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**KES**

# Interior & Exterior Plastic Parts

KES D-G008



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Remark

 **KIA MOTORS**

## 1. Scope of Application

This standard specifies quality standards and test method of interior & exterior plastic parts(hereinafter referred to as "parts") for automobile.

## 2. Report of Evaluation Result

Test quality evaluation result at each stage from development to mass product shall be submitted to Kia according to the Appendix.

## 3. Definition of Terminology

### (1) Effective surface

Surface that can be seen from normal direction while in use. (Detailed one shall be indicated in the drawing.)

### (2) Standard product

Products, such as finished product, test sample, acceptable sample, etc. that stored in a room not affected by sunlight, temperature, humidity, dusts, etc. for comparison with test sample and are approved by the inspection dept.

Remark: The storage period of dept. the standard product shall be in accordance with the standard of Kia's inspection dept.

## 4. Symbol

Quality symbol of parts shall be indicated as evaluation item, test condition, evaluation standard, etc. and shall be in accordance with Table 1.

## 5. Indication Method on Drawings

Quality indication method on drawings shall be in accordance with the example in Table 2 and 3.

Remark: Regarding the rigidity, indicate its test condition and evaluation standard in the drawing

6. Quality

Quality of the part shall be tested according to the test method of item 7. It shall satisfy the quality specified in Table 4. In case there is a particular quality specified on the drawing, it shall satisfy quality as specified in the drawing.

Table 1. Symbol

|                                           |                                             |                                                  |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|-------------------------------------------|---------------------------------------------|--------------------------------------------------|--------------------------|-----|------------------------|-----|--------------------|---------------------------|-----|-----|-----------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--|---|-----------------|---|-------|--------|-------------------------------------------|---------------------------------------------|--------------------------------------------------|--|--|
| Evaluation Item                           | Symbol                                      | Test Condition: Section Symbol                   |                          |     |                        |     |                    |                           |     |     |                                                                                               | Evaluation Standard Symbol |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Rigidity                                  | Symbol                                      | None                                             |                          |     |                        |     |                    |                           |     |     |                                                                                               | None                       |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Short-term heat resistance                | HS                                          | ⇒                                                | 01                       | 02  | 03                     | 04  | 05                 | 06                        | 07  | 08  | 09                                                                                            | 10                         | ⇒ <table><tr><td>A</td><td>B</td><td>1</td><td>2</td><td>3</td></tr><tr><td>Clearance/<br/>steps for<br/>mating<br/>part</td><td>Deforma-<br/>tion of<br/>effective<br/>surface</td><td colspan="3">Grade of<br/>clearance,<br/>steps, def<br/>ormation</td></tr></table> |   |  | A | B               | 1 | 2     | 3      | Clearance/<br>steps for<br>mating<br>part | Deforma-<br>tion of<br>effective<br>surface | Grade of<br>clearance,<br>steps, def<br>ormation |  |  |
| A                                         | B                                           | 1                                                | 2                        | 3   |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Clearance/<br>steps for<br>mating<br>part | Deforma-<br>tion of<br>effective<br>surface | Grade of<br>clearance,<br>steps, def<br>ormation |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | 70                       | 80  | 85                     | 90  | 95                 | 100                       | 105 | 110 | 115                                                                                           | 120                        |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | Temp. classification (℃) |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Long-term heat resistance                 | H                                           | ⇒                                                | E                        |     | I                      |     | ⇒                  | 01                        | 02  | 04  | ⇒                                                                                             |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | Exter-<br>ior<br>parts   |     | Inter-<br>ior<br>parts |     | ⇒                  | 70                        | 80  | 90  |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     | ⇒                  | Temp. Class(℃)            |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     | ⇒                  |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     | ⇒                  |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Cold resistance                           | Cs                                          | ⇒                                                | \                        | 0   | 1                      | 2   | ⇒                  | L                         | H   | S   | ⇒ <table><tr><td colspan="3">C</td></tr><tr><td colspan="3">Surface wrinkle</td></tr></table> |                            |                                                                                                                                                                                                                                                                           | C |  |   | Surface wrinkle |   |       |        |                                           |                                             |                                                  |  |  |
| C                                         |                                             |                                                  |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Surface wrinkle                           |                                             |                                                  |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          | -40 | -30                    | -10 | ⇒                  | 15                        | 30  |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          | -30 | -25                    | -10 | ⇒                  | Weight drop<br>height(cm) |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | Temp. Class.             |     |                        | ⇒   |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        | ⇒   |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Repeating cold-heat resistance            | Th                                          | ⇒                                                | 01                       | 02  | 04                     | ⇒   | D                  | W                         | ⇒   |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | 70                       | 80  | 90                     | ⇒   | Dry                | Wet                       |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | Temp. Class.             |     |                        | ⇒   | Temp.<br>condition |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        | ⇒   |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        | ⇒   |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Liquid resistance                         | Cr                                          | ⇒                                                | E                        |     | I                      |     | ⇒                  |                           | W   | ⇒   |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | Ext.<br>Parts            |     | Int.<br>Parts          |     | ⇒                  | Type of<br>test liquid    |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     | ⇒                  |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     | ⇒                  |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     | ⇒                  |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| Weatherability                            | We                                          | ⇒                                                | 0                        |     |                        |     |                    |                           |     |     |                                                                                               |                            | ⇒ <table><tr><td>A</td><td>B</td><td>C</td></tr><tr><td rowspan="2">100Hr</td><td>300Hr,</td><td>300Hr, grade<br/>4 or more</td></tr><tr><td>grade 4<br/>or more</td><td>100Hr, grade<br/>8 or more</td></tr></table>                                                     |   |  | A | B               | C | 100Hr | 300Hr, | 300Hr, grade<br>4 or more                 | grade 4<br>or more                          | 100Hr, grade<br>8 or more                        |  |  |
| A                                         | B                                           | C                                                |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
| 100Hr                                     | 300Hr,                                      | 300Hr, grade<br>4 or more                        |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           | grade 4<br>or more                          | 100Hr, grade<br>8 or more                        |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | 63                       |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  | Back panel temp. (℃)     |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |
|                                           |                                             |                                                  |                          |     |                        |     |                    |                           |     |     |                                                                                               |                            |                                                                                                                                                                                                                                                                           |   |  |   |                 |   |       |        |                                           |                                             |                                                  |  |  |

