

KES

Classification System for
Rubber Materials for
Automotive Applications

KES B-L045

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Supplementary Sheet



1. Scope of Application

This standard regulates on the basis of the quality of powder rubber materials(herein after refer to as rubber materials) that use for automobiles.

Remark : The units and dimensions as being { } in the standard report together for reference by SI.

2. Indication of Classification

Indication method of classification shall be demonstrated basically to divide in Type of heat resisting strength which rubber materials is shown a resistance against heating ageing and class of grease-proof strength which rubber materials is shown a resistance against swelling in the oil and then shall be divided into hardness and tensile strength. If there is needed performance more, it shall be indicated to establish additional item.

3. Symbols of Classification

3.1 Heat resisting strength and Grease proof strength

Type of heat resisting strength and Glass of grease proof strength shall be indicated by each capital letter of Alphabet and it shall be showed that the initial letter is heat resisting strength and the second letter is grease proof strength.

Example : BC - It shall be indicated that heat resisting strength is B type and grease proof strength is C glass

- (1) Type of heat resisting strength : Type of heat resisting strength is classified as the table 1 according to test temperature. In case of trying for 70 hours running of accelerative ageing test according to the method that is proven to 7 of KES B-L006(Test method of rubber materials) through each test temperature which is proven to the table 1, changing rate of tensile strength, changing rate in elongation and hardness alteration shall be conformed to the table 1.

Table 1 : Classification of heat resisting strength type

Type of hardness resisting strength	Test temperature °C	Ageing test (70h)		
		Changing rate in tensile strength %	Changing rate in elongation %	Hardness alteration
A	70	± 30	-50 Within	± 15
B	100			
C	125			
D	150			
E	175			
F	200			
G	225			
H	250			
I	275			
J	275			

- (2) Heat resistance glass : Regulated glass of grease proof strength in oil proof test shall obtain the changing rate in volume according to the method of 13 of KES B-L006 (Test method of rubber materials) and classify according to the table 2. In this case, test oil shall use No. 3 oil and be submerged for 70hour running in test temperature. However, it should test in 150°C for being over 150°C in test temperature of table 1 because the stable limit of test oil is 150°C

Table 2 : Classification of heat resisting strength glass

Heat resistance strength glass	Changing rate in volume
A	-
B	140 or less
C	120 or less

Table 2 (Continued)

Heat resisting strength glass	Changing rate in volume
D	100 or less
E	80 or less
F	60 or less
G	40 or less
H	30 or less
J	20 or less
K	10 or less

3.2 Hardness and tensile strength : Signs of hardness and tensile strength shall be indicated by four figures after symbols of heat resisting strength type and grease-proof strength. Single figure of the first refers to specified spring hardness (Type A) by hardness test in 6 of KES B-L006. For example, 5 indicates $50 \pm 5H_s$ and 6 indicates $60 \pm 5H_s$. Then the third refers to the minimum of tensile strength for example, 035 refers to 35 kgf/cm^2 (3.4 MPa), 105 refers to 105 kgf/cm^2 (10.3 MPa).

Remark : BC 5105

3.3 Type number, additional symbol and additional figure

In case of either altering a part of the performance in table 6 of each rubber material or appending another performance, it shall use type number, additional symbol and additional figure.

- (1) Type number : Type number shall be filled up the end of the blank on basic performance in table 6 of each rubber material and the shown additional performances in table 6 by this shall be indicated. Type number 1 refers to having no additional performance because the basic performance of table 6 validates only.

Type number except 1 refers to basic performance alteration or addition so that type number 2 shall be shown in the front of material symbol(heat resisting strength type and heat resisting strength glass).

Remark : 2BC5 105, 4BK6, 5HK6 140

- (2) Additional Symbols : Additional symbols shall indicate additional performances and conform to table 3.

