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उत्पाद मानुयल

निजी सुरक्षा उपस्कर भाग 4 व्यवसाय में पहनने के फुटवीयर
IS 15298 (PART 4) : 2017 के अनुसार

**PRODUCT MANUAL
FOR PERSONAL PROTECTIVE EQUIPMENT, PART 4 OCCUPATIONAL
FOOTWEAR
ACCORDING TO IS 15298 (PART 4) : 2017**

भारतीय मानक ब्यूरो -विनियम की स्कीम (अनुरूपता मूल्यांकन)I के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीयशाखा कार्यालयों एवं लाइसेन्स धारियों/ द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेन्सप्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों/ द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	उत्पाद Product	:	IS 15298 (Part 4) : 2017/ISO 20347 : 2012
	शीर्षक Title	:	निजी सुरक्षा उपस्कर भाग 4 व्यवसाय में पहनने के फुटवीयर Personal Protective Equipment, Part 4 Occupational Footwear
	संशोधन संख्या No. of Amendments	:	2
2.	नमूनाकरण दिशा निर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	Occupational footwear shall be made of materials which conform to the requirement of Innocuousness as per Cl 5.3.5 of IS 15298 Part 4 : 2017.
b)	समूहिकरण दिशा निर्देश Grouping Guidelines	:	कृपया ANNEX –A देखें Please refer ANNEX - A
c)	नमूने का परिमाण Sample Size	:	4 Pairs for Basic requirements + 3 pairs for additional requirements (In case samples are sent to a different lab for testing innocuousness of materials, 2 pairs are required to be sent in addition)
3.	परीक्षण उपकरणों की सूची List of Test equipment	:	कृपया ANNEX –B देखें Please refer ANNEX –B
4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	कृपया ANNEX –C देखें Please refer ANNEX – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day :	:	i) Upper thickness ii) Sole Thickness, Cleat height.

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			iii) In socks Thickness iv) Height of upper v) Resistance to Hot Contact vi) Following test may also be carried out without conditioning a. Tear strength of lining material b. Hardness of Sole c. Interlayer bond strength
6.	लाइसेन्स का कार्यक्षेत्र/ Scope of the Licence :		
	IS 15298 (Part 4) : 2017 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है Licence is granted for use of the Standard Mark as per IS 15298 (Part 4) : 2017with the following scope:		
	उत्पाद का नाम Name of the product	Personal Protective Equipment, Part 4 Occupational Footwear	
	Class	Class I and/ or Class II	
	Design and Sizes	कृपया ANNEX –A देखें Please see Annex A	
	Declarations on components of Footwear (in case of Class I Footwear)	Insole: Present/not present	
		Insock: Present/not present; Removable/Non-removable; Water permeable/Non-water permeable Materials of Upper, Vamp lining, Quarter lining, Tongue, Insole, Inscok, Outsole	
	Additional requirements	Without Additional Requirements, or	
		With Additional Requirements (As applicable as follows)	
		Whole Footwear: Upper	Penetration Resistance and//or Conductive/Antistatic/Electrically Insulating and/or Resistance to Inimical Environment and/or Energy Absorption of Seat Region and/or Water Resistance and/or Ankle Protection and/or Cut Resistance.
	Upper	Water Protection and Absorption	
	Outsole	Resistance to Hot Contact and/or Resistance to Fuel Oil	

ANNEX A
PRODUCT MANUAL
FOR PERSONAL PROTECTIVE EQUIPMENT PART 4 OCCUPATIONAL FOOTWEAR
ACCORDING TO IS 15298 (Part 4) : 2017/ISO 20347 : 2012

GROUPING GUIDELINES

1. As per the Indian Standard, IS 15298 (Part 4) : 2017, Occupational Footwear can be classified as per the following code designations:

Code Designation	Classification
I	Footwear made from leather and other materials, excluding all-rubber or all-polymeric footwear
II	All-Rubber (i.e. entirely vulcanized) or all-polymeric (i.e. entirely moulded) footwear

2. In addition, IS 15298 (Part 4), cover the following designs and sizes of footwear

i) Design- A, B, C, D & E

ii) Sizes –

French	English
36 and Below	Upto 3½
37 and 38	4 to 5
39 and 40	5½ to 6½
41 and 42	7 to 8
43 and 44	8½ to 10
45 and above	10½ and above