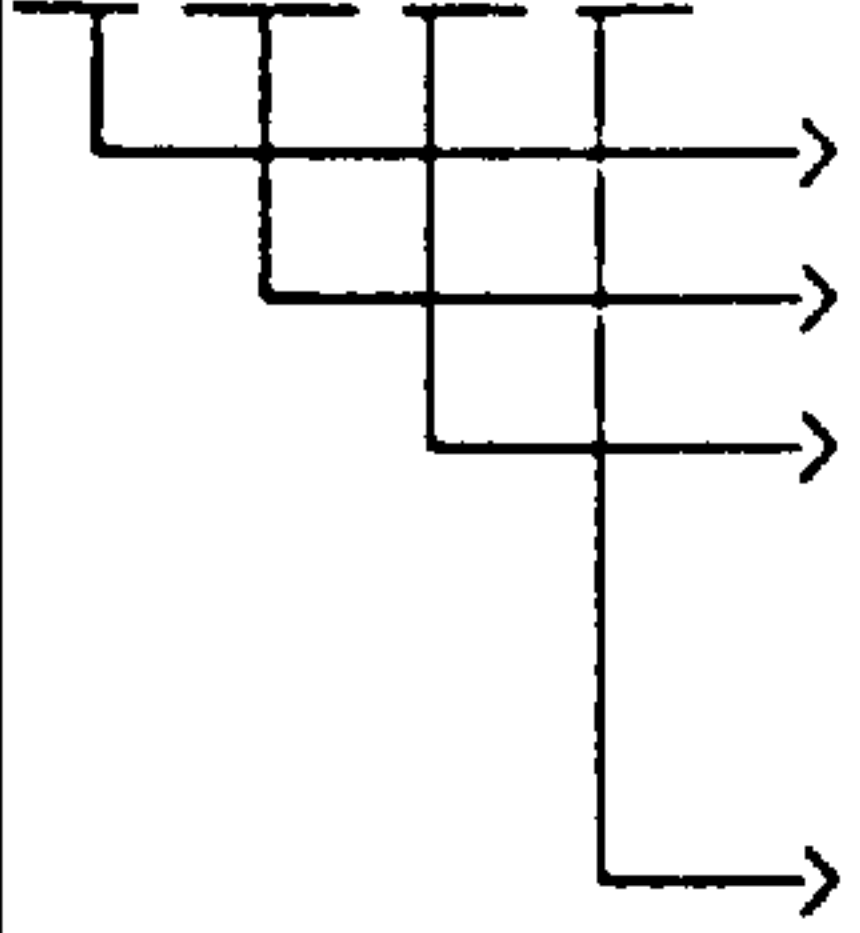
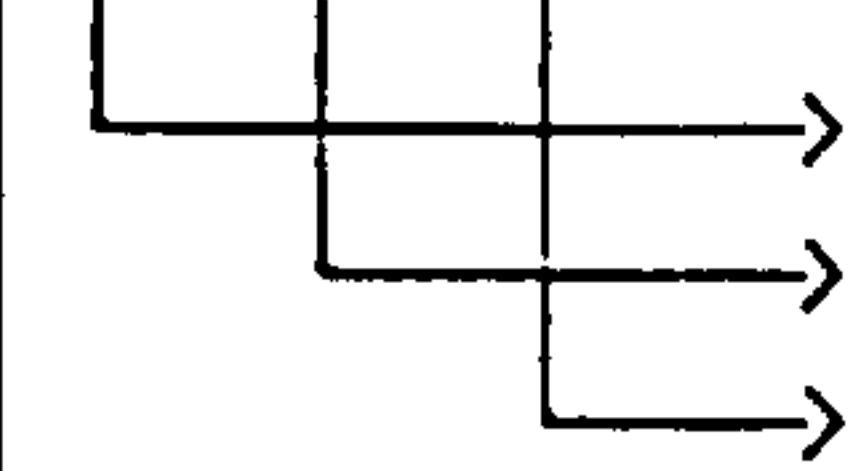
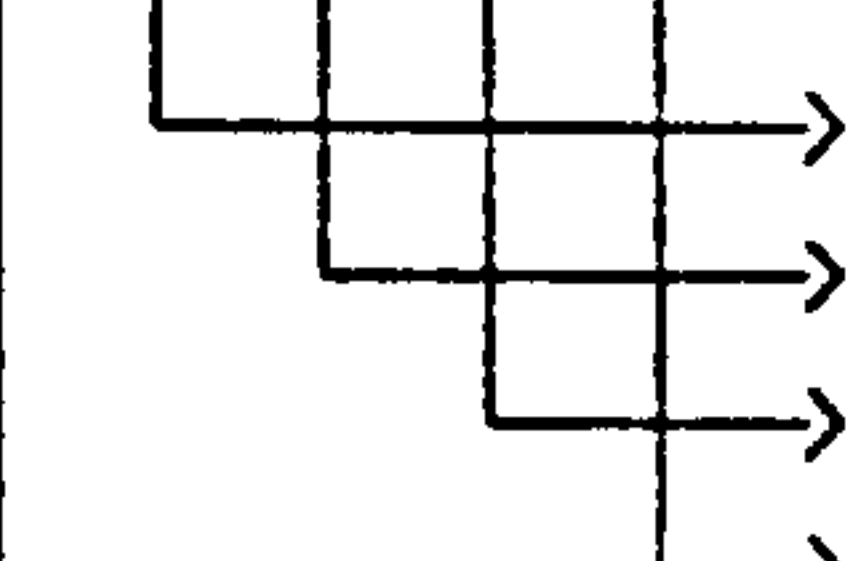
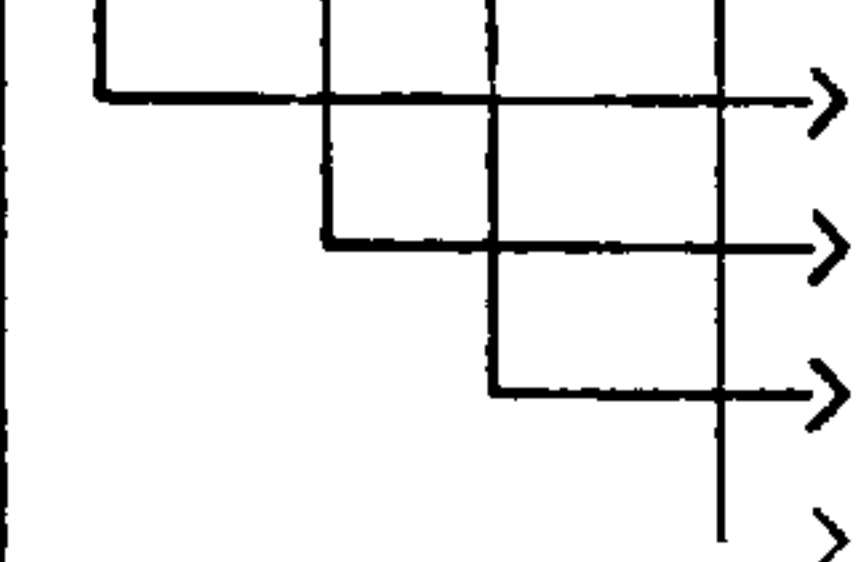
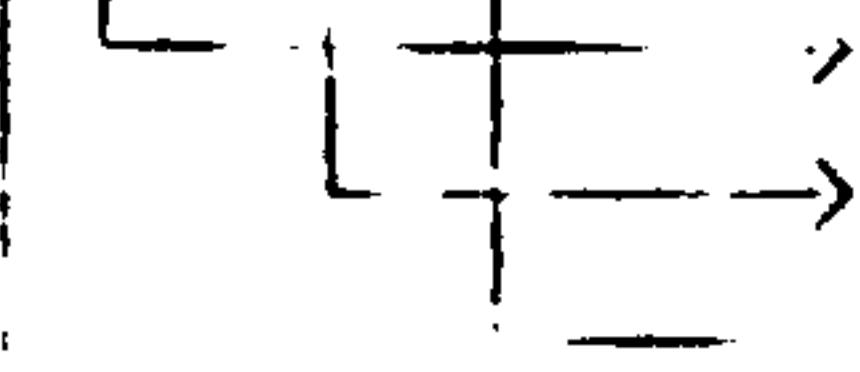
|                  |    |   |                       |   |                      |                       |                        |
|------------------|----|---|-----------------------|---|----------------------|-----------------------|------------------------|
| Light resistance | Li | ⇒ | 0                     | ⇒ | A                    | B                     | C                      |
|                  |    |   | 63                    |   | 100Hr grade or more  | 300Hr grade 4 or more | 300Hr. grade 4 or more |
|                  |    |   | Black panel temp. (℃) |   |                      | 400Hr grade 4 or more | 400Hr. grade 8 or more |
|                  |    |   |                       |   | 83℃. grade 4 or more |                       |                        |

