

KES

Specification of Cylinder Head Gasket Material

KES B-L037C

(EST.) 1990-03-20

(REV.) 1992-02-20

1992-07-20

1993-05-14

Contents

1. Scope of Application
2. Types and Material Symbols
3. Quality
4. Condition of Test and test Piece
5. Test Methods
6. Inspection
7. Alteration of Specification

Quoted Standards

1. Scope of Application

This standard shall be applied to material specification of cylinder head gasket aimed at maintaining air tightness of cylinder block and cylinder head in the automobile engine.

2. Types and Material Symbols

Cylinder head gasket shall be classified by quality of engine material and gasket material as shown in Table 1.

Table 1. Material Symbols and Types

Types	Material Symbols	Engine Divisions	Remarks
Type 1	G-SB01	Iron-cast engine	Asbestos group
Type 2	G-SB02	Aluminum cylinder head engine	
Type 3	G-SB11 G-SB12	All general engines High-power engine(DOHC, T/C, etc.)	Graphite group
Type 4	G-SB21	All general engines	Aramide group

3. Quality

Cylinder head gasket sheet shall be uniform in thickness. The adhesion conditions of its seam and material shall be in good condition and be suitable for quality specifications in Tables 2 - 6.

4. Conditions of Test and Test Piece

Conditions of test and test piece shall conform to KES T-L281 Item 5 (Test piece) and KES T-L281(Standard conditions of test).

5. Test Methods

(1) Specific gravity

Four-sided test piece with a 6-mm-long side which is obtained without burr and tilt (no sealing material) shall be weighed up to 1/1000gr and its each side shall be measured up to 1/100mm, after the preliminary treatment is done according to Article 4.

Specific gravity shall be obtained according to the following formula which uses the average thickness of Item 4.2.

$$\text{Specific gravity} = \frac{W - \text{thickness of steel plate} \times A \times B}{(t - \text{thickness of center steel plate}) \times A}$$

Where, W : Weight of test piece(gr)

A : Area of test piece(cm²)

B : Specific gravity of center steel plate(gr/cm³)

t : thickness of test piece(cm).

Table 2. Basic Physical Properties

NO.	Items	Conditions	Quality Standards					Test Methods
			G-SB01	G-SB02	G-SB11	G-SB12	G-SB21	
1	Specific Gravity		Report	Report	Report	Report	Report	5-1
2	Thickness mm		Report	Report	Report	Report	Report	5-2
3	Hightemperature Loss in Weight %	850℃ 1Hr	30 or less	15 or less	10 or less	10 or less	20 or less	5-3
4	Tensile Strength kg/cm ²	300mm/min	400 or more	350 or more	300 or more	300 or more	450 or more	5-4
5	Compressing Rate %	Main Load 350kg/cm ²	10-25	5-15	15-25	6-18	5-12	5-5
6	Restoring rate %		50 or more	50 or more	40 or more	35 or more	45 or more	
7	Adhesiveness	220℃ 22Hr	II or less	II or less	II or less	II or less	II of less	5-6
8	Corrosiveness	70℃ 168Hr	II or less	II or less	II or less	II or less	II or less	5-7
9	Suspensiveness	100℃ 5Hr	No peeling between steel and gasket					5-8
10	Compressive permanent Strain Rate %	200℃ 22Hr	50 or less					5-9
11	Stress Relaxation Rate %	100℃ 22Hr	10 or less			16 or less	35 or less	5-10
12	Infiltration Antifreezing Solution Leakage	Early	No leakage					5-11
		After aging						
	Area Pressure 50 of Engine Oil (kg/cm ²)	Early						
		After aging						
13	Break test kg		1200 or more					5-12