Table 3 : Additional Symbols , Additional Performance

Additional symbols	Additional performance	Additional symbols	Additional performance
A	Heat resistance	H	Bending resistance
B	Compression permanent set	J	Abrasion resistance
C	Ozone resistance, Weather	K	Adhesion strength
D	resistance	M	Toughness resistance
EA	Specified quality of compression	N	Impact resistance
EF	Water resistance	P	Pollution
EO	Oil resistance (fuel oil)	R	Resilience
F	Oil resistance (lubricating oil)	Z	The other performance
G	Cold resistance		
	Tear strength		

- (3) Additional Number : Two additional numbers attaches in the back of additional symbols.

The initial additional number indicates test methods. Test period shall be selected in the middle of each blank of table 4 included in test methods. The second additional number indicates test temperature and is selected in the middle of table 5. In addition, the first additional number has a single figure for 1,2, ..., 8 but the second additional number has a double figure for 0, 1, 2, ..., 11 or 1, 2, ..., 12.

If additional number is triple figure totally, put hyphen in the middle of them.

Remark : A1-10 , F1-11

The additional symbols which an additional number do not filled up on it shall be useful for test items even there may be in case of undeceiving test method, test temperature or both of them.

Table 4 : Test Method

Performance	Basic performance	1	2	3	4	5	6	7	8
Tensile strength	3 of KES B-L006								
Hardness	6, 2 of KES B-L006								
A. Heat resistance		KES B-L006 7. 3 70h	KES B-L006 7. 6 70h	KES B-L006 7. 6 168h					
B. Compression permanent set		KES B-L006 11. 22h	KES B-L006 11. 70h	Supplementary sheet 1. 22h	Supplementary sheet 2. 70h				
C. Ozon resistance Weather resistance		Supplementary sheet 4 Ozon method A	Supplementary sheet 5 Weather	Supplementary sheet 4 Ozon method B					
D. Specified quality of compression		JIS K6301 17. 4 2	JIS K 6301 17. 4 2						
EA. Water resistance		Supplementary sheet 2 Distilled pressure 70h							
EF. Oil resistance (fuel oil)		KES B-L006 fuel oil A 70h	KES B-L006 fuel oil B 70h	KES B-L006 fuel oil C 70h					
EO. Oil resistance (lubricating oil)		KES B-L006 No. 1 oil 70h	KES B-L006 No. 2 oil 70h	KES B-L006 No. 3 oil 70h	KES B-L006 No. 1 oil 168h	KES B-L006 No. 2 oil 168h	KES B-L006 No. 3 oil 168h	KES B-L006 No. 101 oil 70h	KES B-L006 table 6 specified oil 7
F. Cold resistance		KES B-L006 Remark after 3min	KES B-L006 RM10 or less	KES B-L006 Remark 22h	KES B-L006 RM100 or less			JIS KK6301 19 T ₁ T ₂ T ₃ T ₄ T ₅	
G. Tear strength		KES B-L006 10 type A	KES B-L006 10 type B						
H. Bending resistance									
J. Abrasion resistance									
K. Adhesion strength		KES B-L006 9. 2	KES B-L006 9. 2						
M. Toughness resistance									
N. Impact resistance									
P. Pollution		Supplementary sheet 3. 1 contact	Supplementary sheet 3.24 performance						
R. Resilience		Supplementary sheet 6							
Z. The other performance									

Table 5 : Test temperature additional figures

Additional performance	The second additional number	Test temperature °C	Addition performance	The second additional number	Test temperature °C
A, B, C, EA, EF, EO, G, K,	11	275	F	1	23
	10	250		2	0
	9	225		3	- 10
	8	200		4	- 18
	7	175		5	- 25
	6	150		6	- 35
	5	125		7	- 40
	4	100		8	- 50
	3	70		9	- 55
	2	38		10	- 65
	1	23		11	- 75
	0	-(¹)		12	- 80

Note⁽¹⁾ The temperature when testing outdoor,

3.4 Basic Performance : It has specified elongation according to hardness and tensile strength and recorded again the dimensions which are decided with heat resisting strength and oil resistance glass by the basic performance of heat resistance and oil resistance in table 6 of each materials table.

It has also referred the dimension of compression permanent set rate. These basic performances shall be of gained value from general specimen(test piece) according to applying KES or test method of supplementary sheet 1.

