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JAPANESE INDUSTRIAL STANDARD

SEALING COMPOUNDS FOR SEALING,

GLAZING AND CAULKING IN BUILDINGS

JIS A 5757-1975
(REAFFIRMED 1983)



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Sealing Compounds for Sealing, A 5757-1975
Glazing and Caulking in Buildings (Reaffirmed: 1983)

1. Scope

This Japanese Industrial Standard specifies the performances of the sealing compounds for buildings, hereinafter called as the "sealing compound", in connection with their services such as the joint of building members, the sealing for surrounding of sashes, and the glazing of glass panes.

Remarks 1. The standard covers the performances classified by the services of sealing material, using the sealed objects specified in 6.11.2. In fact, however, because many kinds of the sealed objects are used under various circumferential conditions, it is preferable to carry out tests taking into consideration the circumferential condition and the sealed objects.

2. In this standard, the units and numerical values in { } are in accordance with the International System of Units (SI), and appended for reference only.

2. Definition

The definitions of the terms used in this standard shall be as follows:

- (1) sealing compounds The general term for the amorphous and sticky material when applying which can be used at the jointing places of building members or parts for the purposes of watertightness and airtightness.
- (2) non-sag type The sealing compounds manufactured so as not to make sagging, that is slumping, in the case of being applied for the joint on a vertical surface.
- (3) self-leveling type The sealing compounds manufactured to make naturally leveling at its surface when being applied as upwards joint on a horizontal surface.
- (4) bleeding The partly bleeding of sealing compounds due to the separating of its component.

Applicable Standards: See page 33.

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- (5) staining The phenomena of staining a sealed object by coloring due to the reaction between the sealing compounds and the alkaline component in cement or the like.
- (6) usable time In the case of two-component type sealing compounds, the time from the kneading of base material and hardener to making an unsuitable viscosity for sealing works.
- (7) tack free The time needed to get the condition not to be sticky when touching the sealing compounds by a finger.

3. Classification, Symbol, and Designation

3.1 Classification and Symbols The classification and symbols of sealing compounds shall be as following (1) to (4).

(1) Classes by Main Uses

	(Symbol)
Sealing compounds for metals ⁽¹⁾	S·M
Sealing compounds for concrete ⁽¹⁾	S·C
Sealing compounds for glass ⁽¹⁾	S·G
Caulking compounds for outdoors ⁽²⁾	C·O
Caulking compounds for indoors ⁽²⁾	C·I

(2) Classes by Durability

Grade 1	1
Grade 2	2

(3) Classes by Applying Season

General use ⁽³⁾	A
For summer use ⁽³⁾	S
For winter use ⁽³⁾	W

(4) Classes by Fluidity

Non-sag type	N
Self-leveling type	L

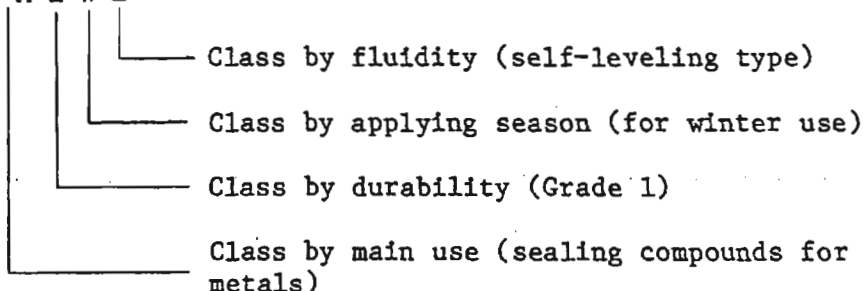
Notes ⁽¹⁾ The sealing compounds for metals, concrete, and glass are those to be used for the joints which are designed considering that the width of a joint will change by the temperature fluctuation or others.
The sealing compounds for glass are the materials to be used for sealing the gap between the glass pane and the sash.

