Definition: Frit - .010" Max

Organic inks - .005" Max

Pinholes/voids - Same as Scratch/Dig Spec.

Dark/Light spots: Point Defect - same as Scratch/Dig Spec. when back-lit.

Linear Defect - same as Scratch/Dig Spec. when back-lit.

% Transmission/Optical Density-Per Customer Requirements (nominal tolerance).

Coupons:

Line definition - N/A

Pinholes/Voids - Q4

Dark/Light Spots - N/A

% Transmission/Optical Density - N/A

Viewing Conditions - Per Surface Quality designation in transmission only unless otherwise specified.

Cat-i Recommended Cleaning Agents for Glass Decorated with Enamel or UV Inks

Reagent Grade Isopropyl Alcohol (IPA) (90+ % Purity).

Non-ammoniated window cleaners.

Distilled or Deionized water at room temperature.

Use only a soft, lint free cloth. Avoid aggressive rubbing on the ink surface. Dry thoroughly after cleaning.

DO NOT USE:

Abrasive cleaners or brushes

Hydrocarbon solvents

Acidic or highly alkaline solutions

A Non-printed border is defined as the edge of the ink or film to the edge of the profile, not the edge of the glass.

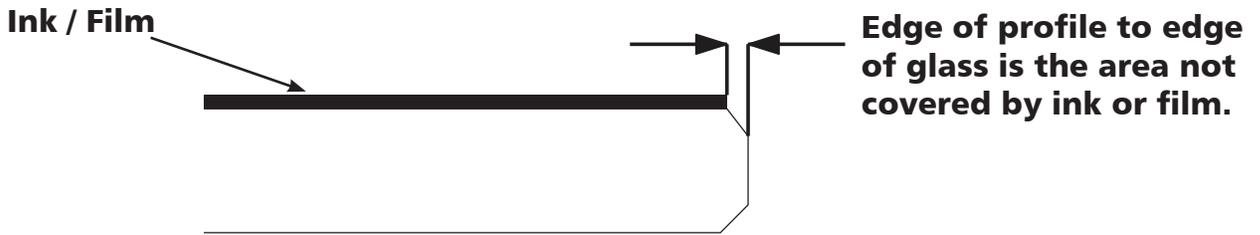
Zero Non-Printed / Film Border shows ink / film goes directly to edge of profile.

Defined Max Non-Printed / Film Border shows clear glass area between ink / film to edge of profile.

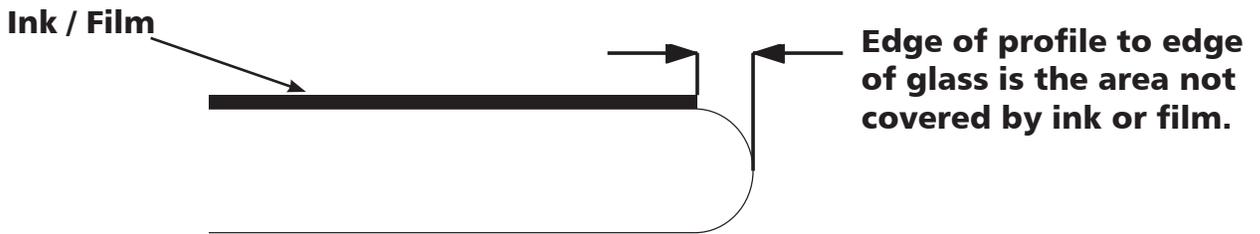
Edge profile and non-printed borders will vary based on customer specifications.

Parts printed with UV and Epoxy inks can have a zero non-printed border, allowing the ink to go the edge of the profile. Parts that are printed with Frit inks all have a minimum of **.015" non-printed border** from the edge of the profile. This keeps Frit inks from flowing over the edge on to the profile during the firing processes. Acceptable non-printed borders should be discussed with your sales representative.

Zero Non-Printed / Film Border

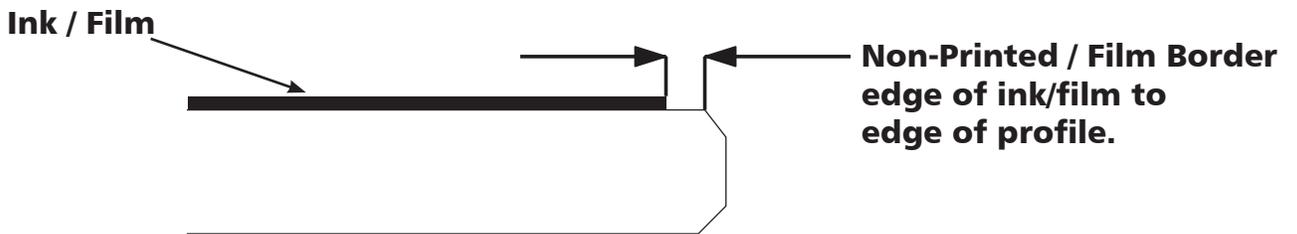


Arris / Seam Profile

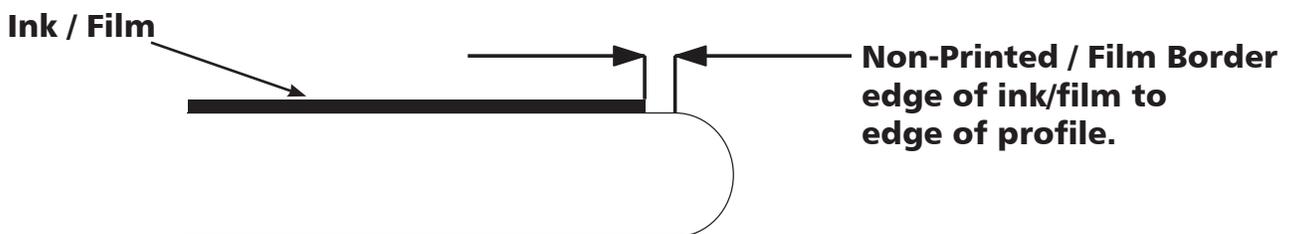


Pencil Profile

Defined Max Non-Printed / Film Border



Arris / Seam Profile



Pencil Profile

Ink Testing Requirments

UV, Epoxy, Thermalset Inks

Cat-i tests UV, Epoxy and Thermalset inks using a cross hatch tape test per ASTM 3359-09. The test is performed using Gardco PA-280630 Tape after each hit of ink on part. Parts smaller than 2" cannot have a cross hatch Tape Test performed. Cat-i will test adhesion of small parts using the Gardco PA-280630 tape without a cross hatch.

Frit Inks

Cat-i tests frit inks using an alcohol test or gloss readings. Alcohol test are performed on frit inks by rubbing 99% isopropyl alcohol the frit ink after firing. If the alcohol wets or bleeds through the ink and visible on the other side then ink is not cured and must be refired. Frit inks can also be tested by gloss level using a Gloss Meter. If the ink is over 35 GU then the ink as been fired correctly. Checking gloss levels of ink will not work on matte finish frits. A cross hatch tape test cannot be performed on frit parts since the frit becomes part of the glass.

Digital Ink

Digitally printed parts cannot be cross hatch tape tested or Alcohol tested. Digital ink uses primer to adhere to glass. If the primer is not present on the glass the ink will flake or rub of with handling immediately after printing. Digital inks are alcohol and acetone resistant, but can be removed with Windex if soaked or an extended period of time. Cross hatch tape testing digital ink cannot be done, because the ink is thicker than UV, epoxy, and frit inks making it difficult to score without tearing the ink from the glass.