

DIRECTORATE GENERAL, CRPF  
BLOCK NO. I. CGO COMPLEX. LODHI ROAD. NEW DELHI-03  
(Bharat Sarkar/Grih Mantralaya)  
Tele-011-24360155/Fax-011-24360155)

No.L.VI1-3/2021-22-Prov-DA-5

Dated, the 27/11/2024

**Expression Of Interest Notice**

Tender No.	No.L.VI1-3/2021-22-Prov-DA-5
Publish Date	28th November, 2024.
Last date of submission	13 <sup>th</sup> December, 2024

**Description of the item** •• Expression of interest for procurement of "Shock Shield"

In CRPF.QRs/Specifications at Directorate General, CRPF, Lodhi Road, New Delhi vide No. L.VII-3/2021-22-Prov-DA-5 dated 27<sup>th</sup> December, 2024, last date of receipt is 13<sup>th</sup> December, 2024 at 1600 hrs. [E-mail: digprov@crpf.gov.in](mailto:digprov@crpf.gov.in) Fax: 24360155 as per details given at attached proposal.

Attachments:-Copy of EOI, copy of draft QRs/Specifications of the subject item.

  
DIG (Prov) Dte.

**'EXPRESSION OF INTEREST'**

CRPF is in a process of framing of revised QRs for "Shock Shield".

2. The draft QRs/Specification of above items are attached herewith.
3. The firms/parties dealing in subject matter are invited to submit their views on the draft QRs/Specification by 13/12/2024, 1600 hrs ( 13<sup>th</sup>December, 2024).

Contact Person:-

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**REVISED QUALITATIVE REQUIREMENTS/ TRIAL DIRECTIVES OF SHOCK SHIELD**

<b>SL No</b>	<b>Name</b>	<b>QR Specifications</b>		<b>Trial Directives</b>
1.	<b>Nomenclature</b>	Shock Shield		To be Checked by B.O.O/ Line Committee
2.	<b>Uses</b>	Shock Shield shall be used by troops during their deployment in Riot or Riot like situations. It is a Non-Lethal Equipment to provide deterrence for self - defence against violent rioters/agitators.		
3.	<b>Colour</b>	Should be colourless		To be check by BOO/ Line committee
4.	<b>Transparency</b>	Minimum 85%		
5.	<b>Operating/ Storage Temperature</b>	- 20°C to + 50°C		Certification from a Valid NABL accredited Lab
6.	<b>Water resistance for Electric parts</b>	IPX4 or above		
7.	<b>Weight</b>	4,500 gms (Maximum)		
8.	<b>Shape</b>	Rectangular or any other shape providing maximum protection to the user		To be check by BOO/ Line committee
9.	<b>Dimensions</b>	Length	<b>920 ± 20 mm</b>	
		Breadth (Flat)	560 mm to 600 mm	
		Breadth (Concave)	<b>600 mm to 620 mm</b>	
		Thickness	03 mm (Minimum)	
10.	<b>Polycarbonate Material requirements</b>	(i) The polycarbonate sheet shall be made of high impact resistant/ natural polycarbonate material <b>with IS 14434:1998</b> . It may contain additives, processing aids and stabilizers (for example UV absorbers).		

<u>SL No</u>	<u>Name</u>	<u>QR Specifications</u>				<u>Trial Directives</u>
		(i) The PC Sheet material shall comply with the requirements as below:-				Certification from any Valid NABL accredited Lab for the test conducted as per IS specified at column-4 with results as per values shown in column-3 (a), (b), (c), (d) & (e) of the table at SI No 10 .
		<b>Sl. No</b>	<b>Characteristics</b>	<b>Requirement</b>	<b>Method of test, Ref to IS/Annx</b>	
		(a)	<b>Melt Flow Index</b> , gram/10 min. (at 300°C under 1.2 Kg load when measured after pre- drying of the material at 120 ± 5°C upto 4 hrs.)	i) 1.5 to 8 (for extrusion /Thermoforming) ii) 8 to 15 (for injection moulding)	IS 13360 (Part 4 / Sec 1/ Sub-sec 2)	
		(b)	<b>Specific Gravity</b>	1.19 to 1.22	IS 13360 (Part 3 Section 11)	
		(c)	<b>Flexural Modulus</b> , Min, MPa (With crosshead speed of 1.2 mm/min and a span to depth ratio of 16 to 1 (test specimen size, 04 mm x 10 mm)	2200	IS 13360 (Part-5 Section-7)	
		(d)	<b>Izod Impact Strength</b> , notched, Min, kJ/m <sup>2</sup> (test specimen thickness of 03 mm and notch radius of 0.25 mm)	60	IS 13360 (Part-5 Section-4)	
		(e)	<b>Deflection Temperature</b> under load at 1.82 MPa, Min,°C	120	IS 13360 (Part-6 Section-17)	

