

KES

Paint Film

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1. Scope of Application

This standard specifies the painting film applied to automobile parts for anti-corrosion or decoration purpose (Functions, usages qualities).

2. Meaning of Terminology

The meaning of terminology used in these standards are as follows:

- 2.1 Interior : The place which is not exposed to rain or wind (directly or indirectly) the installations of the entire car of the entire inside conditions of the car.
- 2.2 Exterior : Everything that is not part of the interior of the car except that the lower part of the outside of the car shall be excluded.
- 2.3 Lower part of the outside of the car: The parts attached to the bottom such as the floor and the tire housing and where the main purpose of coating is anti-corrosion
- 2.4 Inside : Interior indicates the places as follows.
 - (1) The place visibly observable
 - (2) The place visible when getting in and out of the car
 - (3) The place visible during disassembly for repair
- 2.5 Outside: The place other than the inside
- 2.6 Effective face: The surface important in respect to service, indicated in the cases below. (Detailed indications shall be made in the drawings.)
 - (1) The surface is visible when in use.
 - (2) The surface is susceptible to wear or flaws.
 - (3) The surface which could bring about changes in performance due to corrosion development variations in film coating or peeling off.
- 2.7 Standard item : The finished part, the test piece or the sample which has been stored in a cool, dark and dry place under uniform conditions to avoid sunlight, moisture and dust for the purpose of comparison with test items after periodical observations or tests, and which was approved by the development or inspection departments of KIA.

3. Kind and Symbol

The kind and symbol of a coating layer shall be the combination of common performance and optional performance.

3.1 Common Performance

The type and symbol of coating film as common performance shall be as indicated in Table 1, depending on the section of the car.

Table 1. Types and symbols of coating layers

Coating areas	Interior		Exterior		Lower section
	Inside	Outside	Inside	Outside	
Types and Symbols	TA1	TA2	TB1	TB2	TC

Remark: In case the part a component of both the exterior and interior of the car, or both the outside and inside of the car, the type of film shall be determined by the design depts of KIA.

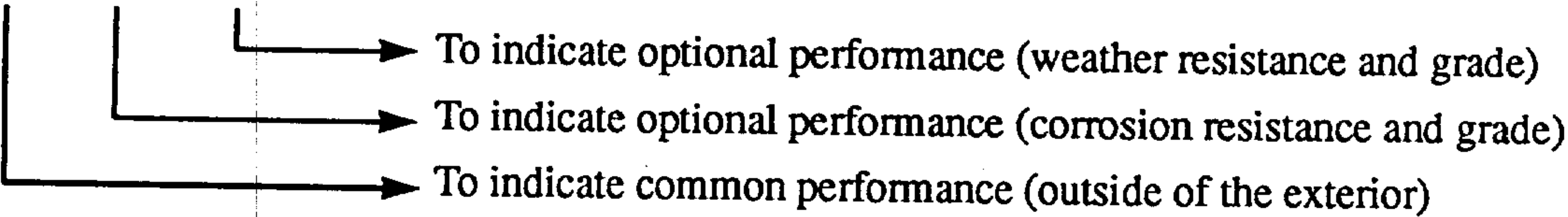
3.2 Optional Performance

The types and the symbols of coating as optional performance are as shown in Attached Table 1-9, and the grades are chosen according to use.

4. Indication

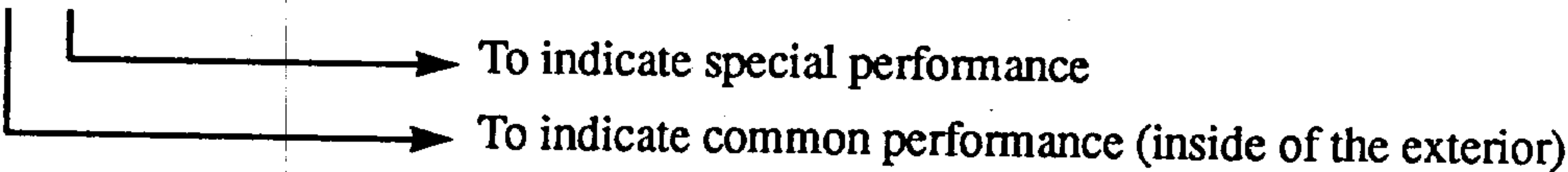
The indication of coating shall be the combination of the common performance symbol and optional performance symbol.

Example: TB2 Co2, WeO2



Remark: In cases of special performance designations, use the special letter [Z] and indicate the details in the specifications column.

Example: TB1-Z



5. Quality

The quality of the effective face on coating shall be tested according to the general test conditions of 6 and the test methods of 7, and shall conform to the requirements of Tables 2-6 and Attached Tables 1-9. In case, however, there is a symbol of special performance, it shall conform to the specifications indicated in the drawings.