Remark 1. Measuring result by manufactured specimen from product may not be accordance with measuring dimension by test piece

2. When specimen was taken from product by the tensile strength in 4 clause of KES B-L006, it may be lower value within 10% in performance place for tensile strength and elongation only according to an agreement between the parties concerned.

It is recognized that occurred error while taking specimen influences on mistakes, Grain and polish finished.

3. In case it does not appropriate to performance dimension by unexpected cause or manufacturing method of specimen from product, the parties may decide its tolerance. The test piece shall be done in comparison with test results of specimen which is taken from product.

3.5 Additional Performances

Additional performances shall indicate as follows

- (1) Additional performances add the needed performances because rubber materials must conform to a use condition. These additional performances indicated in table 6 every type number and its additional symbols and additional number can use individually or preparedly.

Remark : A14 E034.

- (2) Basic performance shall be valid unless it is specified for additional standard of rubber materials Normal number

- 3.6 Normal number of rubber materials : Normal number of rubber materials, indicating the performances of rubber materials by itself, shall include that type number, material symbol (heat resisting type and oil resistance glass), hardness, tensile strength and needed additional performances. In addition, Normal number of rubber materials is selected within the limits of table 6.

Remark 1. 2BC 5105 A14 E034

Type	type of heat resisting strength	hardness	tensile strength	heat resistance, 100℃	Oil resistance(lubricating oil) 100℃
2	BC	5	105	A 1 4	EO 3 4
Grease-proof glass				70hrs of KES B-L006	No.3 oil of KES B-L006 70hrs
Basic performances				Additional performances	

2. The basic performances of heat resistance and oil resistance in the example normal number of rubber materials are substituted for each additional performance but there is no its items in additional performances, 80% of basic performances of compression permanent set shall validate in the same and conform to table 6.

4. Test method

Test method applying to this standard shall conform to table 4 by KES B-L006, and supplementary sheet test 1-6. Unspecified test method and dimension in table 4 shall conform to an agreement between the parties concerned.

5. Sampling specimen

Specimen shall be taken from identical batch or operation with product and it must be vulcanized from identical vulcanized condition with product.

Table 6 : Rubber materials AA

Basic Performance						
Hardness 6 of KES B-L006 (JIS A)±5	Tensile strength 3 of KES B- L006 kgf/cm ² (MPa)	Elongation 3 of KES B- L006 Minimum(%)	Heat resistance 7 of KES B- L006 70°C70h	Oil resistance (lubricating oil) 13 of KES B-L006	Compression permanent set 11 of KES B- L006 70°C 22h Maximum(%)	Type No. of using available
30	70 { 6.86}	400	• Changing rate in	No requirement	Compression permanent set rate 50	2 and 4
30	105 {10.30}	400	tensile			2 and 4
30	140 {13.73}	400	strength(%)			2 and 4
40	70 { 6.86}	400	±30			2 and 4
40	105 {10.30}	400	• Changing			2 and 4
40	140 {13.73}	400	rate in			2 and 4
40	175 {17.16}	500	elongation(%)			2 and 4
40	210 {20.59}	600	-50within			2 and 4
			• Hardness alteration (JIS A)±15			

Table 6 (Continued)

Basic Performance						
Hardness 6 of KES B-L006 (JIS A) ± 5	Tensile strength 3 of KES B- L006 kgf/cm ² (MPa)	Elongation 3 of KES B- L006 Minimum(%)	Heat resistance 7 of KES B- L006 70°C 70h	Oil resistance (lubricating oil) 13 of KES B-L006	Compression permanent set 11 of KES B- L006 70°C 22h Maximum(%)	Type No. of using available
50	35 { 3.43}	250				2
50	55 { 5.39}	250				2
50	70 { 6.86}	400				2 and 3
50	85 { 8.34}	400				2 and 3
50	105 {10.30}	400				2,3,4 and 5
50	140 {13.73}	400				2,3,4 and 5
50	175 {17.16}	400				2,3,4 and 5
50	210 {20.59}	500				2,3,4 and 5
60	35 { 3.43}	250	• Changing rate in tensile strength(%) ± 30 • Changing rate in elongation(%) -50 within • Hardness alteration (JIS A) ± 15	No requirement	Compression permanent set rate 50	2
60	55 { 5.39}	250				2
60	70 { 6.86}	300				2 and 3
60	85 { 8.34}	300				2 and 3
60	105 {10.30}	350				2,3,4 and 5
60	140 {13.73}	400				2,3,4 and 5
60	175 {17.16}	400				2,3,4 and 5
60	210 {20.59}	400				2,3,4 and 5
60	245 {24.03}	500				2,3,4 and 5
70	35 { 3.43}	150				2
70	55 { 5.39}	150				2
70	70 { 6.86}	200				2 and 3
70	85 { 8.34}	200				2 and 3
70	105 {10.30}	250				2,3,4 and 5
70	140 {13.73}	300				2,3,4 and 5