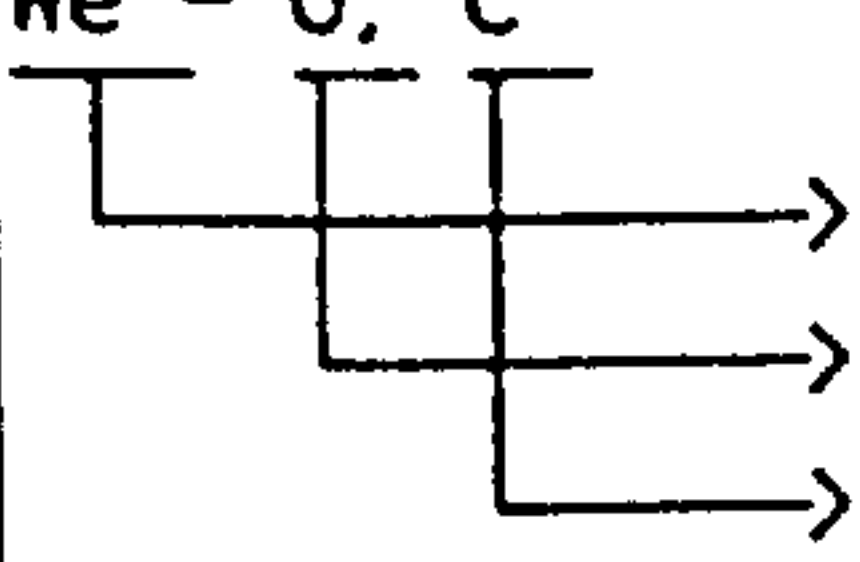
  

|                 |                |      |      |
|-----------------|----------------|------|------|
| Fire Resistance | M <sub>1</sub> | None | None |
|                 | M <sub>2</sub> |      |      |

Remark: [M] indicated in the drawing shall be M1(class 1 of KES C-H001).

