

JIS

JAPANESE INDUSTRIAL STANDARD

General Rules of Coating Films for Automobile Parts

JIS D 0202—1988

Translated and Published

by

Japanese Standards Association

Printed in Japan



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General Rules of Coating Films for
Automobile Parts

D 0202-1988

1. Scope

This Japanese Industrial Standard specifies the general rules of coating films applied on the metal substrate of automobile parts, hereinafter referred to as the "parts", in order to make them anticorrosive or ornamental. However, this is not applicable to the coating films shown below.

- (1) The coating film for the body shell of an automobile and its bed.
- (2) The coating film applied on the thin metal film electroplated, vacuum evaporated, or roll leaf hot stamped or otherwise on plastic substrate.
- (3) The coating film intended for only temporary anticorrosiveness.

2. Definition

The definitions of main terms used in this Standard shall be as follows:

- (1) car inside A place in a car body not exposed, directly or indirectly, to wind or rain. For instance, the inside of driver's room and baggage room.
- (2) car outside A place such as an outside body or an engine room directly or indirectly exposed to wind and rain.
- (3) interior A region of a part not visible to direct view under the using condition of the part.
- (4) exterior A region of a part visible to direct view under the using condition of the part.
- (5) effective surface Either one of the following two surface which are important to service.
 - (a) The surface whose function and ornamentation are affected by the generation of corrosion, or the change or peeling of coating film.
 - (b) The surface liable to be injured or worn.
- (6) glare-resistance treatment A treatment to apply low glossy coating so as to prevent glare.

Applicable Standards and Reference Standards: See page 10.

3. Quality

3.1 Item of Quality Characteristics The items of quality characteristics of coating films shall be as given in Table 1, and they shall be selected in accordance with the place or region where parts are to be used.

Table 1. Items of Quality Characteristics

Place to be applied	Region to be applied	Table 1. Items of Quality Characteristics																
		Appearance	Specular gloss	Glare resistance	Corrosion resistance	Moisture resistance	Water resistance	Oil resistance	Gasoline resistance	Acid resistance	Alkali resistance	Pencil scratching resistance	Film thickness	Grid adhesiveness	Weather resistance	Cycle-cracking property	Heat resistance	Shock resistance
Car inside	Interior	△	—	—	△	—	—	△	△	△	△	—	△	△	—	—	△	—
	Exterior	○	△	△	○	△	△	△	△	△	△	△	△	△	△	△	△	—
Car outside	Interior	△	—	—	○	—	—	△	△	△	△	—	△	△	—	—	—	—
	Exterior	○	△	△	○	○	○	△	△	△	△	△	○	△	△	△	—	○

Remark: The items marked with "○" in the table are to be principally applied, and those marked with "△" to be applied according to agreement between the parties concerned.

3.2 Appearance The appearance of coating film, when tested in accordance with 4.3, shall be uniform in colour, and free from defects such as substrate exposure, blister, cracking or pinhole. However, places difficult to finish, such as corner, extremely uneven portion or welded place, and the parts temporarily coated in coating process may be excluded.

The permissible extent of defectiveness shall be subject to agreement between the parties concerned.

3.3 Specular Gloss Specular gloss, when tested in accordance with 4.4, shall conform to the stipulation on specular gloss agreed on by the parties concerned.

3.4 Glare Resistance Glare resistance shall be tested in accordance with 4.5 and the resultant specular gloss shall be within 40 (%).

3.5 Corrosion Resistance When corrosion resistance is tested in accordance with 4.6, there shall exist no corrosion, blister, peeling, or softening of coating 2 mm or larger in diameter on the effective surface. As for corrosion, blister or peeling whose diameter is less than 2 mm, there shall not exist one or more per 100 cm² of effective surface.

The test time needed for quality judgment should be selected from among those specified in 4.6 subject to agreement between the parties concerned.

3.6 Moisture Resistance When moisture resistance is tested in accordance with 4.7, there shall exist no blister, peeling, cracking, crinkling, remarkable change of specular gloss and color or serious softening of coating film.

The test time needed quality judgment should be selected from among those specified in 4.7 subject to agreement between the parties concerned.

3.7 Water Resistance When water resistance is tested in accordance with 4.8, there shall exist no blister, peeling, cracking, or crinkling, remarkable change of specular gloss or color or serious softening of coating film.

The test time needed for quality judgment should be selected from among those specified in 4.8 subject to agreement between the parties concerned.

3.8 Oil Resistance When oil resistance is tested in accordance with 4.9, there shall exist no blister, peeling, cracking, or crinkling, remarkable change of specular gloss or color or serious softening of coating film.

The test time needed for quality judgment should be selected from among those specified in 4.9 subject to agreement between the parties concerned.

3.9 Gasoline Resistance When gasoline resistance is tested in accordance with 4.10, there shall exist no blister, peeling, cracking, or crinkling, remarkable change of specular gloss or color or serious softening of coating film.

The test time needed for quality judgment should be selected from among those specified in 4.10 subject to agreement between the parties concerned.

3.10 Acid Resistance When acid resistance is tested in accordance with 4.11, there shall exist no blister, peeling, cracking, or crinkling, remarkable change of specular gloss or color or serious softening of coating film.

The test time needed for quality judgment should be selected from among those specified in 4.11 subject to agreement between the parties concerned.

3.11 Alkali Resistance When alkali resistance is tested in accordance with 4.12, there shall exist no blister, peeling, cracking, or crinkling, remarkable change of specular gloss or color or serious softening of coating film.

3.12 Pencil-scratching Resistance When pencil-scratching resistance is tested in accordance with 4.13, the results shall conform to the pencil scratching value specified by agreement between the parties concerned.

3.13 Film Thickness When film thickness is tested in accordance with 4.14, the results shall conform to the value specified by agreement between the parties concerned.

3.14 Grid Adhesiveness When grid adhesiveness is tested in accordance with 4.15, the number of grid sections remaining without being taken away shall be 100 at least. In the cases of substrates, such as copper, copper alloy, aluminum, aluminum alloy or zinc alloy, all of them electroplated, at least 60 grid sections shall remain.

3.15 Weather Resistance When weather resistance is tested in accordance with 4.16, the results shall conform to the requirements given in Table 2.

The test time needed for quality judgment shall be selected from among those specified in 4.16 subject to agreement between the parties concerned.

Table 2. Weather Resistance

Observation item	Requirement
Change in color	Not lower than Grey scale No. 2 specified in JIS L 0804, or not more than color difference 6.8.
Specular gloss	No remarkable change, or not less than 50 % in gloss survival rate.
Soil	None easily recognized.
Migrated soil	
Strain	None conspicuous.
Chalking	
Blister	None.
Peeling	
Cracking	None easily recognized.
Hardening	No remarkable change.
Softening	

3.16 Cycle-cracking Property When cycle-cracking property is tested in accordance with 4.17, there shall exist no blister, peeling or cracking.

3.17 Heat Resistance When heat resistance is tested in accordance with 4.18, there shall exist no blister, peeling or cracking.

3.18 Shock Resistance When shock resistance is tested in accordance with 4.19, there shall exist no peeling or cracking.

4. Testing Method

4.1 General Conditions of Test The general conditions of tests shall be as follows:

- (1) Unless otherwise specified, the laboratory for tests shall be under the standard condition of Grade 2, 20°C and Grade 5, 65 % specified in JIS Z 8703, and shall be shielded from direct sunlight, free from gas, steam or dust that may give adversely affect the test, and have almost no ventilation.
- (2) The material, appliances, reagents and others that are used for tests shall be as specified in 3.2 of JIS K 5400.