

KES

Label and Decoration Tape for Automobiles

KES B-L015

(EST.) 1988 - 01 - 10

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1. Scope of Application

This standard specifies the quality level and evaluation method of adhesion strength and appearance regarding decoration film and label film (hereinafter referred to as "film") used in the inner and outer decoration of automobiles or caution labels.

2. Material Symbol and Classification

The film is classified into 7 classes as shown in Table 1 according to the adhesion location.

Table 1. Material symbol and Classification

Material symbol	Adhesion location	Environmental condition	Remarks
A-TL01	Indoor	high light and heat load	PA 55219
A-TL02		high light load and low heat load	—
A-TL03		low light and heat load	—
A-TL11	Engine room	high heat load	—
A-TL12		low heat load	—
A-TL21	outdoor	high light load	PA 50880
A-TL22		low light load	—

3. Meaning of Terminology

- (1) Film: film shaped resin printed on transparent material. Refers to the adhesive and paper which is attached without an evaporative coating of metal or creases.
- (2) Adhering material: A material with film attached, and a surface cleaned with white gasoline.
- (3) Color penetration: Discolorized of painted area of the film affected by the color of the adhering material.
- (4) Standard product: our company approved limited sample of the test piece, kept in a cool, dark, and dried container to prevent any effects from light, humidity, and dust for periodic observation and comparison with the test piece after the test.
- (5) Width and length of film: Flowing direction and its right angled direction during film manufacture are called length and width, respectively.
- (6) Application film: Those attached to the film surface to protect the outer surface (observable surface after attachment) of the film and to acting as a support. Paper or polyester is used in general.

4. Specification to be Designated in Specification and Drawing

4.1 Shape, material, plate thickness, surface shape, and painting specification of the adhering material for the following evaluation items:

- (1) Strength

- (2) Impact resistance character
- (3) Size change ratio
- (4) Neutral detergent character

4.2 Film Thickness

4.3 If evaluation of the chipping resistance characteristic is required, record in a drawing the additional features.

5. Quality Standard

Test results according to 8, shall conform to the quality conditions of 7, with good workability, and no abnormalities.

6. General Condition of Test

(1) Standard atmospheric condition of testing

Standard atmosphere condition of testing shall be a temperature of $20\pm 5^{\circ}\text{C}$ and a relative humidity of $65\pm 5\%$. Temperature and humidity must be recorded in the test score report.

(2) Test piece

Use a test piece of the product condition, in principle. However, if the test pieces are small in number, use samples from the raw material sheet.

(3) Adhering material

Use the adhering material for the actual application as the adhering material. However, if samples from the actual adhering material is difficult to get select new ones based on the discussions between the related parties, and record the adhering material in the test results. Use similar adhering materials as much as possible.

7. Evaluation Standard

7.1 Physical appearance

Items			A-TL01	A-TL02	A-TL03	A-TL11	A-TL12	A-TL21	A-TL22	Testing method
Color, color difference			shall be satisfactory within the standards of the product							8.2.1
color penetration										evaluation by naked eye
Crease, stain										
Peel-off, damage, inflation of paint film										
Stick out of adhesive										
Roll-up of tip										
Peel-off of paper										"
Storage character	physical appearance		no roll-up of tip, no peel-off or within the standard product							8.2.2
	size change ration	width	± 1.0%							
		length								
Film thickness			conforms to drawing							8.3

7.2 Film Strength

Items	A-TL01	A-TL02	A-TL03	A-TL11	A-TL12	A-TL21	A-TL22	Testing method
Tensile strength kg/25mm	2.0 or more							8.4
Elongation %	10 or more							
Material	conforms to drawing							8.5

7.3 Conditional Adhesion Force (kg/25mm)

Items		A-TL01	A-TL02	A-TL03	A-TL11	A-TL12	A-TL21	A-TL22	Testing method
Peel-off strength kgf/25mm	initial	0.8 or more							8.6
	24 Hr	1.3 or more					1.4 or more		
	48Hr								
Close adherence		class 5							8.7

7.4 Environmental Resistance Character

unit of adhesion force is kgf/25mm

Items			A-TL01	A-TL02	A-TL03	A-TL11	A-TL12	A-TL21	A-TL22	Testing method
Heat aging character	A method	adhesion force	1.5 or more			1.4 or more				8.8
		physical appearance	discoloration is over gray scale class 4, satisfactory appearance							
	B method	size change %	±0.5			±1.0				
		adhesion force	1.3 or more				1.4 or more			
		appearance	*			*	*			
		size change %	±1.0				±1.0			
Moisture aging	adhesion force	1.3 or more					1.4 or more		8.9	
	physical appearance	discoloration is over gray scale class 4, satisfactory appearance								
Heat impact character	A method	adhesion force	1.3 or more			1.3 or more				8.10
		physical appearance		*		*				
		size change %	±1.0			±1.0				
	B method	adhesion force		1.3 or more			1.3 or more	1.4 or more		
		physical appearance		*			*			
		size change ratio %		±1.0			±1.0	±0.5		
Low temperature adhering character								shall be satisfactory		8.11
High temperature peel-off strength		1.0 or more							8.12	
Cold resistance character	conditional strength	1.0 or more							8.13	
	aging strength	1.0 or more								

Remark: Environmental resistance character appearance shall be evaluated in accordance with the material symbol of the corresponding adhesion force.

* means discoloration is over gray scale class 4, satisfactory appearance.

7.5 Fluid Resistance Character

unit of adhesion force is kgf/25mm

unit of adhesion force is Kg/25mm

Items		A-TL01	A-TL02	A-TL03	A-TL11	A-TL12	A-TL21	A-TL22	Testing method
High temperature water	cleaning character	—					no abnormal appearance		8.14
	sedimentation character	—					"		8.15
Guard wax remover	physical appearance	—					"		8.16
	adhesion force	—					1.2 or more		
Gasoline character	physical appearance	—			over class 4 discoloration				8.17
	adhesion force	—			1.0 or more		1.2 or more		
Diesel character	physical appearance	—			over class 4 discoloration				8.18
	adhesion force	—			1.0 or more		1.2 or more		
Acid resistance character	physical appearance	—					no abnormal appearance		8.19
	adhesion force	—					1.2 or more		
Alkali character	physical appearance	—					no abnormal appearance		8.20
	adhesion force	—					1.2 or more		
Neutral detergent character	physical appearance	—					no abnormal appearance		8.20
	adhesion force	—					1.4 or more		
	size change %	—					±0.5		
Salt water resistance character	physical appearance	—			over class 4 discoloration				8.21
	adhesion force	—			1.2 or more		1.4 or more		
		—					no abnormal appearance		8.22
Corrosion resistance character		—			no discoloration, rust formation,				8.23
Anti-rust chemical resistance character		—			peel-off of metal coating		—		8.13
Oil resistance character		—			peel-off of metal coating		—		8.23
Warm water resistance character		—			peel-off of metal coating				8.24