3. To apply for grant of licence and Inclusion, the applicant/licensee should declare the Code Designation and Design for the Occupational Footwear and accordingly following Grouping Guideline is to be followed for grant of licence and inclusion:

Group	Code Designation	Design	Size English/French	Sample to be Tested
1	Either I or II (If for both)*	Either A or B or C or D or E (If for Two, more or all)**	Upto 5/Upto 38	One sample of any size***
2	Either I or II (If for both)*	Either A or B or C or D or E (If for Two, more or all)**	5½ to 8 / 39 to 42	One sample of any size***
3	Either I or II (If for both)*	Either A or B or C or D or E (If for Two, more or all)**	8½ & above/43 & above	One sample of any size***

Notes:

a) * - If the Applicant/Licensee applies for both code designation i.e. I as well as II, Testing to be done for both Designations separately.

b) ** - If the Applicant/Licensee applies for two, more or all designs, testing to be done for each Design separately.

c) * - Sample of any size can be taken for considering other sizes in the same group.
However, manufacturing and testing facility for each size must be verified.**

4. Additional Requirements shall be indicated in the scope of licence only if the sample has been tested for those Additional requirements.

5. However, while considering grant of licence/inclusion of additional sizes/designs, it will be ensured that the applicant/licensee has got the complete manufacturing and testing facilities for all the sizes and designs intended to be covered.

6. During operation of the licence, BO will ensure that all the sizes/designs covered in the licence are tested in rotation. The above guidelines may be followed for Grant of Licence as well as inclusion of new variety.

ANNEX B

List of Test Equipment

Major test equipment required to test as per the Indian Standard

Sl. No.	Test used in with Clause Reference	Test Equipment / Chemicals
1	Height of upper, 5.2.2	Steel Scale/Vernier calipers
2	Upper / Outsole bond strength, 5.3.1.2	Vernier calipers, Digital Tensile Testing Machine of suitable load range with accessories and sample cutting dies,
3	Leakproofness, 5.3.2	Pressure gauge of appropriate range, Stopwatch
4	Specific ergonomic features, 5.3.3	Stopwatch
5	Slip Resistance, 5.3.4	Floor of calibrated ceramic tiles or Steel; Sodium Laurayl Sulphate or Glycerine; Slip testing machine (as per ISO 13287); 400 grit silicon carbide abrasive paper
6	Innocuousness, 5.3.5	All required instruments like Solid phase extraction systems, micron filtration assembly, AAS/AES-ICP, UV-spectrophotometer, GC/GCMS, LC/LCMS, HPTLC etc. with required accessories (injectors, detectors, columns, lamps, graphite furnace, micropipettes, chromatographic chambers etc.), certified reference materials, general and specialized chemicals (of high purity) to detect the presence/absence of critical chemicals as per test method referred in IS 17011, General laboratory glassware, Distilled water
7	General, 5.4.1(Table 8)	Steel Scale/Vernier calipers
8	Thickness, 5.4.2, 5.7.1	Dial Thickness Gauge with Flat Presser Foot of 10 mm Diameter and a load of 1N
9	Tear strength, 5.4.3, 5.5.1, 5.6.1, 5.8.2	Steel Scale, Digital Tensile Testing Machine of suitable load range with accessories and sample cutting dies
10	Tensile properties, 5.4.4	Digital Tensile Testing Machine of suitable load range with accessories and sample cutting dies
11	Flexing resistance, 5.4.5	Steel Scale, Micrometer dial gauge, Flexing machine with counter
12	Water vapour permeability and co-efficient, 5.4.6, 5.5.3	Steel scale/Vernier calipers, Test apparatus of specified description, Pre-flexing apparatus with flex counter, Test specimen cutter, Silica gel desiccant, Water vapour absorption apparatus, Stopwatch, Analytical balance
13	pH, 5.4.7, 5.5.4, 5.6.2, 5.7.2	Analytical balance, Rotary shaker, pH meter and pH standards,
14	Hydrolysis, 5.4.8	Steel Scale, Vernier Calipers, Cold Ross Flex Tester, Deep freezer
15	Chromium VI content, 5.4.9, 5.5.5, 5.6.3, 5.7.5	Analytical balance, pH meter, SPE System, Membrane Filter (0.45 µm pore), Rotary shaker, Nitrogen gas, Aeration tube with flow-meter, Refrigerator, Digital Spectrophotometer with Photometric Cells, Phosphoric