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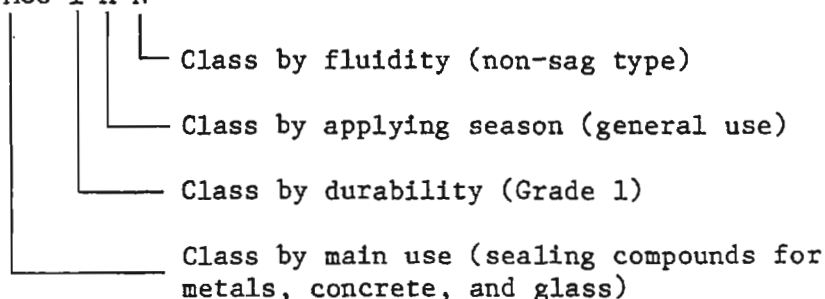
- (2) The caulking compounds for outdoors and indoors are the materials to be used for sealing the gaps between members or parts whose relative displacements are rather small. That for outdoors is that to be used for the place moistened by water in either outdoors or indoors, and that for indoors is that to be used for the place not moistened by water in indoors.
- (3) The general use means the material to be used through whole year, the summer use means that for summer, spring, and autumn, and the winter use means that for winter, spring, and autumn.

3.2 Designation The designation of sealing compounds shall be designated as following manner, though unnecessary parts can be omitted.

Example: S·M-1-W-L



S·MCG-1-A-N



4. Quality

4.1 The sealing compounds when it is tested by 6. in accordance with the general condition of the test of 5. shall conform to the requirements specified in Table 1.

4.2 The colour of sealing compounds shall not have serious colour difference from that of the standard sample that is decided by the agreement between the parties concerned.

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4.3 The sealing compounds shall be non-corrosive to contacting steel or aluminium.

4.4 As concerns the sealing compounds which may give some harmful influence on mankind or beasts, the marking about it shall be carried out according to The Industrial Safety and Health Law, and the cautions for handling shall be clearly manifested.

4.5 The sealing compound shall be kept safely at least for six months when it is stored at a temperature of 5 to 25°C under the sealed condition after manufacturing.

4.6 The sealed compounds shall not contain the bubbles that are harmful for performance or appearance when contained in a cartridge or other airtight container.

4.7 The sealing compounds shall not contain remarkable amount of bubbles after being applied to joints and the like.

Table 1. Quality of Sealing Compounds

Classification Testing item	Sealing compounds						Caulking compounds	
	For metals		For concrete		For glass		For outdoor	For indoor
	Grade 1	Grade 2	Grade 1	Grade 2	Grade 1	Grade 2		
Extruding property	The extruding property of at least two out of three specimens shall be 30 sec or less for the general use and winter use, and 20 sec or less for summer use.							
Slump	The results shall be 3 mm or less.							
Self-leveling	The surfaces of all samples shall become flat.							
Bleeding	The results shall be 5 mm or less, and be within 3 sheets							
Staining	There shall be recognized no staining in all specimens							
Ozone resistance	There shall be recognized no cracking by ozone on all specimens.							
Durability	There shall be recognized no distinct abnormalities on all specimens such as dissolving, swelling, fissures, peeling off from a sealed objects, or others.							

5. General Conditions of Testing

5.1 The materials and reagents for tests shall be in accordance with Table 2.

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Table 2. Materials and Reagents

Name	Standard
Portland cement	Ordinary portland cement specified in JIS R 5210.
Methyl ethyl ketone	Industry use specified in JIS K 1524.
Ethyl alcohol	Ethyl alcohol specified in JIS K 8102.
Aluminum plate	Aluminium plate of A 2014 P or A 5052 P specified in 2. of JIS H 4000 which is processed by sulfuric acid positive anode coating and is baked one time with methacrylate resin at the temperature of 140°C for four minutes.
Glass plate	The glass plate of 3 mm or 5 mm specified in JIS R 3202, or of 2 mm specified in JIS R 3201.

5.2 In the case of the tests of tensile stress, elongation, and durability, primer may be used in order to improve the adhesive property of sealing compounds.

5.3 When surface film is generated on the one-component type sealing compound, this film shall be removed to make it sample. In the case of two-component type sealing compound, sample shall be prepared by kneading to mix the base material and hardener at a specified ratio.

