Tic Tac Toe
SOP for Drop Test

Version 1
Updated: 4/10/2020

Change History

Version	Comment	Author	Date	Spec. Doc Association
1	Created SOP for drop test	Sung Won Han	4/10/2020	22.05

1.0 Objective

1.1. This SOP establishes clear guidelines on performing a drop test on a product per ASTM D5276-98 (2017).

2.0 Scope

2.1. This procedure will be applied to a fully assembled product per the product specifications document.

3.0 Equipment & Tools

3.1. Drop test apparatus

4.0 Materials

4.1. Product - fully assembled

5.0 Safety

5.1. Follow all Lab safety rules.

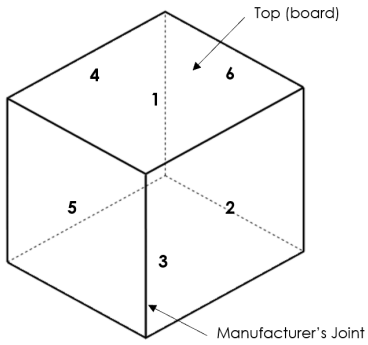
6.0 Reference Documents

Document Title	Details
ASTM D5276-98 (2017)	Standard test method for drop test of loaded containers by free fall
3T_SpecificationsDocument_Ver_1	Specifications document for the product
3T_QualityTestPlan_Ver_1	Quality test plan for the product

7.0 Procedures & Process Control

7.1. Randomly choose a product that has been fully assembled but has not been packaged.

7.2. Mark the faces of the product according to the diagram below.



7.4.1. The manufacturer's joint is where the product is glued together.

7.4.2. Choose the manufacturer's joint so that the front of the product corresponds to Face 5 in the diagram above.

7.3. Use the acceptability criteria as specified in Section 1.01 of Quality Test Plan.

7.4. Find an area with a flat, hard surface floor to perform the drop test.

7.2.1. There should be no other items nearby while the test is being performed.

7.5. Drop the product from different faces and edges at a height of 30 in, following the drop sequence below.

7.5.1 When the product is to be dropped on a corner, position it so that, upon impact, the line containing this corner and the center of gravity of the product does not exceed 5° with the vertical.

7.5.2. When the product is to be dropped on its edge, position it so that the plane of containing this edge is parallel to the impact surface, and the angle between this plane and the impact surface does not exceed 2°.

7.5.3. When the product is to be dropped on its face, position it so that the angle between the plane of this face and the impact surface does not exceed 2°.

7.5.4. At the end of each drop, note whether the product passes or fails the acceptability criteria.

Drop Sequence Number	Product Orientation	Specific Face, Edge, or Corner
1	Corner	Bottom corner formed by Faces 2, 3, and 5
2	Edge	One of the three edges radiating from the corner tested
3	Edge	Second of the three edges radiating from the corner tested
4	Edge	Third of the three edges radiating from the corner tested

5	Face	Bottom surface (Face 3)
6	Face	Top surface containing the acrylic board (Face 6)
7	Face	One of the side surfaces (Face 2 or 4)
8	Face	Opposite of the side surface (Face 2 or 4)
9	Face	Front surface (Face 5)
10	Face	Back surface (Face 6)

7.6. Report the results of the drop test.