		Acid, Potassium Dichromate, 1,5 Diphenylcarbazine, Acetone, Acetic Acid, Nitrogen gas, Di-Potassium Hydrogen Phosphate, General laboratory glassware, Distilled water
16	Abrasion resistance, 5.5.2	Analytical balance, Martindale Abrasion Tester with specified parameters and all accessories, Reference abrasant pad, PU foam, Standard weights of specified diameter, Fabric punch/press cutter for specimen preparation
17	Water absorption and desorption, 5.7.3	Water Absorption Tester, Steel Scale, Stopwatch, Analytical balance
18	Abrasion resistance for insoles, 5.7.4.1	Steel scale, Insole Abrasion Tester, White wool felt pads, Reference abrasant fabric
	Abrasion resistance for insoles, 5.7.4.2	Steel scale, Martindale Abrasion Tester with specified parameters and all accessories, Reference abrasant pad, PU foam, Standard weights of specified diameter, Fabric punch/press cutter for specimen preparation
19	Outsole thickness and cleat height, 5.8.1	Vernier calipers
20	Abrasion resistance, 5.8.3	Analytical balance, Rotary Drum Abrasion Tester, Standard rubber slab. Abrasive sheet, Specimen cutting die
21	Flexing resistance, 5.8.4	Bennewart Flexing Tester, 2 mm cutting punch, Steel Scale, Measuring magnifier/Travelling microscope
22	Hydrolysis, 5.8.5	Cold Ross Flex Tester, Measuring magnifier/Travelling microscope
23	Interlayer bond strength, 5.8.6	Vernier calipers, Digital Tensile Testing Machine of suitable load range with accessories and sample cutting dies
24	Penetration resistance, 6.2.1	Deep freezer, Compression test machine with test nail, Flexing apparatus for inserts, Hot air oven, Sodium Chloride, Sulphuric Acid, Sodium Hydroxide, 2,2,4-trimethylpentane
25	Electrical properties, 6.2.2	Setup for measuring electrical resistance consisting of internal & external electrodes (probes), steel balls (4 kg) of 5 mm dia, Stopwatch, Ethanol, Conductive lacquer having resistance less than $1 \times 10^3 \Omega$
26	Resistance to inimical environments. 6.2.3	Sand bath, Hot plate, Temperature probe, steel balls (4 kg) of 5 mm dia, Insulated cold bath, Copper plate (300±5 mm x 150±1 mm x 5±0.1 mm), Vernier calipers
27	Energy absorption of seat region, 6.2.4	Compression test machine of with test punch
28	Water resistance, 6.2.5	Horizontal watertight trough OR Dynamic footwear flexing machine with counter, weighing balance of 0.1 g LC, Absorbent paper
29	Ankle protection, 6.2.6	Impact apparatus consisting of 5 kg guided mass, drop striker, anvil, means for measurement of force
30	Water penetration and absorption, 6.3	Steel scale, Stopwatch, Analytical balance, 2 cylinders of 30 mm dia made of inert rigid material, electric motor,

		water tank, metallic plate, ring shaped clamps, absorbent cloth, 180 grade emery paper, 1 kg mass
31	Resistance to hot contact, 6.4.1	Stopwatch, Hot contact testing setup, Suitable temperature measuring device, aluminium foil, mandrel of 10±1 mm dia,
32	Resistance to fuel oil, 6.4.2	Analytical balance, 2,2,4-trimetylepentane, Specimen cutting die, Shore-A hardness tester
Note: In addition to above test equipment, conditioning chamber of appropriate size maintained at specified temperature/humidity conditions and durations is necessary for initial conditioning of footwear and for different test parameters as mentioned in the relevant test method Standard.		

The above list is indicative only and may not be treated as exhaustive.