Table 2. Example of Indication in Drawing (Radiator Grille)

| No | Evaluation Item                |                | Symbol                                                                                                           | Contents                                                                                                                                                                                                                                                                                                                                                                           |
|----|--------------------------------|----------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Rigidity                       |                | <u>St</u>                                                                                                        | Required quality includes rigidity                                                                                                                                                                                                                                                                                                                                                 |
| 2  | Short-term heat resistance     |                | <u>Hs -02, A2, B2</u><br>       | <p>Required quality includes short-term heat resistance</p> <p>Test temperature 80℃</p> <p>Change of steps and clearance of effective surface at 80℃ and after the testing shall be 1.5mm or less and 0.5mm or less, respectively.</p> <p>Wave height of effective surface at 80℃ and after the testing shall be 1.5mm or less and 0.5mm or less, respectively at 300mm pitch.</p> |
| 3  | Long-term heat resistance      | Interior parts | —                                                                                                                | —                                                                                                                                                                                                                                                                                                                                                                                  |
|    |                                | Exterior parts | <u>Hl - E, A2, B2</u><br>     | <p>Required quality includes long-term heat resistance.</p> <p>Exterior parts (test temperature 70℃)</p> <p>Change of steps and clearance of an effective surface after the testing shall be 0.5mm or less, and wave height of effective surface shall be 0.5mm or less at 300mm pitch.</p>                                                                                        |
| 4  | Cold resistance                |                | <u>Cs - 0, H, A2, B2</u><br>  | <p>Required quality includes cold resistance.</p> <p>External test temp. -40℃, impact test temp. -30℃</p> <p>Height of weight drop: 30cm</p> <p>Evaluation standard of change in steps and clearance, as well as wave height at -40℃ and after the testing, are the same as No 3.</p>                                                                                              |
| 5  | Repeating cold-heat resistance |                | <u>Th - 02, D, A2, B2</u><br> | <p>Required quality includes repeating cold-heat resistance.</p> <p>Cold &amp; heat temperature: -30℃ ~ 80℃</p> <p>Dry</p> <p>Same as those in No.3</p>                                                                                                                                                                                                                            |
|    | Liquid resistance              |                | <u>Cr - E, I</u><br>          | <p>Required quality includes liquid resistance.</p> <p>Exterior parts</p> <p>Test liquid shall be white gasoline, w/w(1), white kerosene, and those indicated in the drawings.</p>                                                                                                                                                                                                 |

| No | Evaluation Item  | Symbol                                                                                         | Contents                                                                                                                     |
|----|------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 7  | Weatherability   | We - 0, C<br> | Required quality includes wheatherability<br>Black panel temperature 63℃.<br>Grade 4 or more at 300Hr, and grade 3 at 1000Hr |
| 8  | Light resistance | _____                                                                                          | _____                                                                                                                        |
| 9  | Fire resistance  | _____                                                                                          | _____                                                                                                                        |

Note (1) : Window washer liquid

Table 3. Example of Indication in Drawing (Door Trim-Full Trim)

| No | Evaluation Item                |                | Symbol           | Description                                                                                                                                                                                                                                                                                           |
|----|--------------------------------|----------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Rigidity                       |                | St               | Required quality includes rigidity                                                                                                                                                                                                                                                                    |
| 2  | Short-term heat resistance     |                | Hs -05, A2, C    | Required quality includes short-term heat resistance.<br>Test temperature 95℃<br>Change of steps and clearance of effective surface at 95℃ and after testing shall be 1.5mm or less and 0.5mm or less, respectively.<br>At 95℃ and after testing, there shall be no wrinkle on the effective surface. |
| 3  | Long-term heat resistance      | Interior parts | H -I, 04, A2, C  | Required quality includes long-term heat resistance.<br>Interior parts<br>Test temperature 90℃<br>Change of steps and clearance of an effective surface after testing shall be 0.5mm or less.<br>After testing, there shall be no wrinkle on the effective surface.                                   |
|    |                                | Exterior parts | _____            | _____                                                                                                                                                                                                                                                                                                 |
| 4  | Cold resistance                |                | Cs -0, H, A2, B2 | Required quality includes cold resistance.<br>External appearance test temp. -40℃, impact test temp. -30℃<br>Height of weight drop: 30cm<br>Evaluation standard of change in steps and clearance as well as wave height at -40℃ and after the test are the same as No 2.                              |
| 5  | Repeating Cold-heat resistance |                | Th -04, W, A2, C | Required quality includes repeating cold-heat resistance.<br>Cold & heat temperature: -30℃ ~ 90℃<br>Wet<br>Same as those in No.3                                                                                                                                                                      |
| 6  | Liquid resistance              |                | Cr - I, 0        | Required quality includes liquid resistance<br>Interior parts<br>Test liquid shall be petroleum benzene, ammonia perspiration liquid, heat cleaner, defoaming liquid.                                                                                                                                 |