Table 6 (Continued)

Basic Performance						
Hardness 6 of KES B-L006 (JIS A)±5	Tensile strength 3 of KES B- L006 kgf/cm ² (MPa)	Elongation 3 of KES B- L006 Minimum(%)	Heat resistance 7 of KES B- L006 70°C70h	Oil resistance (lubricating oil) 13 of KES B-L006	Compression permanent set 11 of KES B- L006 70°C 22h Maximum(%)	Type No. of using available
70	175 {17.16}	300				2,3,4, and 5
70	210 {20.59}	350				2,3,4, and 5
80	35 { 3.43}	100				2
80	70 { 6.86}					2
80	105 {10.30}					2
80	140 {13.73}					2
80	175 {17.16}					2
90	35 { 3.43}					2
90	70 { 6.86}					2
90	105 {10.30}					2

Table 6 (Continued)

Additional Performance								
Test Items	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
A13 Heat resistance 7 of KES B-L006 100℃70h Within changing rate in tensile strength (%) Within changing rate in elongation(%) within changing alteration (JIS A)		±30 - 50 ±15		-25 -25 10	-25 -25 10			
B13 Compression permanent set 11 of KES B-L006 70℃22h Maximum(%)			25	25	25			
B33 Compression permanent set Supplementary sheet 1. 70℃22h Maximum(%)			50	50	50			
C12 Ozone resistance 17 of KES B-L006 Supplementary sheet 4. A of the quality evaluation		85	*	85	*			
C20 Weather resistance JIS D 0205 Supplementary sheet 5. of the quality evaluation		85	85	85	85			

Table 6 (Continued)

Additional Performance								
Test items	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
F17 Cold Resistance 15 of KES B-L006 Remark after 3 min form -40℃		All good condition	All good condition	All good condition	All good condition			
K11 Adhesion strength 9 of KES B-L006 Minimum(kgf/cm ²) (MPa)		14 {1.37}	28 {2.75}	14 {1.37}	28 {2.75}			
EA14 Water resistance Supplementary sheet 2 100℃70h Within changing rate in volume(%)		10	10	10	10			
P20 Contamination Supplementary sheet 3.2 Test plate Antipollution		All good condition	All good condition	All good condition	All good condition			
Z The other performance	The others performance (including color) will be available to make a rule in all things. In this case, instruct the test method and standard dimension in detail.							

"*" means that this test method shall be available for application but standard dimension is undecided.

Table 6 (Continued) Rubber Materials AK

Basic Performance						
Hardness 6 of KES B-L006 (JIS A) ± 5	Tensile strength 3 of KES B-L006 Minimum kgf/cm ² (MPa)	Elongation 3 of KES B-L006 Minimum (%)	Heat resistance (lubricating oil) 7 of KES B-L006 100°C 70h	Oil resistance 13 of KES B-L006, No.3 oil, 100°C 70h Maximum(%)	Compression permanent set 11 of KES B- L006, 100°C 22h Maximum(%)	Type No of using available
40	35 {3.43}	400	changing rate in tensile strength (%) ± 30	changing rate in volume 10	compression permanent set rate 50	2
50	35 {3.43}	400	changing rate in elongation (%)			2
60	50 {4.90}	400	-50 Within			2
70	70 {6.86}	400	hardness alteration			2
80	70 {6.86}	400	(JIS A) ± 15			2
90	70 {6.86}	400				2

