KES

Testing Method of Air Control Hose

KES T – L123

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Additional Rule

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1. Scope of Application

This standard shall regulate an air-control hose (hereinafter referred to hose) used in a system such as a pollution control equipment ([1]) and a vacuum control in a car.

Note ([1]) : Pollution control equipments such as an air-injection equipment (AI equipment), a secondary air supply equipment, and a blow by gas restoration equipment.

2. Kinds and Construction

See Table 1 for kinds, construction, and classification of use.

Table 1

Kinds	Symbol of material	Construction	Classification of use					
			Oil resistance		Heat resistance temperature (°C)			Condition to use
			Yes	No	100	120	130	
1st kind DA	R-DA710-Y121	Single layer hose		O			O	Place with non-extreme a use environment
1st kind CG	R-CG610-Y121		O			O		
1st kind BG	R-BG607-Y121		O		O			
2nd kind DG	R-DG710-Y122	Two-layer hose of inner and outer surfaces	O				O	Place with extreme a use environment
2nd kind BG	R-BG710-Y122		O		O			

Remark 1. Symbol of material is regulated by TES K 032 (Non-metal symbol of material)

2. It is possible to use within a performance range regulated by KES T-L154

(Testing method for fuel-oil resistance rubber hose)

3. Performance

The performance of the hose is tested by the testing method in 7.1.1 ~ 7.1.6.

It shall be suited for regulations in Table 2.

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Table 2

Test Items		Standard size					Testing method
		1st kind DA	1st kind CG	1st kind BG	2nd kind DG	2nd kind BG	
Pressure resistance	Water pressure • 1st kind 0.5 kgf / cm^2 • 2nd kind 1 kgf / cm^2	No defects such as leakage, partial swelling, etc.					7.1.1
	Explosion kgf / cm^2	More than 1			More than 3		
	Buoyancy ([2]) rate of change of outer diameter %	Less than –20					
State of factors	Bend-ability • 300 ± 20 cpm • 2 × 10^6 times	No defects such as cracks, leakage, etc.					7.1.2
	Drawn-ability kgf	More than 5					
	Cover swelling resistance	—	No swelling on the cover				
Bend-ability (Shape of crushing a bending hose outer diameter)		Within an allowance of shape of crushing in Table 4					7.1.3
Heat and aging resistance • Regulated temperature × 200 h • (100°C, 120°C, 130°C)		No defects like outbreak of cracks, etc.					7.1.4
Cold resistance -40 ± 1 °C							7.1.5
O_3 resistance 100 ± 5pphm × 75 h							7.1.6

Note ([2]) : Testing condition for the buoyancy of the hose is –250 mmHg × 75 sec.

Remark 1. If impossible to perform the regulated test with a bended hose, it is alright to use a straight hose.

2. Necessary change of standard values, testing method or addition, etc. of the test items for the performance is possible.

4. Physical Test

The physical performance of material of the hose is tested by the testing method in 7.2.1 ~ 7.2.7.

It shall be suited for regulations in Table 3.

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Table 3

Test items		Standard value							Testing method
		1st kind DA	1st kind CG	1st kind BG	2nd kind DG		2nd kind BG		
					Inner rubber	Outer rubber	Inner rubber	Outer rubber	
Heat resistance testing temperature (K) °C		130	120	100	130		100		—
Hardness (JIS A) (Hs)		70 ± 5	65 ± 5(3)	60 ± 5	70 ± 5	60 ± 5	70 ± 5	60 ± 5	7.2.2
Tensile Strength (kgf / cm²)		More than 100	More than 100	More than 70	More than 100	More than 70	More than 100	More than 70	7.2.3
Strain rate (%)		More than 250							
Permanent compressive strain (K × 70h) %		Within 80	Within 80	Within 80	Within 80	Within 80	Within 60	Within 80	7.2.4
Heat resistance (K × 70 h)	Change of hardness (Hs)	0 ~ 15	0 ~ 15	0 ~ 15	0 ~ 15	0 ~ 15	0 ~ 15	0 ~ 15(4)	7.2.5
	Rate of change of tensile strength (%)	± 30	± 30	± 30	± 30	± 30	± 30	± 30(4)	
	Rate of change of strain rate (%)	Within -60	Within -50	Within -40	Within -60	Within -60	Within -40	Within -50(4)	
Special heat resistance (K × 200 h)	Hardness (Hs)	Less than 85	Less than 85	—	Less than 85	Less than 85	—	—	
	Strain rate (%)	More than 100	More than 100	—	More than 100	More than 100	—	—	
Fuel-oil resistance {30 °C × 70 h But, rate of volume change 30 × 70 h}	Change of hardness (Hs)	—	-40 ~ 0	-40 ~ 0	-40 ~ 0	—	-40 ~ 0	—	7.2.6
	Rate of change of tensile strength (%)	—	-60 ~ 30	-50 ~ 30	-60 ~ 30	—	-50 ~ 30	—	
	Rate of change of strain rate (%)	—	Within -50	Within -50	Within -50	—	Within -50	—	
	Rate of volume change (%)	—	0 ~ 40	0 ~ 35	0 ~ 40	—	0 ~ 35	—	
Oil resistance (100 °C × 70 h)	Rate of volume change (%)	Within 200	-5 ~ 25	-5 ~ 25	-5 ~ 25	0 ~ 100	-5 ~ 25	0 ~ 100	7.2.7

Note (3) : Relationship of establishment of hardness during improvement is a special designation.

(4) : When relating to KES T-L154, the standard value of the heat resistance test temperature is 120 °C.

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