| No | Evaluation Item  | Symbol                                                                       | Contents                                                                                                                                                                                                                          |
|----|------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7  | Weatherability   | _____                                                                        | _____                                                                                                                                                                                                                             |
| 8  | Light resistance | <div>Li - 0, C</div> <div><div></div><div></div><div></div><div></div></div> | <div>Required quality includes light resistance.</div> <div>Black panel temperature 63℃</div> <div>Grade 4 or more at 300Hr, and grade 3 or more at 400Hr,</div> <div>or black panel temp. 83℃ and grade 4 or more at 200Hr</div> |
| 9  | Fire resistance  | <div>M<sub>1</sub></div> <div></div>                                         | <div>Spec. on fire resistance shall satisfy class 1 of KES</div> <div>C-H001.</div>                                                                                                                                               |

Table 4. Quality

| Test Item<br>Condition<br>Evaluation Item |                               | Rigidity   |            | Short term heat resistance |            | Long term heat resistance | Cold resistance |            |        | Repeating cold-heat resistance | Liquid resistance | Weatherability | Light resistance | Combustion resistance |
|-------------------------------------------|-------------------------------|------------|------------|----------------------------|------------|---------------------------|-----------------|------------|--------|--------------------------------|-------------------|----------------|------------------|-----------------------|
|                                           |                               | High temp. | Room temp. | High temp.                 | Room temp. | resistance                | Low temp.       | Room temp. | impact |                                |                   |                |                  |                       |
| Shape dimension                           | Bending                       | ▲          | △          |                            |            |                           |                 |            |        |                                |                   |                |                  |                       |
|                                           | Change in steps and clearance |            |            | *                          | ◎          | ◎                         | *               | ◎          |        | ◎                              |                   |                |                  |                       |
|                                           | Waving                        |            |            | *                          | ◎          | ◎                         | *               | ◎          |        | ◎                              |                   |                |                  |                       |
|                                           | Surface wrinkle               |            |            | *                          | ◎          | ◎                         | *               | ◎          |        | ◎                              |                   |                |                  |                       |
| External Appearance                       | Crack                         |            | ○          |                            | ○          | ○                         | ○               |            | ○      | ○                              | ○                 | ○              | ○                |                       |
|                                           | Whitening                     |            | ○          |                            | ○          | ○                         | ○               |            | ○      | ○                              | ○                 | ○              | ○                |                       |
|                                           | Peeling off                   |            |            | ○                          | ○          | ○                         | ○               |            | ○      | ○                              | ○                 | ○              | ○                |                       |
|                                           | Separation                    |            |            | ○                          | ○          | ○                         | ○               |            | ○      | ○                              | ○                 | ○              | ○                |                       |
|                                           | Swelling                      |            |            | ○                          | ○          | ○                         | ○               |            | ○      | ○                              | ○                 | ○              | ○                |                       |
| Color                                     | Discoloration                 |            |            | ○                          | ○          | ○                         |                 |            |        | ○                              | ○                 | ☆              | ☆                |                       |
|                                           | Change in gloss               |            |            | ○                          | ○          | ○                         |                 |            |        | ○                              | ○                 | ※              | ※                |                       |
| Surface condition                         | Stain                         |            |            | ○                          | ○          | ○                         |                 |            |        | ○                              |                   | ※              | ※                |                       |
|                                           | Choking                       |            |            |                            | ○          | ○                         |                 |            |        |                                |                   | ○              | ○                |                       |
|                                           | Surface adhesion              |            |            | ○                          | ○          | ○                         |                 |            |        | ○                              | ○                 | ○              | ○                |                       |
|                                           | Color appearance              |            |            |                            |            | ○                         |                 |            |        | ○                              | ○                 | ※              | ※                |                       |
|                                           | Contamination                 |            |            | ☆                          | ☆          | ☆                         |                 |            |        | ☆                              |                   | ☆              | ☆                |                       |
|                                           | Softening/hardening           |            |            | ○                          | ○          | ○                         |                 |            |        | ○                              |                   | ※              | ※                |                       |
|                                           | Inflammability                |            |            |                            |            |                           |                 |            |        |                                |                   |                |                  | □                     |

Remark 1.  $\Delta$  : Standard value as indicated in the drawing shall be satisfied. (Refer to Table 5)

$\blacktriangle$  : Same as  $\Delta$ . However, temperature condition and measurement points shall be indicated in the drawing.