5.4 The sealing compound of one-component type, and base material and hardener for two-component type shall be left for 24 hours or more before testing under the temperature specified at each of testing methods. Unless otherwise indicated, the apparatuses to contact the sample and the objects to be sealed shall be left under standard condition for 24 hours or more prior to testing. The standard condition herein means the state at $20 \pm 3^\circ\text{C}$ in temperature and 45 to 65 % in humidity.

5.5 The kneading to mix of the base material and hardener of two-component sealing compound shall be satisfactorily carried out on a glass plate or others to get uniform condition by means of a suitable spatula with cautions not to mix bubbles.

Reference: In cases where the kneading on a glass plate is very difficult because of the remarkably small mixing ratio of the base material and hardener of two-component type or of the low values of their viscosity, a suitable vessel or kneader may be used.

5.6 In the case of two-component type sealing compounds, unless otherwise indicated, after kneading the filling shall be finished within 10 minutes.

5.7 Unless otherwise stated, tests shall be carried out under the standard condition.

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5.8 Unless otherwise stated, a test shall be carried out on each of three specimens.

5.9 The items of the tests are indicated in (1) to (3) of Table 3. The mark of O in the table means the item to be tested.

Remark: The testing items in Table 3-(1) are those listed in quality specification. The results of the testing items in Table 3-(2) are to be marked on each one of containers according to 8.1, and the results of the testing items in Table 3-(3) are to be reported on a suitable informative material in accordance with 8.2.

Table 3-(1). Testing Items of Quality Specification

Classification Testing item	Sealing compounds						Caulking compounds		Remarks
	For metals		For concrete		For glass		For outdoor	For indoor	
	Grade 1	Grade 2	Grade 1	Grade 2	Grade 1	Grade 2			
Extruding property	○						○		For general use and winter use 5°C is applicable, and for summer use, 20°C.
Slump	Either one item						Either one item		For general use and summer use 50°C is applicable, and for winter use, 35°C.
Self-leveling	○						○		The same as extruding property.
Bleeding	○						○		
Staining	○						○		
Ozone resistance	○						○	—	
Durability	○(a)	○(a)	○(b)	○(b)	○(c)	○(c)	○(d)	○(d)	Test of (a), (b), (c), and (d) in left column shall be applied to following objects. (a) Aluminium plate (b) Mortar plate (c) Glass plate (d) Mortar block

Table 3-(2). Testing Item for Marking (1)

Classification Testing item	Sealing compounds						Caulking compounds		Remarks
	For metals		For concrete		For glass		For outdoor	For indoor	
	Grade 1	Grade 2	Grade 1	Grade 2	Grade 1	Grade 2			
Usable time	○						○		For general use 5°C, 20°C, and 35°C are applicable, for summer use 20°C and 35°C, and for winter use 5°C and 20°C. In the case of, however, one-component type, this test is omitted.
Tack free	○						○		

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Table 3-(3). Testing Items for Marking (2)

Classification Testing Item			Sealing compounds						Caulking compounds		Remarks
			For metals		For concrete		For glass		For outdoor	For indoor	
			Grade 1	Grade 2	Grade 1	Grade 2	Grade 1	Grade 2			
Specific gravity			○						○		
Heating loss			○						○		
50 % tensile strength	Before heating	Standard condition	○ (a)		○ (b)		○ (c)		—		1. Tests of (a), (b), and (c) in left columns shall be applied to following objects. (a) Aluminium plate (b) Mortar plate (c) Glass plate 2. The breaking condition shall be recorded
		Low temperature	○ (a)		○ (b)		○ (c)		—		
	After heating	Standard condition	○ (a)		○ (b)		○ (c)		—		
		Low temperature	○ (a)		○ (b)		○ (c)		—		
Maximum tensile strength	Before heating	Standard condition	○ (a)		○ (b)		○ (c)		—		
		Low temperature	○ (a)		○ (b)		○ (c)		—		
	After heating	Standard condition	○ (a)		○ (b)		○ (c)		—		
		Low temperature	○ (a)		○ (b)		○ (c)		—		
Elongation at maximum load	Before heating	Standard condition	○ (a)		○ (b)		○ (c)		—		
		Low temperature	○ (a)		○ (b)		○ (c)		—		
	After heating	Standard condition	○ (a)		○ (b)		○ (c)		—		
		Low temperature	○ (a)		○ (b)		○ (c)		—		
Elongation at breaking	Before heating	Standard condition	○ (a)		○ (b)		○ (c)		—		
		Low temperature	○ (a)		○ (b)		○ (c)		—		
	After heating	Standard condition	○ (a)		○ (b)		○ (c)		—		
		Low temperature	○ (a)		○ (b)		○ (c)		—		

