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KES

Floor Mat

KES D – C212

(EST.) 1991 – 07 – 08 

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1. Purpose

This standard shall intend to ensure adequate quality through standardizing specification.

Remark : This standard shall transfer requirements of our company with specific drawing.

2. Scope of Application

This standard shall regulate floor mat for car (hereinafter called as “mat”).

3. Report of Evaluation Result

Should submit quality evaluation result for each step from development to mass production to KIA according to instruction of appended document.

4. Definition of Terms

(1) Overlock

Sewing treatment of end part of mat to improve appearance.

(2) Back cushion material

Cushion material like felt or urethane ,which is fixed to back part of mat in order for sound absorption, seating and etc

(3) Magic tape

Tape, which has contacting surface of hook and loop type used for fixing of mat or preventing turnup of mat and is able to attach and separate easily.

(4) Sidehook

Hook, which is inserted to body flange part in order to fix mat or prevent slip of mat.

(5) Stapling

Method, which inserts metallic staple and bends it so fixes magic tape, sidehook and etc.

(6) Heel pad

Chloride vinyl plate, which attaches to part that end of foot contacts to prevent that mat wears out or is caught by shoes.

(7) Toe pad

Chloride vinyl mat, which attaches to part that end of foot contacts to prevent that mat wears out or is caught by shoes.

(8) Foot rest pad

Chloride vinyl mat, which attaches to foot rest part to prevent that mat wears out or is

caught by shoes.

(9) Gap, fold, winding and etc

Change of gap/fold, winding and plait clarified in KES D-G008.

(10) P-VC

Chloride vinyl resin clarified in KES B-N004.

5. Indicative Specification on Drawing

- (1) Requiring code of KES D-G008 (specification)
- (2) Figure of “Car installing condition” of KES D-G008
- (3) Area indicative drawing of “effective surface” of KES D-G008
- (4) Measuring point of each test clarified with “Should be indicated on drawing” by KES D-G008
- (5) Part color
- (6) Evaluation standard of gap, fold, winding and etc
- (7) Material composition
- (8) Thickness of plate to which side hook is fixed
- (9) At using urethane, evaluation method and whole density about physical property of back cushion material (Nominal density, compressive strength, tensile strength, elongation, break strength, impact stiffness and deformation induced by compression)
- (10) Measuring point about loose of mat

6. Standard of Evaluation

Evaluation standard of mat shall conform to table 1.

Remark 1. Method to read evaluation item and evaluation method of table 1 shall be same as following examples.

Evaluation item			Evaluation method	
Durability	Vibration	1st Evaluation	7.5.1	1 st Evaluation method
	• Operating force of slider	2nd Evaluation (Evaluation item carried out after vibration durability evaluation)	• 7.3.1	2 nd Evaluation method
	.. Noise	3rd Evaluation (Evaluation item carried out after operating force evaluation)	.. 7.3.7	3 rd Evaluation method

Remark 2. Quality rank shall be represented with A, AR, B or C.

The definition shall conform to KMS QA-002 (Determination and application of quality rank)

Table 1

Evaluation item			Evaluation standard	Quality rank	Evaluation method
Appearance	Color of parts		(1) Should satisfy color state clarified on drawing (2) Should conform to allowable standard color plate offered by Kia	B	KS A 0065
	Contamination of surface or impurity		(1) Should be no contamination or impurity (2) Or should satisfy minimum allowable sample.	B	Eye check
	Joining quality, size, shape and surface plait or winding		(1) Should be no problem on mat fixed to test platform (2) Or should satisfy minimum allowable sample.	B	Eye check
	Loose of mat		(1) At using felt as back cushion : Less than ±5 mm (2) At using urethane as back cushion : Less than +5 -2 mm (3) Without back cushion : Less than +5 0 mm	B	7.2.1
Resistance to environment	Short term resistance to heat	Gap, fold, winding and etc	Should satisfy standard clarified on drawing	B	KES D-G008
	Loose of mat		Should be no harmful deformation	B	•7.2.1
	Resistance to cold	Gap, fold, winding and etc	Should satisfy standard clarified on drawing	B	KES D-G008
	Long term resistance to heat	Gap, fold, winding and etc	Should satisfy standard clarified on drawing	B	KES D-G008
	Loose of mat		Should be no harmful deformation	B	•7.2.1
	Resistance to heat impact	Gap, fold, winding and etc	Should satisfy standard clarified on drawing	B	KES D-G008
	Loose of mat		Should be no harmful deformation		•7.2.1
	Resistance to chemicals		Should satisfy standard clarified on drawing	B	KES D-G008
	Resistance to radiation				
	Resistance to burning	Initial	Should satisfy standard clarified on drawing	AR	KES T-L022
	After aging				

