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PAKISTAN STANDARD

SAFETY RAZOR BLADES (DOUBLE EDGE)



**PSQCA Complex, Standardization Wing, 1st Floor, Plot-ST-7/A, Block-3, Scheme No.36,
Gulistan-e-Jauher, Karachi.**

PAKISTAN STANDARD

FOR:

SAFETY RAZOR BLADES (DOUBLE EDGE)

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**PAKISTAN STANDARD SPECIFICATION
FOR
SAFETY RAZOR BLADES (DOUBLE-EDGE)**

0. FOREWORD

This Pakistan Standard has been adopted by the Authority of the Pakistan Standards & Quality Control Authority, (National Standards Body of Islamic Republic of Pakistan), after the draft prepared by the Mechanical Technical Committee (MTC-01) for “Small Scale Industrial Products” which has been approved and endorsed by the National Standards Committee on Mechanical on 28.02.2017

- 0.1** This Pakistan Standard No.219 was first laid down in 1979 and was revised in 1981, 1988. 1992 and 1993 respectively. Now it has been revised to accommodate the latest technology and technical know-how.
- 0.2** The following standards have been consulted which are acknowledged with thanks.
- i) CG-R-0060a(GSA-FSS) /for Razors, Safety and Blades Razors,
 - ii) CAS No.5-36/, Safety Razors Blades
 - iii) PS-ISO: 2859/1/1999-Sampling Procedure for Inspection by attributes.
 - iv) Data / Diagram provided by M/s Treet Corporation Ltd, Lahore & Gillette Pakistan
 - v) ISO 3951- Sampling procedures for inspection by variables
- 0.3** This revised version of PS: 219 has been adopted after taking into consideration the views and the suggestions of manufacturers, specialists, technologists and utilizing agencies. It is hoped that user will find it well in line with the technical barriers to trade agreement (WTO/TBT).
- 0.4** This Standard is subject to periodical review in order to keep pace with the development in technology. Any suggestion for improvement will be recorded and placed before the Sectional Committee in due course.
- 0.5** This Standard is intended chiefly to cover the technical provisions related to the manufacturer and supply of the material and it does not include all the provisions of a contract.

1. SCOPE

1.1 This Standard sets out requirements for the types of razor blade as follows:

- a) Carbon steel type;
- b) Stainless Steel type.

2. Shape, dimensions and tolerances.

2.1 The shape and dimensions of Razor blade shall be as shown in Figure-1.

2.2 Tolerances

2.2.1 The finished half width of the blade & tolerances thereon shall be specified by the manufacturer.

2.3 Length

2.3.1 The Length of the blade shall be 37.00 ± 0.15 mm.

2.4 Width

2.4.1 The Width of the blade shall be measured by leaving 2mm at each corner as shown in the figure or by any other similar measuring means keeping in view the delicacy of the blade edges.

3. Material

[Vide Table -3: Chemical Composition:](#)

4. Sampling Procedure (PS-ISO:2859/1/1999- Sampling Procedure for inspection by Attributes)

- 4.1 **Lot** – In any consignment, all the blades of the same type and manufactured from the same material under essentially similar conditions of manufacture shall be grouped together to constitute a lot.
- 4.2 **Sampling Plan (ISO 3951- Sampling procedures for inspection by variables)** – A sampling plan indicates the number of units of products from each lot or batch which are to be inspected (sample size or series sample sizes) and the criteria for determining the acceptability of the lot or batch (acceptance and rejection numbers)-Table-2.
- 4.3 **Inspection Level** – The inspection level determines the relationship between the lot or batch size and the sample size. The inspection level to be used for any particular requirement will be prescribed by the responsible authority. Three inspection levels I, II and III are given in table 1 for general use. Unless otherwise specified, inspection level II will be used with an acceptance quality level (AQL) as shown in table 2.
- 4.4 **Code Letter** – Sample sizes are designated by code letters table No.2 shall be used to find the applicable code letter for the particular lot or batch size and the prescribed inspection level.
- 4.5 **Obtaining sampling plan** – The (AQL) and the code letter shall be used to obtain the sampling plan from table 2.

5. Tests

5.1 Perforation alignment pattern

The perforation alignment pattern shall be of type which enables the blade to be fitted to the normal types of double edged safety razors available in the market. This alignment pattern shall cater for the bar pin or end located styles.

5.2 **Symmetry** – In each type of blades, the perforation when tested in accordance with the requirements, of clause A-1 of Appendix-A shall be symmetrical about the longitudinal axis of the finished blade to within 0.22 mm.