11.	<b>Polycarbonate sheet characteristics</b>	<p>(i) PC sheet shall comply with the test requirements as per table below:-</p> <table border="1" data-bbox="506 228 1493 542"> <thead> <tr> <th data-bbox="506 228 583 297">Sl. No</th> <th data-bbox="583 228 932 297">Characteristics</th> <th data-bbox="932 228 1121 297">Requirement</th> <th data-bbox="1121 228 1493 297">Method of test, Ref to IS/ Annex</th> </tr> </thead> <tbody> <tr> <td data-bbox="506 297 583 365">(a)</td> <td data-bbox="583 297 932 365"><b>Dart drop Impact</b>, Minimum J (at 27°C)</td> <td data-bbox="932 297 1121 365">150</td> <td data-bbox="1121 297 1493 365">Annx B of IS 14443</td> </tr> <tr> <td data-bbox="506 365 583 433">(b)</td> <td data-bbox="583 365 932 433"><b>Light Transmission</b>, percent, Minimum</td> <td data-bbox="932 365 1121 433">85</td> <td data-bbox="1121 365 1493 433">IS 13360 (Part-9 Section-5)</td> </tr> <tr> <td data-bbox="506 433 583 542">(c)</td> <td data-bbox="583 433 932 542"><b>Flammability Test</b>(test specimen thickness 3.18 mm ± 0.13 mm)</td> <td data-bbox="932 433 1121 542">94 HB class</td> <td data-bbox="1121 433 1493 542">IS 16864, protective Shield specification, Annex. "C"</td> </tr> </tbody> </table> <p>(ii) The Polycarbonate body of the Shock Shield shall have abrasion resistance surface coating on both surfaces.</p>	Sl. No	Characteristics	Requirement	Method of test, Ref to IS/ Annex	(a)	<b>Dart drop Impact</b> , Minimum J (at 27°C)	150	Annx B of IS 14443	(b)	<b>Light Transmission</b> , percent, Minimum	85	IS 13360 (Part-9 Section-5)	(c)	<b>Flammability Test</b> (test specimen thickness 3.18 mm ± 0.13 mm)	94 HB class	IS 16864, protective Shield specification, Annex. "C"	<p>Certification from any Valid NABL accredited Lab for the test conducted as per IS specified at column-4 with results as per values shown in column-3 (a), (b) &amp; (c) of the table at SI No 11 .&amp; To be checked by BOO for column 3 (b).</p>
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(c)	<b>Flammability Test</b> (test specimen thickness 3.18 mm ± 0.13 mm)	94 HB class	IS 16864, protective Shield specification, Annex. "C"																
12.	<b>Handle/ Arm Rest Characteristics</b>	<p>(i) Handle with Grip, Arm Support shall be provided for comfortable use of the equipment for long durations.</p> <p>(ii) General requirement of Handle :-</p> <p>(a) Material for handle should be polymeric, preferably polycarbonate.(<b>sling attachment</b>)</p> <p>(b) <b>Classic bolts (M5)</b> if used, shall be SS 304 hex-headed. Nut and bolts system should preferably be self- locking.</p>	<p>To be check by BOO/ Line committee</p>																

<u>SL No.</u>	<u>Name</u>	<u>QR Specifications</u>	<u>Trial Directives</u>
13.	<b>Field Performance requirements of Shock Shield</b>	(a) <b>Resistance to vandalism :-</b> The Polycarbonate body of the shield shall have impact resistance of level 'A3' when tested for vandal resistance as per the method prescribed in Annex C of IS 14443.	Certification from any Valid NABL accredited LAB for the test prescribed in Annex C of IS 14443
		(b) <b>Resistance to surface penetration: -</b> The Polycarbonate body of Shock shield shall have resistance of level 'B3" against penetration when tested for resistance to forced entry as per the test method prescribed in Annex D of IS 14443.	Certification from any Valid NABL accredited LAB for the test prescribed in Annex D of IS 14443. <b>Field Trial on NCNC basis.</b>
		(c) <b>Resistance to Surface Abrasion:-</b> The resistance of Shock shield to surface abrasion shall be tested in accordance with ASTM D 1044 for 100 cycles under 500 g load. Haze of test specimen shall not be more than 20 percent.	Certification from any Valid NABL accredited LAB for the test in accordance with ASTM D 1044.
		(d) <b>Resistance to Environmental Stress Cracking:-</b> Environment Stress Cracking Resistance ( ESCR) test shall be performed on polycarbonate body of the shield ( with Protective coating) by constant strain method as per IS 13360(Part 8/ Sec 9).	Certificate from any Valid NABL accredited lab
14.	<b>Shelf Life</b>	(i) 06 Years (minimum) except battery, (ii) For battery 01 year (minimum)	Recommended
15.	<b>Miscellaneous</b>	(i) The Word RAF/ POLICE in 100 mm width and 400 mm length May be written of fluorescent paper size { <b>100mm width and 400mm length (±10 mm)</b> } (colour to be specified by user) on front side or as required by user department. (ii) The design of the shield should be such that during handling the vision area should not fall on the resting surface. (iii) Elastomeric bushes & washers should be used for nut and bolt system.	To be check by BOO/ Line committee