5.10 Rounding-Off of Test Results The results obtained from each of tests shall be rounded according to JIS Z 8401 and represented by the number of figures specified in Table 4. This, however, shall not apply to such cases as, self-leveling of 6.4, staining of 6.6, ozone resistance of 6.10, and durability of 6.12.

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Table 4. Numerical Figures of Test Results

Testing item		Results of tests
Specific gravity		Two decimal places
Extruding property		Whole number
Slump		One decimal place
Bleeding		Whole number
Usable time	Within 30 minutes	Multiple of 5 minutes
	Over 30 minutes to 1 hour incl.	Multiple of 10 minutes
	Over 1 hour	Multiple of 30 minutes
Tack free	Within 30 minutes	Multiple of 5 minutes
	Over 30 minutes to 1 hour incl.	Multiple of 10 minutes
	Over 1 hour to 3 hours incl.	Multiple of 30 minutes
	Over 3 hours	Multiple of 1 hour
Heating loss		Two significant figures
50 % tensile stress		Two significant figures
Maximum tensile stress		Two significant figures
Elongation at maximum load		Two significant figures
Elongation at breaking		Two significant figures

6. Tests

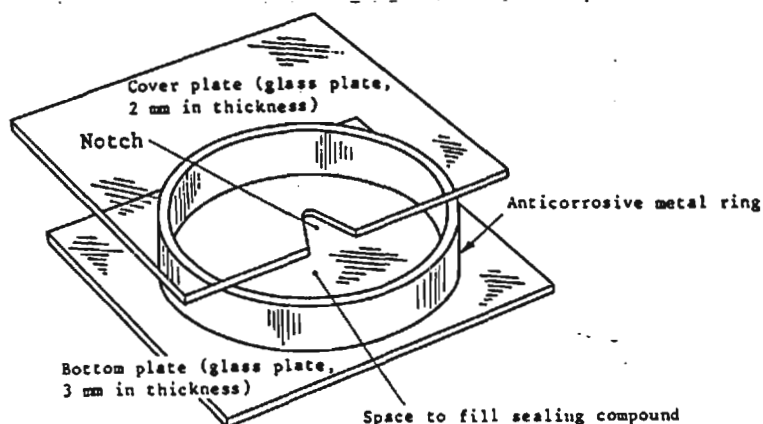
6.1 Specific Gravity

6.1.1 Testing Devices

- (1) Ring This is an anticorrosive metal ring shown in Fig. 1, whose dimensions are 12 mm in height, 65 mm in inside diameter, and 2 mm in thickness, and is smoothly finished at upper and lower ends so as to contact closely to a cover glass plate and bottom one.

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Fig. 1. Device for Specific Gravity Test



- (2) Cover Plate, Bottom Plate These glass plates shall have the size about 85 mm x 85 mm, and thickness of 2 mm for cover plate ⁽⁴⁾ and 3 mm for bottom plate, and have no strain for close contact to the ring.
- (3) Buret This is a buret for chemical analysis specified in JIS R 3505, and has a volume not more than 50 ml by nominal dimension.
- (4) Balance Weighing capacity 500 g, reciprocal sensibility 100 mg.

Note ⁽⁴⁾ The cover glass having a V-shaped notch is easy to handle.

6.1.2 Testing Method

- (1) Measuring of Volume of a Ring Place a ring at near center of a bottom plate so closely as not to leak water ⁽⁵⁾. Pour water (about 20°C) into the ring approximately full by means of a buret, and cover it with a cover glass ⁽⁶⁾. Pour continuously water until there remains inside no air bubble. Obtain the volume (V) from the difference of readings of the buret.