| BHEL, BHOPAL | Annexure-A |
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**CST FOR DOUBLE DENSITY, POLYCARBONATE TOE CAP SAFETY SHOES WITH ONE ADDITIONAL PAIR OF SOCKS**

| SL No | DESIGN PARAMETER | | TECHNICAL DETAIL | VENDOR TO CONFIRM/COPY |
|---|---|---|---|---|
| 1 | Appearance & Design | | | |
| 1.1 | | Design : | Low-ankle safety shoe designed for maximum safety and comfort . Anatomically shaped with curved heel and rounded edges for greater comfort after long periods of wear | [redacted] |
| 1.2 | | Upper Height : | Less than 113mm (measured from outside without heel height) for all sizes 4-12 . Manufacturer to have authentic license against IS 15298 (part1): 2011 / ISO 20344 - 2004 | |
| 1.3 | | Weight | weight of size 8 pair should not exceed 1000 gms ( + 50 gms tolerence) Higher sizes may have incremental 50 gms additional weight | |
| 2 | Catalog | | original catalog showing technical details of the shoe quoted by vendor | |
| 3 | Process | | | |
| 3.1 | | Manufactured by Direct Injection Process (DIP) without using nails | | |
| 4 | Upper (Inconformance with IS, ISO) | | | |
| 4.1 | | Material : | Finest genuine full grain CS Print leather | |
| | | | Colour : Black | |
| | | | Thickness : 1.8 - 2.2 mm +/- 0.2 mm | |
| 4.2 | | Tear strength : | 120 Newtons (minimum) as per ISO 3377 | |
| 4.3 | | Water vapour permeability | Not less then 0.8mg / cm2 /h | |
| 4.4 | | Water vapour coefficient : | Not less then 20mg / cm2 | |
| 4.5 | | pH value of the upper leather | Acceptable in the range of 3.5 TO 3.7 | |

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| Sl No | DESIGN PARAMETER | | TECHNICAL DETAIL | VENDOR TO CONFIRM/SPECIFY | |
|---|---|---|---|---|---|
| 5 | Vamp & Quarter lining (Inconformance with IS, ISO and EN Standard) | | | | |
| 5.1 | | Vamp Material : | 250 gsm non woven fabric . Collar, Tongue and lining in NAPA Leather | | |
| 5.2 | | Tear strength : | 15 Kilotons (minimum) | | |
| 5.3 | | Abrasion resistance : | Dry Condition – no hole before 25600 cycles | | |
| 5.4 | | | Wet Condition – no hole before 12800 cycles | | |
| 5.5 | | Water vapour permeability : | Not less then 2.0mg / cm2 | | |
| 5.6 | | Water vapour coefficient : | Not less then 30mg / cm2 | | |
| 5.7 | | Quarter Lining : | Ultra breathable distance mesh lining with antimicrobial treatment for odour control and more comfortable feet | | |
| 6 | Insole (Inconformance with IS, ISO and EN Standard) | | | | |
| 6.1 | | Material : | Non woven based insole not less than 2mm thick | | |
| 6.2 | | pH Value : | Not less than 3.5 | | |
| 6.3 | | Water vapour absorption : | Not less than 35% (m / m) | | |
| 6.4 | | Water desorption : | Not less than 40%(m /m) of the water absorbed | | |
| 7 | Sole (Inconformance with IS, ISO and EN Standard) | | | | |
| 7.1 | | Material : | Flexible Polyurethane . | | |
| 7.2 | | Manufacturing Process : | Direct Injection Process (DIP) | | |
| 7.3 | | Relative Density : | Double density polyurethane | | |
| 7.4 | | | Bottom Sole : relative density 0.90-1.0 | | |
| 7.5 | | | Mid Sole : relative density 0.35- 0.45 | | |
| 7.6 | | Heat resistance : | up to 120 Centigrade | | |
| 7.7 | | Shore Hardness | up to 65 Shore A Anti-Torsion System shoes | | |
| 7.8 | | Tear strength : | Not less than 5 Kilo Newtons / m | | |
| 7.9 | | Abrasion resistance : | volume loss is below 250 $mm^3$ | | |
| 7.10 | | Flexing resistance : | Maximum 4mm cut growth before 30000 flexes | | |
| 7.11 | | Fuel Oil resistance : | Increase in volume not greater than 12% | | |
| 7.12 | | Other Properties : | Anti-skid, acid, alkali & water-resistant, with Gel Heel Socks . Sole Electrical resistance of max 22 kV for 1 minute. | | |

