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KES

Test Method of Heater Hose for Automobile

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1. Scope of Application

This standard shall regulate Heater Hose (Called as Hose hereinafter) used in cooling system of internal combustion engine for automobile and heating system of automobile.

Remark Unit value indicated by put { } out of this standard is written additionally as reference in SI.

2. Purpose of Establishment

This shall intend to promote confirmation of appropriate quality with standardization of Hose.

3. Kinds and Structure

Kinds of Hose is divided by the structure in table 1.

Table 1

Kinds	Structure
1 kind	Whole rubber type (Whole rubber Hose not having reinforced layer)
2 kind	Outer reinforced type (Thing having reinforced layer at outer surface of hose)
2 kind	Middle reinforced type (Thing having reinforced layer at the middle between inner surface rubber and outer surface rubber)

4. Performance

Hose should execute test by test method of 7 and should be suitable for regulation of table 2.

5. Shape and Dimension

- 5.1 Let shape of shaped hose straight pipe and curved pipe.
- 5.2 Inner diameter and tolerance of hose shall conform to table 3.

5.3 Thickness and tolerance of hose shall conform to table 4.

6. Appearance

Inner diameter and thickness of hose should be uniform and inner surface of it should be flat and flexible and shouldn't have harmful flaw at using, bubble, other defect.

Table 2

Section	Contents					Regulation	Test condition	Method contents	
Performance	Water pressure	Changing rate of outer Dia.	1 kind	Inner Ø 44 and less than	Less than 15	1kgf/cm ² { 98 kpa }	7.1.1		
				Inner Ø 44 and more than (2)	—	—			
			2 kind	Inner Ø 44 and less than	Less than 15	5kgf/cm ² { 490 kpa }			
				3 kind	Inner Ø 44 and less than	Less than 15		1kgf/cm ² { 294 kpa }	
		Break	Break pressure Kg f / cm ² { kpa }		1 kind	Inner Ø 44 and less than		More than 2{196}	
				Inner Ø 44 and more than (2)		—		—	
				2 kind	Inner Ø 44 and less than	More than 8{784}		—	
					3 kind	Inner Ø 44 and less than		More than 6{588}	—
	Negative pressure		Inner φ 44 and more than (3)			No harmful defect at using of problem, distortion, deformation and etc	-100mmHg×500 { -13.33kpa × 5 min }	7.1.3	
			Inner φ 44 and more than (3)			—	—		
	Handling repetitive pressurization vibration		Outer Dia.	2 kind 3 kind	—	No harmful defect at using of break, partial bubble and etc	Table 5	7.1.4	
			Changing rate of Outer Dia. %			Less than 10			
	Adhesive quality		Peeling strengthkg f / cm ² (Mpa) (Limited at 3 kind) { N / cm }			More than 1{9.8}	25 min / min	7.1.5	
	Heat aging quality		—			No problem of crack and etc	120 ± 1 °C × 70h	7.1.6	
	Resistance to low temperature (5)		—				Table 6	7.1.7	
	Resistance to ozone		—				Table 7	7.1.8	
Physical Performance	Tensile strength kg f / cm ² { MPa }				Less than 80 { 7.85 }	—	7.2.1		
	Elongation %				Less than 300				
	Hardness H ₂				60 ~ 75	Spring hardness A type	7.2.2		
	Resistance to aging	Changing rate of tensilelength %			Less than – 30	120 ± 1 °C × 70h	7.2.3		
		Changing rate of elongation %			Less than – 50				
		Change of hardness HS			0 ~ 20				
	Resistance to liquid	Resistance to liquid %			Less than – 25	Boiling point × 70h	7.2.4		
		Resistance to liquid %			- 5 ~ 10				
	Resistance to oil		Resistance to oil %			Less than 100	100 ± 1 °C × 70h	7.2.5	

Note (1) Depressurization speed of resistance to pressure and depressurization speed shall conform to agreement between concerned parties.

(2) Water and breaking pressure of inner Dia. more than Ø 44 of 1 kind shall conform to agreement between concerned parties.

(3) Negative pressure of inner Dia. more than Ø 44 shall conform to agreement between concerned parties.

(4) Durability shall be executed with 2 kind and 3 kind.

(5) Resistance to low temperature forward limitation shall conform to agreement between concerned parties.