ANNEX C

Scheme of Inspection and Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. PACKING AND MARKING – The Standard Mark as given in Schedule of the license shall be stamped on each piece of Occupational footwear and the outer packaging for each pair of footwear, provided always that the Footwear to which this mark is thus applied conforms to every requirement of the specification. All markings shall be made inside of tongue or at top outer face of the footwear so that least damage is done during working

3.1 Following details shall be permanently marked on each piece of footwear:

- a) Size;
- b) Manufacturer's name and brand;
- c) Manufacturer's type designation;
- d) Year and at least quarter of manufacture;
- e) Number and year of the standard, based upon which the boots are produced;
- f) symbol(s) from Table 2 and Table 16 appropriate to the protection provided and/or, where applicable, the appropriate category (OB, O1 to O5), as described in Table 17 of IS 15298 (Part 4);
- g) Any other statutory marking.
- h) BIS Licence No. (CM/L---

3.2 Each pair of boot shall be supplied with the following information in English and any other language:

- i) Name and full address of manufacturer,
- ii) Details of customer care service provider,
- iii) Instruction for storage and maintenance,
- iv) For instructions on cleaning and drying, *see* IS 6519,
- v) Wherever applicable, declaration to be made stating footwear is not for use in fire hazard/explosion
- vi) prone areas/hot contact/electric resistance purpose,
- vii) The footwear is not a GREEN footwear and not bio-degradable.
- viii) BIS Licence No. (CM/L---
- ix) BIS website details: "For details of BIS Certification please visit www.bis.gov.in" (These details also to be marked on the box)

4. CONTROL UNIT – For the purpose of this scheme, 10,000 pairs or Fortnight production of the Occupational footwear, whichever is earlier manufactured from the same consignment of the raw material shall constitute a control unit.

4.1 On the basis of test result, the decision regarding conformity or otherwise of a control unit to a given requirement shall be made as follows:

4.1.1 No. of sample shall be drawn from each control unit and to be tested for all the requirements as specified in Table 1 of the scheme.

4.1.2 If the sample fails to conform in any of the requirements laid down in the specification, such, entire control unit represented by the sample shall be considered unfit for the purpose of marking.

5. LEVELS OF CONTROL -The tests, as indicated in Table 1 and at the levels of control specified therein, shall be carried out on the whole production of the factory covered by this scheme and appropriate records and charts maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

6. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016. A separate record providing the detailed information regarding the rejected control units and mode of their disposal shall be maintained, such material shall in no case be stored together with that conforming to the specification.

PERSONAL PROTECTIVE EQUIPMENT PART 4 OCCUPATIONAL FOOTWEAR
ACCORDING TO IS 15298 (PART 4) : 2017/ISO 20347 : 2012
TABLE 1 LEVELS OF CONTROL
(Para 5.0 of the Scheme of Testing and Inspection)

(1)				(2)	(3)			
TEST DETAILS				Test equipment requirement R:required (or) S: Sub-contracting permitted	LEVELS OF CONTROL			
Clause	Requirement	Test Method			No. of Samples	No. of test pieces from each sample	Frequency	Remarks
		Clause	Reference					
5.2	DESIGN							
5.2.1	General	5.2.1	IS 15298 (Pt 4)	R	1 from each of 3 sizes	1	Each control unit	Applicability will be as defined in Table 2 of IS 15298 (Pt 4)
5.2.2	Height of upper	6.2	ISO 20344	R	1 from each of 3 sizes	1	Each control unit	-do-
5.2.3	Seat Region	5.2.3	IS 15298 (Pt 4)	R	All		-do-	-do-
-do-	Design A	-do-	-do-	R	-do-	1	-do-	-do-
-do-	Design B	-do-	-do-	R	-do-	1	-do-	-do-
-do-	Design C	-do-	-do-	R	-do-	1	-do-	-do-
-do-	Design D	-do-	-do-	R	-do-	1	-do-	-do-
-do-	Design E	-do-	-do-	R	-do-	1	-do-	-do-
5.3	WHOLE FOOTWEAR							-do-