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| Sl. No | DESIGN PARAMETER | | TECHNICAL DETAIL | VENDOR TO CONFIRM/SPECIFY | |
|---|---|---|---|---|---|
| 8 | Toe Cap (In conformance with IS, ISO, EN Standard) | | | | |
| 8.1 | | Material : | Polycarbonate material toe cap conforming to EN : 12568:2010, harmonized with EN:ISO 20345 & EN:20346:2004+A1:2007 | [redacted] | |
| 8.2 | | Impact resistance : | Minimum 14 mm clearance on 200 Joules impact | | |
| 8.3 | | Compression resistance : | Minimum 14mm clearance on putting a load of 15 Kilo Newton | | |
| 9 | Thread | | | | |
| 9.1 | | Material : | Nylon or Polyester | [redacted] | |
| 9.2 | | Properties : | Z twist, oil, acid, chemical proof | | |
| 10 | Laces | | | | |
| 10.1 | | Material : | Nylon | [redacted] | |
| 10.2 | | Length : | 85 +/- 5 cm | | |
| 11 | Size | | | | |
| 11.1 | | Size range : | From sizes 4 to 12(38-46) | [redacted] | |
| 12 | Eyelets | | | | |
| 12.1 | | Material : | Nickel Brass | [redacted] | |
| 12.2 | | Numbers : | 3 or 4 | | |
| | | | | | |
| 13 | Packing | | | | |
| 13.1 | | | Each pair to be packed in 3 ply corrugated box | [redacted] | |
| 13.2 | | | Wrapped in 45 micron clear Polybag | | |
| 13.3 | | | 55 Micron outer carry bag | | |
| 13.4 | | | 10 pairs packed in one master carton (9 ply) | | |
| 14 | Warranty | | | | |
| 14.1 | | Warranty period : | 12 months from date of receipt at BHEL | [redacted] | |

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| Sl. No | DESIGN PARAMETER | TECHNICAL DETAIL | VENDOR TO CONFIRM/SPECIFY |
|---|---|---|---|
| 15 | IMPORTANT CONDITIONS AT TECHNO-COMMERCIAL BID STAGE: | | |
| 15.1 | Original Catalog has to be submitted along with Techno-Commercial Offer | | |
| 15.2 | Shoes to be CE,ISI,and DGMS Certified Copies of all Certifications such as IS,ISO,EN etc wherever applicable in the specifications,shall be submitted. without these,the offer may not be considered. Along with Technical bid, vendor has to submit to BHEL a copy of latest test certificate from Footwear Design and Development Institute (FDDI), Noida, or any other National Accredited Laboratory authorized for testing & certification of safety shoes, in respect of the shoe quoted for. At the time of inspection before bulk supply, all parameters confirmed by vendor during technical stage have to be evidenced through authentic Test Certificate which will | | |
| 15.3 | One free pair of the quoted shoe, of size 8 (42) will be submitted by vendor for evaluation at BHEL. Sample to be submitted by Tender Opening date. After completion of evaluation, rejected samples will be returned to unsuccessful Vendor(s) at BHEL Bhopal after placement of order on successful vendor(s). Accepted samples will be retained in SPX department to be used as "Acceptance Datum" at the time of bulk supply by vendor. This sample shall not be counted as included in supply quantity. | | |
| 15.4 | Inspection of shoes shall be done at Manufacturer's works. If the supplies are made by Traders, the inspection shall be made at their Principal's Works only before despatch. Manufacturers should have test facilities as per the relevant Standards against which they have quoted . | | |
| 15.5 | Vendors quoting against this enquiry shall submit , in original, authorization certificate from the OEM/Principal to quote for this BHEL Enquiry. It should be clearly stated that Principal supports the channel partner / trader for warantee/guarantee as per this eqnuiry. | | |
| 15.6 | Vendor has to sign and stamp each page of this specification as proof of complying to BHEL Terms and conditions. | | |
| 15.7 | Vendor shall submit all documents, data, credentials as required against column marked "Vendor to confirm/specify" in this specification. Without hard copies to support vendor's response to technical data, the offer will not be considered as technically complete/clear. | | |
| 15.8 | For all values that are confirmed and mentioned by vendor as "we confirm", all such data shall be demonstrated by submitting relevant Test Certificates , at the Techno-commercial stage itself. The test certificates shall be issued from any National Accredited laboratories,or CE/EN Certificate house or FDDI. Certificates from private agencies, self certified, will not be accepted. | | |

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