5.3 **Heat treatment** – The steel strips shall be suitably heat treated to make sharp and durable edges of the blades. The hardness of the blade after chemical coating **should be from:**

a) Carbon steel blades – **500** HV after coating;

b) Stainless Steel blades – **550** HV after coating.

5.3.1 The blades shall be tested for hardness on Vickers hardness tester and/or mini-load hardness tester in accordance with the method given in clause – A-2.

5.4 Nicks when examined in accordance with the method given in clause A-3 the blades shall average not more than three nicks per blade edge of a size larger than 0.01 mm. The distance between the nicks shall be no less than 6.3 mm.

5.5 **Straightness and parallelism of cutting edges** – When checked on top of the cutting edge along the full length of the blade, each cutting edge shall be straight to within 0.040 mm. The two cutting edges of the double –edge blade shall be straight and parallel to within 0.080 mm so that when measured at the two ends and at least three intermediate positions, there shall not be a variation in excess of 0.080 mm in the maximum and minimum perpendicular measurements between the two cutting edges as per clause 2.4.1.

- 5.6. **Shaving performance** – When tested in accordance with the requirements of clause A-5.
- a) Carbon steel blades shall give an average of two satisfactory shaves per blade.
 - b) Stainless steel blade give an average of four satisfactory shaves per blade.
6. **Flexibility** – The blade shall have an approved flexibility and when tested in accordance with the requirements of clause A-6. They shall not crack or break.
7. **Surface Treatment** – Each carbon steel blade shall be given appropriate surface treatment.
- NOTE – If the lot No. is not applied o the blade itself, it shall be supplied on the wrapper, tuck or carton.
- 7.1. **Printing** – Each blade shall be neatly printed/etched with the brand name with side indication.
- 7.2 **Additional blade edge treatment** – The blades may receive additional treatment in the cutting edge area to improve smoothness and life.
8. **Protective Coating** – Before packing each blade shall receive a thin protective coating of the approved mineral oil or plastic compound or any suitable chemical.
9. **Packing and marking** – Each blade shall be packed as follows:
- a) **First wrapping** – The blade shall be completely wrapped in an approved wax impregnated paper.
 - b) **Outer wrapping** – This shall be in a suitable printed wrapper bearing the following information:-
 - i) Type of blade.
 - ii) Brand name.
 - c) **Protection of cutting edges** – The blades shall be so packed that no cutting edge makes contacts with any surface of the packing material.
 - d) **Packets** – The blades be packed in containers permanently and indelibly marked on the outside with the information required as below:-
 - i) Name or Trade Mark of the manufacturer and country of origin.
 - ii) Type of blade
 - iii) Information for use (where applicable)
 - iv) Quantities.
- 9.1 Packet may also be marked with the PSQCA-SDC Certification Mark.

APPENDIX - A

A. General

Before proceeding with the following tests, examine the blades and containers for compliance with the requirements of clause 2, 5.1, 5.5, 7, 8 and 9.

A.1 Method of test for symmetry

A.1.1 Procedure

- i) Place the finished blade after punching in an approved jig and apply the measuring pin of fixed dial gauge to one end.
- ii) Reverse the finished blade blank in the jig and apply the dial gauge to the opposite edge. The difference between the two readings is the lack of symmetry.

A.2 Hardness Test

- i) **Equipment:** A Vickers hardness tester/or mini load hardness tester or any other equivalent.
- ii) **Procedure:** Use one kg or 0.50 kg load for testing the hardness of blade.

A.3 Nick Test

- A) **Apparatus:** A one hundred power microscope equipped with a field micrometer eye-piece with 0.01 mm graduations.
- B) **Preparation:** Oil, grease, protective film and lint shall be removed from the cutting edges of the blade by suitable means which will not damage the blade edge. The blade edge shall then be placed in the microscope field and adequately illuminated for clear vision.
- C) **Measurement**
 - i) Measure the distance between nicks for compliance with the requirements of clause 5.4.
 - ii) Nicks greater than 0.01mm in any direction shall be counted and the number of nicks in the sample shall be divided by the number of blade edges in a blade examined. If the average number of nicks per edge is greater than 3, the blade shall be considered as defective, however that is position of the lot is liable rejection based on sampling plan as per clause 4.

A.4 Method of test for facet angles.

Remove all the plastic, lacquer and oil coatings, then place the blade in an approved goniometer and measure the facet angle during process.