Table 6 (Continued)

Additional Performance								
Test Items	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
A14 Heat resistance 7 of KES B-L006 100℃70h Within changing rate in tensile strength (%)		- 15	- 15					
Within changing rate in elongation (%)		- 40	- 40					
Within changing alteration (JIS A)		15	15					
B33 Compression permanent set Supplementary sheet 1. 70℃22h Maximum(%)		50	50					
E014 Oil resistance (lubricating oil) 13 of KES B-L006 No. 1 oil 100℃70h Within changing rate in tensile strength(%)		*	*					
Within changing rate in elongation(%)		*	*					
Within hardness alteration(JIS A)		*	*					
Within changing rate in volume(%)		-3~5	-3~5					
E014 Oil resistance (lubricating oil) 13 of KES B-L006 No. 3 oil 100℃70h Within changing rate in tensile strength(%)		- 30	- 30					

Table 6 (Continued)

Additional Performance								
Test Items	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
Within changing rate in elongation(%)		-50	-50					
Hardness alteration(JIS A)		-5~10	-5~10					
Changing rate in volume(%)		*	*					
F17 Cold resistance 15 of KES B-L006 Remark after 3 min. from -40℃		All good condition						

"*" means that this test method shall be available for application but standard dimension is undecided.

Table 6 (Continued) Rubber Materials BA

Basic Performance						
Hardness 6 of KES B-L006 (JIS A)±5	Tensile strength 3 of KES B- L006 kgf/cm ² (MPa)	Elongation 3 of KES B- L006 Minimum(%)	Heat resistance 7 of KES B- L006 70℃70h	Oil resistance (lubricating oil) 13 of KES B-L006	Compression permanent set 11 of KES B- L006 70℃ 22h Maximum(%)	Type No. of using available
30	70 { 6.86}	400	• Changing rate in tensile strength(%) ± 30	No requirement	Compression permanent set rate 50	2
30	105 {10.30}	400				2,3,4 and5
30	140 {13.73}	400				2,3,4 and5
40	35 { 3.43}	300				2 and 8
40	70 { 6.86}	300				2 and 8
40	105 {10.30}	400				2,3,4,5and6
40	140 {13.73}	400				2,3,4 and5
50	70 { 6.86}	300				2 and 8
50	105 {10.30}	400				2,3,4,5and6
50	140 {13.73}	400				2,3,4 and5
50	175 {17.16}	400				2,3,4 and5
60	35 {3.43}	250				• Changing rate in elongation (%) -50 Within
60	55 { 5.39}	250	8			
60	70 { 6.86}	300	2 and 8			
60	105 {10.30}	350	2,3,4,5			
60	140 {13.73}	400	2,3,4,5and6			
60	175 {17.16}	400	2,3,4,5and6			
70	35 { 3.43}	150				8

Table 6 (Continued)

Basic Performance						
Hardness	Tensile strength	Elongation	Heat resistance	Oil resistance	Compression permanent set	Type No. of using available
6 of KES B-L006 (JIS A)±5	3 of KES B-L006 kgf/cm ² (MPa)	3 of KES B-L006 Minimum(%)	7 of KES B-L006 70℃70h	(lubricating oil) 13 of KES B-L006	11 of KES B-L006 70℃ 22h Maximum(%)	
70	55 { 5.39}	150	(JIS A)±15			8
70	70 { 6.86}	200				2 and 8
70	85 { 8.34}	200				8
70	105 {10.30}	250				2,3,4,5and6
70	140 {13.73}	300				2,3,4 and5
70	175 {17.16}	300				2,3,4 and5
80	70 { 6.86}	100				2 and 7
80	105 {10.30}	150	• Changing rate in tensile strength(%) ±30			2 and 4
80	140 {13.73}	200	• Changing rate in elongation(%) -50Within			2 and 4
90	35 { 3.43}	75	• Hardness alteration (JIS A)±10	No requirement	Compression permanent set rate 50	7
90	70 { 6.86}	100				2. 7
90	105 {10.30}	125				2. 4

