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Product Description of Roller Blind

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1. Introduction

This document provides the technical description of blind design for Diesel trainset (hereafter DMU) of Turkish Wagon Industry Co.(hereafter, TUVASAS) in accordance with requirement of the Technical Specification (TS).

2. Application Standards

DIN EN ISO 13934-1 Tensile properties of fabrics- Part 1: Determination of maximum force and elongation at maximum force using the strip method

DIN ISO 5084 Determination of thickness of textiles and textile products

DIN EN 12127 Fabrics- Determination of mass per unit area using small samples

DIN 5510-2:2009 Preventive fire protection in railway vehicle-Part 2: Fire behavior and fire side effects of materials and parts-Classification, requirements and test methods

EN 45545-2:2013 Railway applications- Fire protection on railway vehicles-Parts 2: Requirements for fire behavior of materials and components

EN ISO 105-B01 Textiles - Tests for color fastness - Part B01: Color fastness to light: Daylight (ISO 105-B01:2014)

3.General

- The blinds control whole or partial lighting of inside passenger carriages.
- The blinds are operated in an up and down manner by manually for lighting control.
- It should be easy for passengers to control the location of blinds for whole or partial lighting control.
- The material of blinds makes for up and down operation without tearing or folding, and the blinds should be operated easily without any noise

4.Functionally required conditions

- The "Profile" will be equipped on the side of blinds for the reduction of noise and stopper role, so passengers can control lighting as their wish.
- The blinds protect passengers from direct exposure to sunlight.
- The blinds should be designed for an easy exchange of textile screen.
- The whole blinds should be easily attached and separated for the smooth exchange of windows.
- It should be designed for free ascent and descent at any location with a simple structure.

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- The blinds operate through the smooth operation of a control stand that ascends and descends along with an upper roll supporter and both guide rails.
- The blinds should not include any dangerous factors for passengers in normal usage state.
- The admitted load for the blinds operation is 2~3.5 daN.

- **5. Screen material**

ROLLER BLIND FABRIC TECHNICAL SPECIFICATIONS		
TESTS	**STANDARDS**	**Criteria**
Composition		PVDC, PVC, Polyester, Fiberglass or combinations of these materials.
Weight	DIN EN 12127	100 – 500 g/m²
Thickness	DIN ISO 5084	0.2 - 0.9 mm
Tensile Strength	DIN EN ISO 13934-1	(Warp) ≥ 500 N / 5 cm (Weft) ≥ 500 N / 5 cm
Transmission/Openness Factor		%20-%45
Light Fastness	EN ISO 105 B01	Over 4 grade
Color		Gray tones

- For the edge of the material, polyester strap will be treated by heat treatment.
- Light fastness satisfies the degree that is over 4th degree in accordance with ISO 105 B01.
- The color and outlook of the material should be same as the approved sample.

6. Guide rail

- Guide rails on both sides work as a guide rail of screen ascent and descent, and the profile inside takes charge of noise and balance when screen ascends.
- Guide rails should be installed in a straight line for a smooth operation and noise prevention.
- Mechanism moving on guide rails for roller blinds should not make noise and should be wear resistant. Item on metal surface that keeps in touch with guide rails should be wear resistant plastic.
- Rollers in mechanism should be covered with wear resistant material.

8. Hook bracket

- It should be fix upper roll supporter with riveting on guide rail.

9. Upper tension spring

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▸ The upper tension spring operates to control the balance of the ascent and descent of screen.

10. Screen guide stand and roller bush

▸ The screen guide stand is installed under the screen so it can be moved by lighting degree that passengers request.
▸ The roller bush is located on both sides of the screen guide stand, and it controls a crossing of power by upper adhesion a bracket and braking function.

11. Lower wire bracket

▸ The lower wire bracket takes charge of the balance of power that is from the upper adhesion a bracket and fixing function.

12. Fire Performance

▸Screen material used for the roller blind is designed to meet following criteria:

-EN 45545-2:2013 / R1-HL2 or DIN 5510-2:2009 / S3-SR2-ST2-FED≤1(30 minute)

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