2.  $\bigcirc$  : Shall not occur.

3.  $\odot$  : Standard in Table 6 shall be satisfied.

\* : Same as  $\odot$ . However, test application and measurement points shall be indicated in the drawing.

4.  $\star$  : Shall be within limit of standard part shown in Table 7.

$\star$  : Shall be within limit shown of standard part in Table 8 and 9.

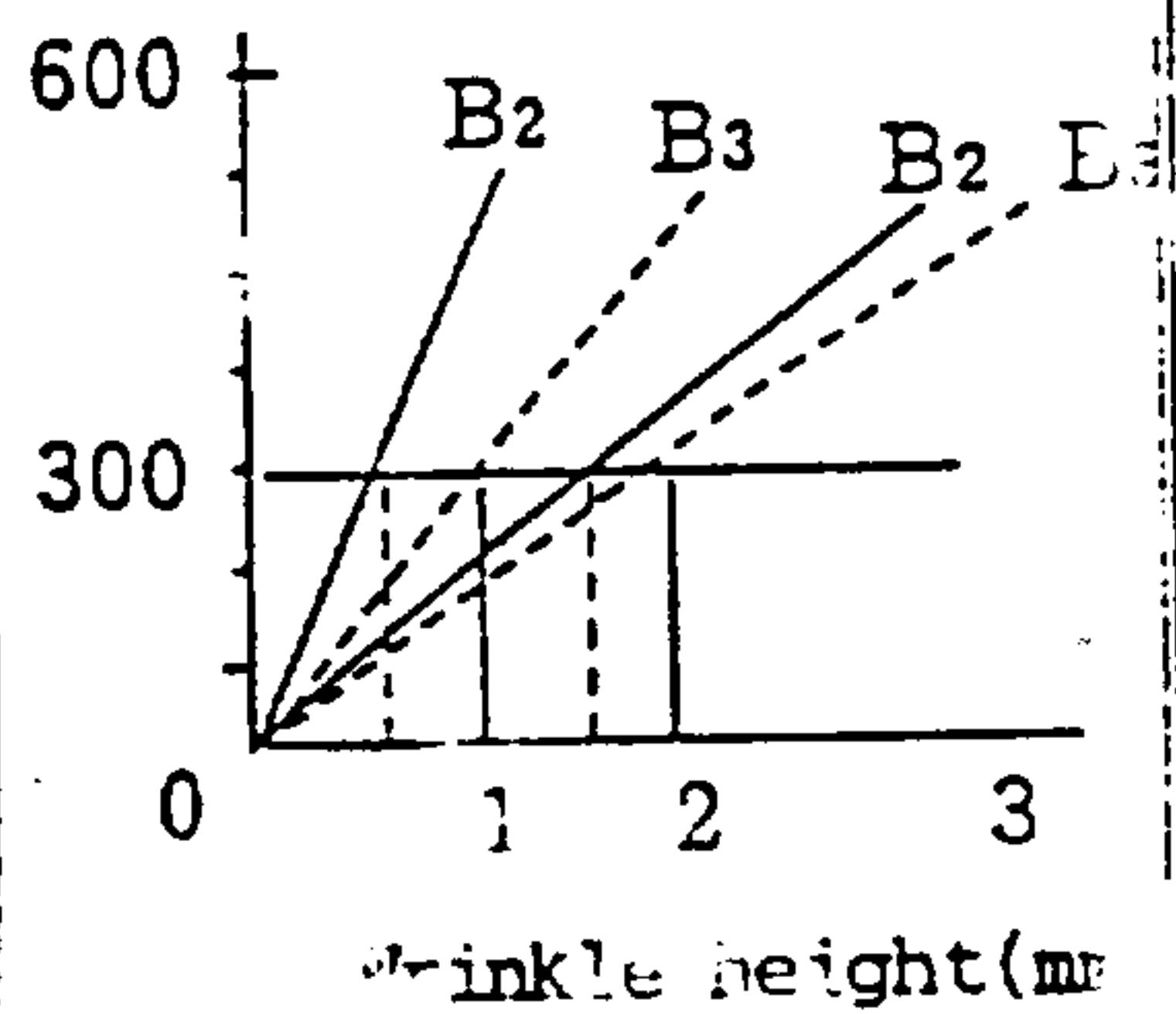
$\ast$  : Shall be within limit of standard.