Table 6 (Continued)

Additional Performance								
Test Items	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
A14 Heat resistance 7 of KES B-L006 100°C70h Within changing rate in tensile strength(%) Within changing rate in elongation (%) Within hardness alteration(JIS A)			-25 -25 10	-25 -25 10				
B13 Compression permanent set 11 of KES B-L006 70°C 22h Maximum(%)			25			25		25
C12 Ozone resistance 17 of KES B-L006 Supplementary sheet 4. A of the quality evaluation		100	100	100	100	100	100	100
F17 Cold resistance 15 of KES B-L006 Remark after 3min. form -40°C		All good condition	All good condition	All good condition	All good condition			
F19 Cold resistance 15 of KES B-L006 Remark after 3min form -55°C			All good condition		All good condition			

Table 6 (Continued)

Additional Performance								
Test items	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
K11 Adhesion strength 9 of KES B-L006 Minimum(kgf/cm ²) (MPa)			14 { 1.37}	14 { 1.37}	14 { 1.37}	14 { 1.37}		
K21 Adhesion strength 9 of KES B-L006 Minimum(kgf/cm ²) (KN/m)			7 { 6.86}	7 { 6.86}	7 { 6.86}			
K31 Adhesion strength * Adhesion by adhesive cement after vulcanizing			※	※	※			
Z The other performance	The others performance (including color) will be available to make a rule in all things. In this case, instruct the test method and standard dimension in detail.							

K31 of "※" is the adhesion by adhesive cement and specimen should not be the conditional table regarded as doing harm or harmfulness. It also should not be polluted by blended cement.

"※" means that this test method shall be available for application but standard dimension is undecided.

Table 6 (Continued) Rubber Materials BC

Basic Performance						
Hardness 6 of KES B-L006 (JIS A) ±5	Tensile strength 3 of KES B- L006 kgf/cm ² (MPa)	Elongation 3 of KES B- L006 Minimum(%)	Heat resistance 7 of KES B- L006 70°C/70h	Oil resistance (lubricating oil) 13 of KES B-L006	Compression permanent set 11 of KES B- L006 70°C 22h Maximum(%)	Type No. of using available
30	35 { 3.43}	300	• Changing rate in tensile strength (%) ±30 • Changing rate in elongation(%) -50Within • Hardness alteration (JIS A)±15	Changing rate in volume 120	Compression permanent set rate 80	2 and 5
30	70 { 6.86}	400				2 and 5
30	105 {10.30}	500				2 and 5
30	140 {13.73}	500				2 and
40	30 { 3.43}	300				2
40	70 { 6.86}	400				2 and 5
40	105 {10.30}	500				2 and 5
40	140 {13.73}	500				2 and 5
40	175 {17.16}	500				2
50	35 { 3.43}	300				2 and 5
50	70 { 6.86}	300				2 and 5
50	105 {10.30}	350				2, 5 and 6
50	140 {13.73}	400				2, 5 and 6
50	175 {17.16}	450				2 and 6
50	210 {20.59}	500				2 and 6
50	245 {24.03}	500				2 and 6
60	35 { 3.43}	300	3 and 5			
60	70 { 6.86}	300	3 and 5			

Table 6 (Continued)

Basic Performance						
Hardness 6 of KES B-L006 (JIS A) ± 5	Tensile strength 3 of KES B- L006 kgf/cm ² {MPa}	Elongation 3 of KES B- L006 Minimum(%)	Heat resistance 7 of KES B- L006 70°C70h	Oil resistance (lubricating oil) 13 of KES B-L006	Compression permanent set 11 of KES B- L Maximum(%)	Type No. of using available
60	105 {10.30}	350				3, 5 and 6
60	140 {13.73}	350				3 and 6
60	175 {17.16}	400				3 and 6
60	210 {20.59}	400				3 and 6
60	245 {24.03}	400				3 and 6
70	35 { 3.43}	200				3 and 5
70	70 { 6.86}	200				3 and 5
70	105 {10.30}	250	• Changing rate in tensile strength(%) ± 30 • Changing rate in elongation (%) -50 Within • Hardness alteration (JIS A) ± 15			3, 5 and 6
70	140 {13.73}	300				3, 5 and 6
70	175 {17.16}	300				3 and 6
70	210 {20.59}	300				3 and 6
80	35 { 3.43}	100		Changing rate in volume 120	Compression permanent set rate 80	4
80	70 { 6.86}	100				4
80	105 {10.30}	100				4
80	140 {13.73}	150				4
90	35 { 3.43}	50				4
90	70 { 6.86}	100				4
90	105 {10.30}	150				4
90	140 {13.73}	150				4