<u>SL No.</u>	<u>Name</u>	<u>QR Specifications</u>		<u>Trial Directives</u>	
16.	<b>Battery Specifications for Shock Shield</b>	(a)	Capacity	As Required	Certificate from any Valid NABL accredited lab
		(b)	Type	Rechargeable Batteries complying to:- 1. IS 16046 (Part I) for Nickel based batteries. or 2. IS 16046 (Part II) for Lithium based batteries.	
		(c)	Charging cycles	1000 (minimum)	
		(d)	Charging time	<b>Maximum 04 hours</b> from low to full charge.	
		(e)	Number of shocks	Minimum 7000 qtr second burst when fully charged	
		(f)	Indicators	Full, Low & Charging Battery (on equipment or on Charging Adapter)	To be Checked by B.O.O/Line Committee
17.	<b>Voltage &amp; Current</b>	(a)	Input Voltage	220 V, 50 Hz ( $\pm 10\%$ )	Certificate from any Valid NABL accredited lab
		(b)	Output Voltage	<b>80 KV (minimum)</b>	
		(c)	Max Duration of Impulse/ Current	1 ms/ 1mA	
18.	<b>Electrical Safety</b>	Compliance to Clause 13 (Leakage Current and Electrical Strength at Operating Temperature) & Clause 15 (Moisture Resistance) of IS 302-1		Certification from any Valid NABL accredited LAB	
19.	<b>Trigger/ Shock Mechanism</b>				
(a)	<b>Trigger Type</b>	There shall be on/ off switch and a Self- Returning <b>trigger/push switch</b> on Shock Shield.			To be Checked by B.O.O/Line Committee
(b)	<b>Placement of Electrodes their Shape/ Design</b>	(i) <b>Aluminium</b> Electrodes should be uniformly distributed covering at least 20% of of front surface of the shield including all 4 sides. (ii) <b>Dimensions of Electrodes- Min 1.5mm (<math>\pm 0.5</math>mm) thickness.</b> (iii) Electrodes shape/ Design must be so that the vision area of the shield doesn't get affected. (iv) Electric sparks will be visible from electrodes for deterrence.			

20.	<b>Miscellaneous</b>		
	(a)	The Manufacture/ supplier will provide complete test reports for confirmation of compliance from any NABL/Govt. accredited Lab.	To be Checked by B.O.O/Line Committee
	(b)	01 year warranty for battery & electrical circuits/fittings and 03 years warranty for whole equipment.	
	(c)	OEM/ Traders should be able to provide at least 03 years AMC on completion of warranty.	
21.	<b>Field testing/ observations by BOO</b>		
(a)	<b>Drop Test</b>	To confirm the physical ruggedness of equipment, The equipment should be thrown five times from <b>02 meter</b> height on a concrete surface. No physical damage to the equipment should be reported.	To be Checked by B.O.O and their views will be considered final and binding against the Lab Test Reports.
(b)	<b>Impact Test</b>	The shield will be hit five times on the front surface/edge using 01 meter long & blunt SS/Iron rod (with circular cross section) of 10mm-25mm Dia & 1kg-1.5kg Weight. Different points of impact may be chosen for every strike. No damage/ cracks should be reported. <b>Electronic meter should be attached.</b>	To be Checked by B.O.O and their views will be considered final and binding against the Lab Test Reports.
(c)	<b>Current Detection</b>	Board will check the presence of electrical charge/energy on various portions of electrodes with the help of common electric tester (Screw Driver type).	To be Checked by B.O.O and their views will be considered final and binding against the Lab Test Reports.