Table 2 Quality of TA1 (Inside of the Interior)

Test items	Test methods and conditions	Evaluation items and methods	Quality			Test methods KES T-M010
Physical appearance	-	-	There should be none of these visible	Expositions of the base material, gaps, cracks nor peeling off	Or, according to necessity, it shall be within each limit of the standards	Par. 4
			There should be none of these visible	Contamination, bleeding, stains, flaws, Pin-holes, sagging flow, orange peeling nor mixing of impurities		
Luster	Instrument method (7)	-	To be within the limits of standard items (within 5%)			Par. 5
Color	-	-	Within the limits of standard items			Par. 6
Adhesion	Scratch method	-	Above 4th grade			Par. 8.3
Hardness	Pencil hardness ⁷	-	Above HB			Par. 9.1
Grease resistance	40 ± 2°C 24 hrs.	Physical appearance	There should be no cracks, peeling-off wrinkles nor blisters			Par. 24
Corrosion resistance	-	-	According to Attached Table 2			Par. 26

Table 3 Quality of TA2 (Outside of Interior)

Test items	Test methods and conditions	Evaluation items and methods		Quality			Test methods KES T-M010
Physical appearance				There should be none of these	Expositions of the base material, gaps, creacks nor peeling off	Or, according to necessity, it shall be within each limit of the standards	Par. 4
				There should be none of these visible	sagging, flow, orange peeling nor mixing of impurities		
Luster	Instrument method(7)	-	-	To be within the limits of standard items (within 5%)			Par. 5.1
Color	-	-	-	To be within the limits of standard items			Par. 6
Adhesion	2mm checking test method	-	-	4th grade or more			Par. 8.1
Hardness	Pencil hardness	1	-	HB or more			Par. 9.1
Finger print resistance	70 ± 2C 2 Hrs	-	-	4th grade or more			Par. 10
Heat resistance	80 ± 2C 2 Hrs	Luster(1)	Instrument method	90% or more			
		Color	-	4th grade or more			Par. 11
		Adhesion	2mm checking test method	4th grade or more			
Cold and heat repetition	5Cycles	Physical	-	No cracks, peeling-off, wrinkles nor blisters			Par. 12
		Physical	-	No cracks, peeling-off, wrinkles nor blisters			
Moisture resistance	40 ± 2C 98% over RH 72 Hrs. or more	Luster(1)	Instrument method	90% or more			
		Color	-	5th grade			Par. 14
		Adhesion	2mm checking test method	3rd grade or more			
Acid resistance	Hydrozen chloride method 20 ± 2C 1 Hr	Physical	-	No cracks, peeling-off, wrinkles nor blisters			
		Luster	Visual method	No degradation of luster			Par. 15.1
		Color	-	5th grade			

Table 3 Quality of TA2 (Outside of Interior)

Test items	Test methods and conditions	Evaluation items and methods		Quality	Test methods KES T-M010
Alkali resistance	20 ± 2°C 1 Hr	Outside	-	No cracks, peeling-off, wrinkles nor blisters	Par. 16
		Luster	-	No deterioration of luster	
		Color	-	5th grade	
Alkali Alcohol resistance	-	Outside	-	No cracks, peeling-off, wrinkles nor blisters	Par. 17
		Luster	-	No deterioration of luster	
		Color	-	5th grade	
White gasoline resistance	-	Outside	-	No cracks, peeling-off, wrinkles nor blisters	Par. 18
		Luster	-	No deterioration of luster	
		Color	-	5th grade	
Oil resistance	80 ± 2°C 1 Hr	Outside	-	No cracks, peeling-off, wrinkles nor blisters	Par. 19
		Luster	-	No deterioration of luster	
		Color	-	5th grade	
Grease resistance	40 ± 2°C 24 Hr	Outside	-	No cracks, peeling-off, wrinkles nor blisters	Par. 24
		Luster	-	No deterioration of luster	
		Color	-	5th grade	
Corrosion resistance	-	-	-	To be according to Attached Table 2	Par. 26
Luster resistance	-	-	-	To be according to Attached Table 2	Par. 28

Note (1) In case the coated parts have a semi-luster or no luster, the visual method shall be applied.

Table 4 Quality of TBI (Inside of exterior)

Test items	Test methods and conditions	Evaluation items and methods	Quality			Test methods KES T-M010
Physical appearance	-	-	There should be none of these visible	Disclosure of the base material, gaps, cracks nor peeling off	or, according to necessity, it shall be within each limit of the standards	Par. 4
			There should be none of these visible	Contamination, bleeding, stains, flaws, Pin-holes, sagging flow, orange peeling nor mixing of impurities		
Luster	Instrument method (7)	- -	To be within the limits of standard items (within 5%)			Par. 5
Color	-	- -	To be within the limits of standard items			Par. 6
Adhesion	Scratch method	- -	4th grade or more			Par. 8.3
Hardness	Pencil hardness	- -	HB or more			Par. 9.1
Water Resistance	40 ± 2°C 24 Hrs	Adhesion Scratch method	No cracks, peeling-off, wrinkles nor blisters			Par. 13
Kerosene Resistance	40 ± 2°C 24 Hrs	Physical appearance -	No cracks, peeling-off, wrinkles nor blisters			Par. 20
Grease resistance	40 ± 2°C 24 Hrs	Physical appearance -	No cracks, peeling-off wrinkles, nor blisters			Par. 24
Corrosion resistance	-	- -	According to Attached Table 2			Par. 26