Table 6 (Continued)

Additional Performance								
Test Items	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
A14 Heat resistance 7 of KES B-L006 100°C 70h Within Changing rate in tensile strength (%) Within Changing rate in elongation(%) Within hardness alteration (JIS A)		-15	-15	-15	-15	-15		
B14 Compression resistance 11 of KES B-L006 100°C 22h Maximum(%)		35	35	35	35	35		
C12 Ozone resistance 17 of KES B-L006 Supplementary sheet 4. A of the quality evaluation		100	100	100	100	100		
C20 Weather resistance JIS D 0205 Supplementary sheet 5 of the quality evaluation		*	*	*	*	*		
F19 Oil resistance 13 of KES B-L006 No. 1 oil 100°C 70h Within Changing rate in tensile strength (%) Within Changing rate in elongation(%)		-30	-30	-30	-30	-30		
		-30	-30	-30	-30	-30		

Table 6 (Continued)

Additional Performance								
Test Items	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
Hardness alteration(JIS A) Within changing rate in volume(%)		± 10 -10~15	± 10 -10~15	± 10 -10~15	± 10 -10~15	± 10 -10~15		
E034 Oil resistance (lubrication oil) 13 of KES B-L006 No. 3 oil 100℃70h Within changing rate in tensile strength(%) Within changing rate in elongation(%) Within changing rate in volume (%)		-70 -55 120	-60 -50 100	-45 -30 80	-60 -60 100	-60 -50 100		
F17 Cold resistance 15 of KES B-L006 Remark after 3 min form -55℃		All non- confor- ming	All non- confor- ming	All non- confor- ming		All non- confor- ming		
F19 Cold resistance 15 of KES B-L006 Remark after 3 min. form -55℃					All non- confor- ming			
G21 Tear strength 10 of KES B-L006 B type Tensile strength 70kgf/cm ² In case of (6.86 MPa) less Minimum (kgf/cm ²) (KN/m) Tensile strength 70~105 kgf/cm ²		22 (21.6)	22 (21.6)	22 (21.6)				

Table 6 (Continued)

Test Items	Additional Performance							
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
In case of {6.28~10.30MPa} Minimum (kgf/cm) {KN/m}		26 (25.5)	26 (25.5)	26 (25.5)				
Tensile strength 105 kgf/cm ² In case of {10.30 MPa} more Minimum (kgf/cm) {KN/m}		26 (25.5)	26 (25.5)	26 (25.5)	26 (25.5)	26 (25.5)		
K11 Adhesion strength 9 of KES B-L006 Minimum (kgf/cm) {KN/m}		14 (1.37)	14 (1.37)	14 (1.37)	14 (1.37)	28 (2.75)		25
P Pollution Supplementary sheet 3.2 Antipollution		*	*	*				
Z The other performance	The others performance (including color) will be available to make a rule in all things. In this case, instruct the test method and standard dimension in detail.							

"*" means that this test method shall be available for application but standard dimension is undecided.

