KES

Test Standard for Fuel Filler Hoses for Automobiles

KES T – L425

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1. Scope of Application

This standard shall be applied to rubber hose (Called hose hereinafter), which purpose is for connection from fuel injection mouth to a fuel tank used in gasoline and diesel vehicles. (However, it excludes hoses for extraction of air of the fuel tank, control of the pressure resistance of tank, etc.)

2. Purpose of Establishment

The purpose of this standard shall be secure the proper quality due to hose standardization.

3. Kinds

For the kinds of hoses, it is indicated in Table 1 for its structure and use.

Table 1

Kinds and classification		Structure of hose		Use
Kind 1	A	Whole rubber single-layer type	With wrinkles	General
	B		Without wrinkles	Special
Kind 2		Reinforced-center type		Pressure resistant

4. Performance

For the performance of the hose, operate the test as the performance test of 7.2, and it shall be appropriate for specifications in Table 2 and Table 3.

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Table 2

Items			Performance	Main test conditions	Test Method
Per-form-ance test of hose	Pressure resistance	Water pressure test	(1) Ones, which have no abnormalities such as water leakage, partial expansion, etc. (2) Ratio of change of outer diameter shall be less than +10%.	Kind 1 0.049 Mpa {0.5kg f / cm^2} 5min Kind 2 0.196 Mpa {2.0kg f / cm^2} 5min	7.2.1 (1)
		Pressure load test	(1) Ones, which have no defects such as exfoliation, pinches, etc. (2) Ratio of change of outer diameter shall be less than -20%.	-6.66 Kpa {-50mmHg} 5min	7.2.1
	Close adherence	Exfoliation test	More than 11N/cm {1.12kg / cm}	Tensile speed 25.0±1.5mm / min	7.2.2
	Cold resistance	Low temperature test	No occurrence of cracks, etc.	-40±2℃ 5 $^{+0.5}_{0}$ h	7.2.3
	Ozone resistance	Ozone aging test	No occurrence of cracks, etc.	50pphm, 40±2℃ 7 $^{+2}_{0}$ h	7.2.4
	Heat and aging resistance	Compression test	No occurrence of cracks, etc.	100±1℃ 70 $^{+2}_{0}$ h	7.2.5
	Transmittance	Transmittance test	Follow the agreements between sender and receiver.	—	7.2.6
	Extraction	Extraction test	Follow the agreements between sender and receiver.	—	7.2.7
	Deteriorati on resistance against gasoline	Precipitation test	No occurrence of cracks, etc.	Fuel resistance C([3])+2.5 wt% LPO([4]) 40±1℃, 120 $^{+2}_{0}$ h	7.2.8
	Worsening	Tensile test	Follow the agreements between sender and receiver.	Fuel C, 40±1℃ 70 $^{+2}_{0}$ h	7.2.9
	Removal resistance	Seal-up test	Follow the agreements between sender and receiver.	Fuel C, 40±1℃ 70 $^{+2}_{0}$ h	7.2.10

Note ([1]) Pressure resistance is applied only to Kind 1 A and Kind 2 hoses, and for wrinkled hose Kind 1 B, follow the agreements between sender and receiver.

([2]) Close adherence is applied only to middle-reinforced Kind 2 hose.

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(3) Use Fuel C (Isooctane 50 toluene 50 capacity%) specified in JIS K 6301 (Test method for vulcanized rubber physics).

(4) Chemical code of lauryl peroxide.

Table 3

Items			Performance	Main test conditions	Test Method
Physics test of rubber layer	Tensile test	Tensile speed MPa{kg/cm^2}	More than 7.385 {80}	Tensile speed 500±25 mm min	7.3.1
		Strain ratio %	More than 200		
	Hardness test	Hardness Hs	Follow the agreements between concerned parties.	Spring hardness type A	7.3.2
	Aging test	Ratio of change of tensile strength % Ratio of change of strain ratio % Ratio of change of hardness %	Within –15 Within -50 0 ~ +15	100±1℃ 70 $^{+2}_{0}$ h	7.3.3
	Property compression set test	Decrease of property compression set	Follow the agreements between concerned parties.	100±1℃ 70 $^{+2}_{0}$ h	7.3.4
	Precipitation test	Ratio of change of volume %	Below +35	Fuel C 40±1℃ 48+2 $^{+2}_{0}$ h	7.3.5
	Tear strength test	Tear strength KN/m {kg/cm^2}	Above 19.62{20}	JIS type B test sample	7.3.6

5. Size

(1) For the inner diameter and the allowance of the inner diameter and the allowance hose, follow Table 4.

Table 4

Inner diameter	Allowance (6)	Outer diameter of application pipe (Reference)
30.5	±0.5	31.5
33.5		35
37.5		38
41.5		43
43.5		45
47		47.5
49		50.5
52		53.4

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Note ([6]) Allowance only applies to straight parts for insertion of the ends of the hose.

In addition, in case of specifying inner diameter and allowance other than those in the table, follow the agreements between concerned parties.

(2) For the thickness and the allowance of the thickness and the allowance hose, follow Table 5.

Table 5

Kinds	Thickness	Allowance ([7])
Kind 1	3.5	±0.5
	4.0	
	4.5	
	5.0	
Kind 2	4.0	
	4.5	

Note ([7]) Allowance only applies to straight parts for insertion of the ends of the hose.

For the thickness of the bent parts and middle straight parts, follow the agreements between concerned parties.

In addition, in case of specifying thickness and allowance other than those in the table, follow the agreements between concerned parties of sender and receiver.

(3) Allowance of length

Follow Table 6 for the allowance of the length of the hose. However, for the allowance of the hose longer than 500mm, follow the agreements between concerned parties of sender and receiver.

Table 6

Length	Allowance ([8])
Less than 100	+6 0
More than 100 less than 200	+8 0
More than 200 less than 300	+10 0
More than 300 less than 500	+12 0

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