5.  $\square$  : shall satisfy class 1 and 2 of KES C-H001.

Table 5. Bending Standard(Reference for design)

| Bend(m/m) | Test Condition               |            | Example of applicable parts         |
|-----------|------------------------------|------------|-------------------------------------|
|           | Diameter of pressing jig(mm) | Weight(kg) |                                     |
| 1         | 15                           | 1          | Venturator Fan                      |
| 2         | 15                           | 3          | Pillar Trim, Fender                 |
| 2         | 15                           | 5          | Pillar Garnish, Cowl Grille         |
| 2         | 50                           | 5          | Door Trim                           |
| 3         | 50                           | 10         | Top Surface of Instrument Panel     |
| 4         | 15                           | 10         |                                     |
| 5         | 80                           | 20         | Radiator Grille(Passenger Car)      |
| 20        | 15                           | 5          | Center Console Lid<br>Glove Box Lid |

Table 6. Standard in Change of Steps & Clearance, Surface Deformation, and Wrinkle on Surface

| No | Evaluation Item               |                                                                 |                   | Grade | Area                  | Evaluation standard(mm or less)                                                                                                                        |               | Ex. of applicable parts                                                |
|----|-------------------------------|-----------------------------------------------------------------|-------------------|-------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------|
|    |                               |                                                                 |                   |       |                       | Low Temp.                                                                                                                                              | After testing |                                                                        |
| A  | Change of steps and clearance | Steps and clearnace for mating part in assembled condition (mm) | Less than 0.5     | 1     | Effective surface     | 1.0                                                                                                                                                    | 0.3           | Meter Hood<br>Top surface of column cover<br>Rear pillar garnish, etc. |
|    |                               |                                                                 |                   |       | Non-effective surface | 1.5                                                                                                                                                    | 0.5           | A pillar trim<br>Bottom surface of column cover                        |
|    |                               |                                                                 | 0.5~less than 5.0 | 2     | Effective surface     | 1.5                                                                                                                                                    | 0.5           | Ventruator, Frt. Griller<br>S/W panel                                  |
|    |                               |                                                                 |                   |       | Non-effective surface | 2.0                                                                                                                                                    | 1.0           |                                                                        |
|    |                               |                                                                 | 5.0 or more       | 3     | Effective surface     | 2.0                                                                                                                                                    | 1.0           |                                                                        |
|    |                               |                                                                 |                   |       | Non-effective surface | 4.0                                                                                                                                                    | 2.0           |                                                                        |
| B  | Surface waving                |                                                                 |                   | 1     | -                     | Shall not occur(2)                                                                                                                                     |               | Plated, glossy parts                                                   |
|    |                               |                                                                 |                   | 2     | Effective surface     | <div>↑<br/>Pitch (mm)<br/>After testing Low-high temp.<br/></div> |               | Instrument<br>Top surface of panel<br>Top surface of bumper            |
|    |                               |                                                                 |                   | 3     | Non-effective surface |                                                                                                                                                        |               | Instrument<br>Bottom surface of panel                                  |
| C  | Surface wrinkle               |                                                                 |                   | -     | Effective surface     | Shall not occur                                                                                                                                        |               | Door trim                                                              |

Note (2) : Evaluate the standard parts in accordance with necessity.

Table 7. Standard in Contamination

| Area                               | Evaluation Standard                                                                                                             |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Effective surface                  | Contamination shall not exist.                                                                                                  |
| Visible area while replacing parts | Shall be contamination gray scale grade 3 or more of KES A-A012 (Standard Gray Color Table for Contamination and Discoloration) |

Table 8. Standard of Discoloration in Weatherability

| Symbol    | Condition<br>Sun Shine Carbon<br>Weather Meter | Evaluation Standard                                                                                                            |
|-----------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| We - O, A | 100hr                                          |                                                                                                                                |
| We - O, B | 300hr                                          | Color change shall be gray scale grade 4 or more of KES A-A012.                                                                |
| We - O, C | 300hr                                          | Color change shall be gray scale grade 4 or more of KES A-A012 (Standard Gray Color Table for Contamination and Discoloration) |
|           | 1,000hr                                        | Color change shall be grade 3 or more of KES A-A012.                                                                           |