A.5 Shaving Test.

- i) **General.**
 - a) The test shall be carried out by minimum **02 & 04 persons for Carbon Steel and Stainless Steel blades respectively.**
 - b) The test shall be carried out on 24 \pm 4 hour old human stubble.

- ii) **Procedure.**

The blade shall be fitted to a standard safety razor and the operator shall shave in **a** usual manner using shaving cream, **gel or foam** with **normal** warm water.

iii) **Expression of results.**

The operators shall continue shaving with the blade each day until they feel that the blade started giving un-satisfactory shave. The average number of shaves shall be determined by dividing the number of satisfactory shaves by the number of operators performing the test. The number of operators shall be between 5 to 10 persons.

Criteria.

Carbon steel blade - minimum 2 satisfactory shaves.

Stainless steel blade – minimum 4 satisfactory shaves.

Note – Carbon Steel and stainless steel blades should be tested on person habitual to that particular type of blade.

A-6 FLEXIBILITY TEST

(A) **Procedure** – The blades shall be bent around smooth steel bars in accordance with the following requirements:

<u>DIRECTION OF FLEX</u>	<u>DIAMETER OF BAR</u>
A long the “long axis”	38 mm
A long the “short axis”	32 mm

No crack or Bending or Cracking occurs after bend test.

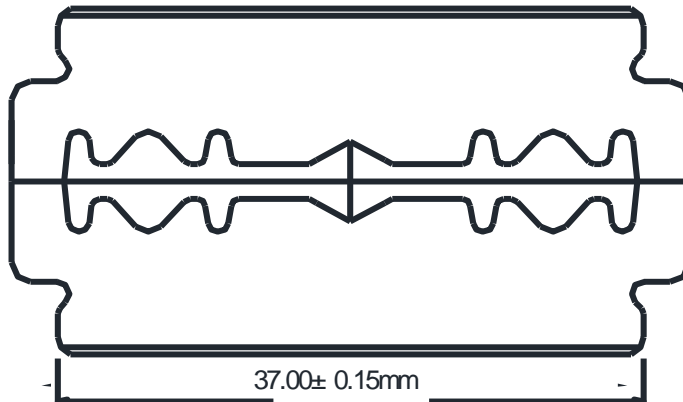


FIG-1

Width & thickness of the blade should be specified by the manufacture.

TABLE – I**SAMPLE SIZE CODE LETTERS**

Lot of batch size			Special Inspection level				General Inspection levels		
			S-1	S-2	S-3	S-4	I	II	III
2	to	8	A	A	A	A	A	A	B
9	to	15	A	A	A	A	A	B	C
16	to	25	A	A	B	B	B	C	D
26	to	50	A	B	B	C	C	D	E
51	to	90	B	B	C	C	C	E	F
91	to	150	B	B	C	D	D	F	G
151	to	280	B	C	D	E	E	G	H
281	to	500	B	C	D	E	F	H	J
501	to	1200	C	C	E	F	G	J	K
1201	to	3200	C	D	E	G	H	K	L
3201	to	10000	C	D	F	G	J	L	M
10001	to	35000	C	D	F	H	K	M	N
35001	to	150000	D	E	G	J	L	N	P
150001	to	500000	D	E	G	J	M	P	Q
500001	and	over	D	E	H	K	N	Q	R

Table 3 — Single sampling plans for normal inspection

Sample size code letter	Acceptance quality limit, AQL, in percent nonconforming items and nonconformities per 100 items (normal inspection)																													
	0.10	0.15	0.25	0.40	0.65	1.0	1.5	2.5	4.0	6.5	10	15	25	40	65	100	150	250	400	650	1000									
A	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
B	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
C	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
D	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
E	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
F	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
G	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
H	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
J	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
K	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
M	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
N	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
P	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Q	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
R	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46

↘ = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100 % inspection.
 ↗ = Use the first sampling plan above the arrow.

Ac = Acceptance number

Re = Rejection number

TABLE -- 3

CHEMICAL COMPOSITION.

Carbon Steel Strip For Double Edge Blades					
c	si	Mn	Cr	s	p
1.20~1.30%	0.15~0.30%	0.30~0.35%	0.40~0.55%	0.0257%(Max)	0.025%(Max)
Stainless Steel Strip For Double Edge Blades					
c	si	Mn	Cr	s	p
0.65~0.70%	0.20~0.50%	0.80%(Max)	12.50~13.70%	0.025%(Max)	0.025%(Max)