

TUVASAS DMU 124R Test Procedure of Windows

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1. Introduction

This document describes the test procedure of the windows for the vehicles of Tuvasas DMU project

2. Application Standard

- BS 857:1967

3. Test Items

3.1. Test of Toughened safety glass (According to BS857:1967)

Test items	Classification of Tests	
	Type Test	Routine Test
Visual Inspection	O	O
Dimension check	O	O
Thickness	O	
Fragmentation test	O	

3.2. Openable Window Test

Test items	Classification of Tests	
	Type Test	Routine Test
Visual Inspection & Dimension check	O	O
Weight measurement	O	
Operation check for opening the openable window	O	O
Operation check for closing the openable window	O	O
Operation of key-lock on window handle	O	O

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4. Test Procedure and Criteria

4.1. Toughened safety glass

4.1.1. Visual Inspection

- Visual inspection of type test shall be performed according to BS 857
- Visual inspection of routine test shall be performed to check that no visible breaks, cracks and flaws on the glass shall be viewed at 1m distance in front of the glass, in the factory of the glass manufacturer.

4.1.2. Dimension check

- Check the specified dimensions according to drawings.

4.1.3. Thickness measurement

- Measure the thickness of the toughened safety glass according to drawings
- The thickness of the toughened safety glass shall be $5 \pm 0.5\text{mm}$.
- The thickness of the glass assembly shall be $16 \pm 0.5\text{mm}$.

4.1.4. Fragmentation test

- The test shall be performed according to the Appendix E of BS 857
- There shall be not less than 60 particles in a square side of 5 cm area.
- Or there shall be not less than 240 particles in a square of side 10 cm area.

4.2. Openable Window

4.2.1. Visual Inspection and Dimensions check

- Visual inspection of type test shall be performed according to BS 857
- Visual inspection of routine test shall be performed to check that no visible breaks, cracks and flaws on the glass shall be viewed at 1m distance in front of the glass, in the factory of the glass manufacturer.
- Check the specified dimensions according to drawings.

4.2.2. Weight measurement

- Measure the weight of the openable window assembly.

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4.2.3. Operation ckeck

- The following for operation of openable window should be checked if they operated without any trouble.
 - Operation check for opening the openable window
 - Operation check for closing the openable window
 - Operation of key-lock on window handle

5. Equipment and instrumentation

5.1. Test of toughened safety glass

- A 227g (± 2 g) ball
- A 2.27kg (± 20 g) ball
- Support Frame of specimen for the fragmentation test
- Micrometer or calipers

5.2. Tests of Openable Window

- Weighing scale
- Ruler

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6. Inspection / Test sheet

PROJECT	Tuvasas DMU 124R	Title : Windows	Inspector	
			Signature	
			Date	

Test items	Check Point & Criteria	Result
Visual Inspection	No visible breaks, cracks and flaws on the glass should be viewed at 1m distance in front of the glass.	Pass/ Fail
Dimension Inspection	Check the specified dimensions according to drawings.	Pass/ Fail
Thickness	- The thickness of the toughened safety glass shall be $5 \pm 0.5\text{mm}$. - The thickness of the glass assembly shall be $16 \pm 0.5\text{mm}$.	Pass/ Fail
Fragmentation test	- There shall be not less than 60 particles in a square side of 5 cm area. - Or there shall be not less than 240 particles in a square of side 10 cm area.	Pass/ Fail
Weight	Measure the weight of the window assembly	Pass/ Fail
Operation check	- Operation check for opening the openable windows - Operation check for closing the openable windows - Operation of key-lock on window handle	Pass/ Fail