Table 1 (Continue)

Evaluation item		Evaluation standard	Quality rank	Evaluation method
Strength and stiffness	Exfoliation strength of heel pad, toe pad and foot rest pad	(1) More than 3 kgf {29.4 N} at edge (2) More than 1.5 kgf {14.7 N} at part except for edge	B	7.3.1
	Side hook	(1) P1 ≧ 8 kgf {78.4 N} (2) P2 ≧ 1.5 kgf {14.7 N} (3) P3 ≧ 10 kgf {98 N}	B	7.3.2
	Separating strength between hook of magic tape and loop side	More than 0.25 kgf {2.45 N}	B	7.3.3
	Adhesive quality of back cushion material	(1) More than breaking force of material (2) Should be no boundary break	B	7.3.4
	Fixing strength of stapling	More than 4 kgf {39.2 N}	B	7.3.5
	Resistance to exfoliation between top cover of back surface and P-VC	More than 3 kgf {29.4 N}	B	7.3.6

Table 1 (Continue)

Evaluation item				Evaluation standard	Quality rank	Evaluation method
Physical property of surface material	P-V C	Hardness	Foam	80 ± 5°	B	7.4.1
			Foamless	More than 50 °		
		Tensile strength	Vertical	More than 30 kgf/cm² {2.94 MPa}	B	7.4.2
			Horizontal	More than 25 kgf/cm² {2.45 Mpa}		
		Elongation		More than 100 %		
		Tensile break strength		Should satisfy standard of table 2	B	7.4.3
		Heat reduction		Less than 0.9 %	B	7.4.4
		Resistance to corrosion	Foam	A method : Less than 400 mg	B	7.4.5
			Foamless	A method : Less than 200 mg		
		Heat shrinking	Vertical	-0.35 ~ 0%	B	7.4.6
			Horizontal	0 ~ + 0.2 %		
		Color confidence for dry fiction		(1) Deformation should be less than 4 th rank gray sale	B	7.4.7
		Color confidence for sweat rub		(2) Discoloration of white surface should appear rarely		
		Non-adhesion		Should be no conspicuous damage except for extremely small defect	B	7.4.8
		Carpet		(1) Clarified on drawing should be satisfied with standard of KES B-P003 (2) Carpet material clarified on drawing should be satisfied with standard of KES B-P001	B	KES B-P003 KES B-P001

Table 1 (Continue)

Evaluation item			Evaluation standard		Quality rank	Evaluation method
Physical property of back cushion material	Felt	Density		More than 0.04 g/cm ³	B	7.5.1
		Tensile strength	Vertical	More than 0.05 kgf/cm ² {4.9 kPa}	B	KS K 3703
			Horizontal			
		Water contained quantity		Less than 10 %		JIS L 3203 JIS L 3204
		•Heat loss		Less than 15 %	B	•7.5.2
	Urethane	Whole density		Should satisfy standard clarified on drawing	B	KS M 6518
		Compressive strength			B	KS M 6549
		Tensile strength			B	KS M 6518
		Elongation			B	KS M 6518
		Resistance heat strength			B	KS M 6518
		Impact elasticity			B	KS M 6572
		Permanent deformation by compression			B	KS M 6549
		Heat conductivity		0.035 ± 0.005 kcal/m ² h ² °C {0.041 ± 0.006 W/m ² K}	B	KS F 2265
		After heat aging, 70 °C, 400 h	Elongation	More than 100 %	B	KS F 6518
			Tensile break strength	More than 0.6 kgf/cm {5.9 N}	B	KS F 6518
		After heat aging, 38%, 50°C, 400h	Elongation	More than 100 %	B	KS F 6518
			Tensile break strength	More than 0.6 kgf/cm {5.9 N}	B	KS F 6518
		Smoke, smell, toxic scent		Should be no smoke, smell, toxic scent	B	7.6.1