Table6 (Continued) Rubber

Basic Performance						
Hardness 6 of KES B-L006 (JIS A)±5	Tensile strength 3 of KES B- L006 kgf/cm ² (MPa)	Elongation 3 of KES B- L006 Minimum(%)	Heat resistance 7 of KES B- L006 70℃70h	Oil resistance (lubricating oil) 13 of KES B-L006	Compression permanent set 11 of KES B- L006 70℃ 22h Maximum(%)	Type No. of using available
					rate of compression permanent set	
40	35(3.43)	500			40	2
40	70(6.86)	500			40	2
50	35(3.43)	350		Changing	40	2
50	55(5.39)	350	Changing	rate in	40	2
50	70(6.86)	400	rate in	volume	40	2
50	105(10.30)	400	tensile	120	40	2and3
50	140(13.73)	400	strength		40	2
			(%) ±30			
60	35(3.43)	300	Changing		40	2
60	55(5.39)	300	rate in		40	2
60	70(6.86)	350	elongation		40	2
60	105(10.30)	350	(%)		40	2and3
60	140(13.73)	350	Within-5		40	2
			0			
70	35(3.43)	200	Hardness		50	2
70	55(5.39)	200	alteration		50	2
70	70(6.86)	200	(JIS A)		50	2
70	105(10.30)	250	± 15		50	2and3
70	140(13.73)	250			50	2

Table 6 (Continued)

Basic Performance						
Hardness 6 of KES B-L006 (JIS A) ± 5	Tensile strength 3 of KES B- L006 kgf/cm ² (MPa)	Elongation 3 of KES B- L006 Minimum(%)	Heat resistance 7 of KES B- L006 70°C 70h	Oil resistance (lubricating oil) 13 of KES B-L006	Compression permanent set 11 of KES B- L006 70°C 22h Maximum(%)	Type No. of using available
70	175 (17.16)	250	Changing rate in	Changing	50	50
80	70 (6.86)	100	tensile	rate in	50	50
80	105 (10.30)	100	strength	volume 80	50	50
80	140 (13.73)	150	(%) ± 30		50	50
80	175 (17.16)	150	Changing		50	50
			rate in		50	50
90	70 (6.86)	100	elongation		50	50
90	105 (10.30)	100	within		50	50
90	140 (13.73)	150	-50		50	50
			hardness		50	50
			alteration			
			(JIS A)			
			± 15			

Table 6 (Continued)

Additional Performance								
Test items	Type1	Type2	Type3	Type4	Type5	Type6	Type7	Type8
A14 Heat resistance 7 of KES B-L006 100℃ 70h Within changing rate in tensile strength(%) Within changing rate in elongation(%) Within hardness alteration (JIS A)		-15 -40 15	-15 -40 15					
B14 Compression permanent set 11 of KES B-L006 100℃ 22h Maximum (%)		25	25					
C12 Ozone resistance 17 of KES B-L006 supplementary sheet 4. A of the quality evaluation		100	100					
C 20 Weather resistance JIS D 0205 Supplementary sheet 5 of the quality evaluation		*	*					
EO14 Oil resistance (lubricating oil) 13 of KES B-L006 No.1 oil 100℃70h Within changing rate in tensile strength (%) Within changing rate in elongation(%)		-30 -30	-30 -30					

Table 6 (Continued)

Additional Performance								
Test Items	Type1	Type2	Type3	Type4	Type5	Type6	Type7	Type8
Hardness alteration(JIS A) Within changing rate in volume(%)		± 10 -10~15	± 10 -10~15					
E034 Oil resistance (lubricating oil) 13 of KES B-L006 No. 3 oil 100℃70h Within changing rate in tensile strength(%) Within changing rate in elongation(%)		-50 -40	-50 -40					
F17 Cold resistance 15 of KES B-L006 Remark after 3 min. from -40℃		All good condit ion						
F19 Cold resistance 15 of KES B-L006 Remark after 3 min. from -55℃			All good condit ion					
G21 Tear strength 10 of KES B-L006 B type Tensile strength 105kgf/cm ² In case of {10.30 MPa} more Minimum (kgf/cm) {KN/m}			26 (25.5)					

Table 6 (Continued)

Additional Performance								
Test items	Type1	Type2	Type3	Type4	Type5	Type6	Type7	Type8
K11 Adhesion strength 9 of KES B-L006 Minimum (kgf/cm ²) (MPa)			24 (2.35)					
Z The others performance	The others performance (including color) will be available to make a rule in all things. In this case, instruct the test method and standard dimension in detail.							

"*" means that this test method shall be available for application but standard dimension is undecided.