Table 2 Evaluation standard of P-VC tensile breaking strength

		Thickness (mm)						
		1.0	1.3	1.6	2.0	2.5	3.0	More than 3.5
Foam	Vertical	More than 3.0 {29.4}	More than 3.9 {38.2}	More than 4.8 {47.2}	More than 6.0 {58.8}			
	Horizontal	More than 2.0 {19.6}	More than {32.3}	More than 4.0 {39.2}	More than 5.0 {49.0}			
Foam-less	Vertical				More than 2.5 {24.5}	More than 4.0 {39.2}	More than 5.5 {53.9}	More than 6.0 {58.8}
	Horizontal				More than 2.0 {19.6}	More than 3.0 {29.4}	More than 4.0 {39.2}	More than 5.0 {49.0}

7. Evaluation Method

7.1 Common evaluation condition

7.1.1 Standard condition of test place

As far as no special assignment, make condition standard temperature 20 °C, rank 15 (20 ± 15 °C), standard humidity 65 %, rank 20 (65 ± 20 %), 1 atm of KS A-0006 (Standard condition of test place).

7.2 Apparent quality

7.2.1 Loose of mat

(1) Fix a mat to test platform like figure 1.

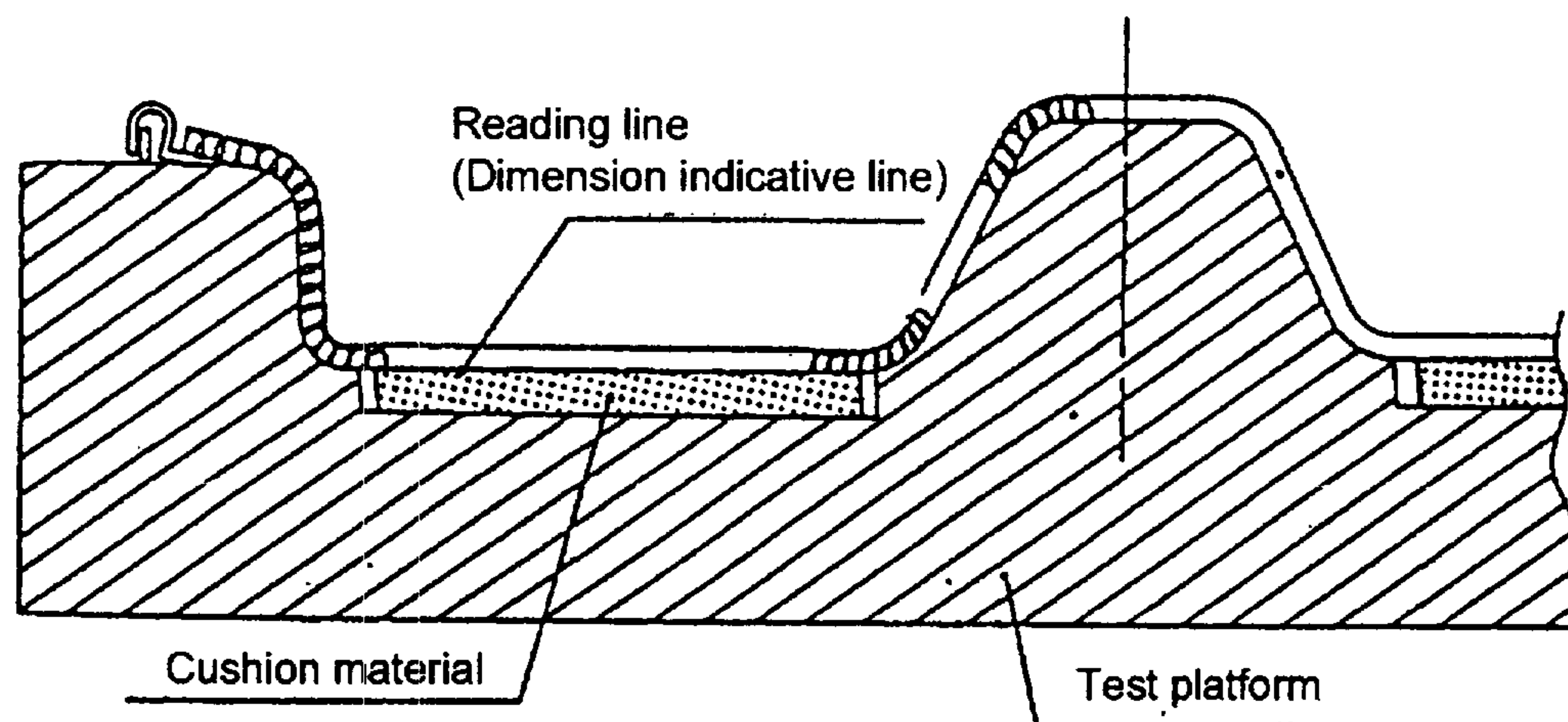


Figure 1

(2) Read loose of mat at measuring point indicated on drawing.

(3) Do not push cushion or top cover and read loose by using instrument like scale.

7.3 Strength and stiffness

7.3.1 Exfoliation strength of heel pad, toe pad and foot rest pad

(1) Specimen

Cut specimen from part except for part attached to mat of edge side and edge.

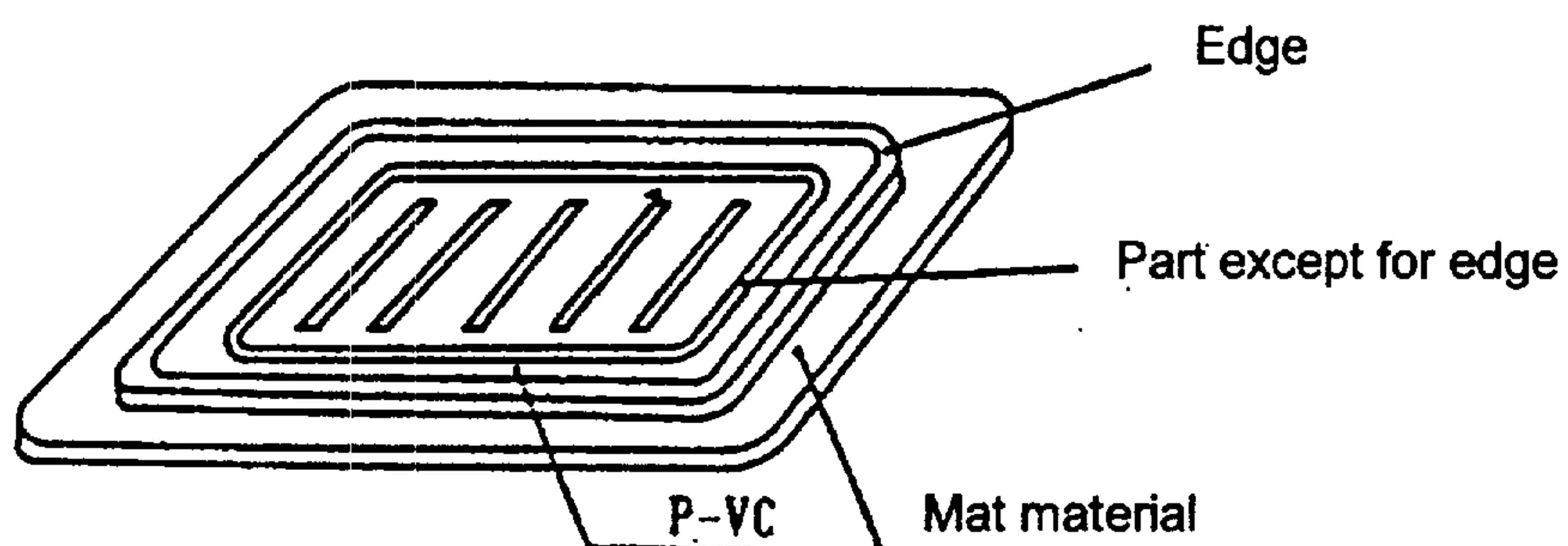


Figure 2