5.3.1	Sole Performance							
5.3.1.1	Construction	5.3.1.1	IS 15298 (Pt 4)	R	-do-	All	Each control unit	-do-
5.3.1.2	Upper / Outsole bond strength	5.2	ISO 20344	R	1 from each of 3 sizes	1	-do-	-do-
5.3.2	Leak proofness	5.7	ISO 20344	R	-do-	-do-	-do-	-do-
5.3.3	Specific ergonomic features	5.1	-do-	R	3 pairs of 3 different sizes	1 pair	-do-	-do-
5.3.4	Slip Resistance	5.11	-do-	S	-do-	-do-	Once in a month	-do-
5.3.5	Innocuousness	-	IS 17011	S	One consignment from each source (i.e. Supplier) shall be tested once every six months			
5.4	UPPER							-do-
5.4.1	General	5.4.1	IS 15498 (Pt 4)	R	1 from each of 3 sizes	1	Each control unit	-do-
5.4.2	Thickness	6.1	ISO 20344	R	-do-	4	-do-	-do-
5.4.3	Tear strength	6.3	-do-	R	-do-	-do-	-do-	-do-
5.4.4	Tensile properties	6.4.1	-do-	R	-do-	1	-do-	-do-
5.4.5	Flexing resistance	6.5	-do-	R	-do-	-do-	-do-	-do-
5.4.6	Water vapour permeability and co-efficient	6.6 & 6.8	-do-	R	-do-	-do-	-do-	-do-
5.4.7	pH	6.9	-do-	R	1	2	-do-	-do-

5.4.8	Hydrolysis	6.10	-do-	R	1 from each of 3 sizes	1	-do-	-do-
5.4.9	Chromium VI content	6.11	ISO 17075	R	1	2	-do-	-do-
5.5	LINING (Vamp & quarter lining)							-do-
5.5.1	Tear strength	6.3	ISO 20344:2011	R	1 from each of 3 sizes	3	Each control unit	-do-
5.5.2	Abrasion resistance	6.12	-do-	R	3	4	-do-	-do-
5.5.3	Water vapour permeability and co-efficient	6.6 & 6.8	-do-	R	1 from each of 3 sizes	1	-do-	-do-
5.5.4	pH value	6.9	-do-	R	1	2	-do-	-do-
5.5.5	Chromium VI content	6.11	ISO 17075	R	1	2	-do-	-do-
5.6	TONGUE							-do-
5.6.1	Tear strength	6.3	ISO 20344:2011	R	1 from each of 3 sizes	3	Each control unit	-do-
5.6.2	pH value	6.9	-do-	R	1	2	-do-	-do-
5.6.3	Chromium VI content	6.11	ISO 17075	R	-do-	-do-	-do-	-do-
5.7	INSOLE & INSOCK							-do-
5.7.1	Thickness	7.1	ISO 20344:2011	R	3	1	Each control unit	-do-
5.7.2	pH value	6.9	-do-	R	1	2	-do-	-do-
5.7.3	Water absorption and desorption	7.2	-do-	R	3	1	-do-	-do-
5.7.4	Abrasion resistance							-do-

5.7.4.1	Insole	7.3	-do-	R	3	1	-do-	-do-
5.7.4.2	Insocks	6.12	-do-	R	3	4	-do-	-do-
5.7.5	Chromium VI content	6.11	ISO 17075	R	-do-	-do-	-do-	-do-
5.8	OUTSOLE							-do-
5.8.1	Design	5.8.1	IS 15298 (Pt 4)	R	-do-	1	-do-	-do-
5.8.1 & Table 17	Outsole thickness	8.1.2	ISO 20344	R	1 from each of 3 sizes	1	Alternate control unit	-do-
5.8.1.2	Cleated area		-do-	R	-do-	1	-do-	-do-
5.8.1.3	Cleat height	8.1	-do-	R	-do-	1	-do-	-do-
5.8.2	Tear strength	8.2	-do-	R	-do-	-do-	-do-	-do-
5.8.3	Abrasion resistance	8.3	-do-	R	-do-	-do-	-do-	-do-
5.8.4	Flexing resistance	8.4	-do-	R	-do-	-do-	-do-	-do-
5.8.5	Hydrolysis	8.5	-do-	R	-do-	-do-	-do-	-do-
5.8.6	Interlayer bond strength	5.2	-do-	R	-do-	-do-	-do-	-do-
6	ADDITIONAL REQUIREMENTS FOR OCCUPATIONAL FOOTWEAR							Applicable as per Table 16
	WHOLE FOOTWAR							-do-
6.2.1	Penetration resistance		ISO 20344	R	1 pair from each of 3 sizes	1 pair	Alternate control unit	-do-
6.2.2	Electrical properties							-do-
6.2.2.1	Conductive footwear	5.10	ISO 20344	R	1 pair from each of 3 sizes	1 pair	Alternate control unit	-do-
6.2.2.2	Antistatic footwear	5.10	-do-	R	-do-	-do-	-do-	-do-

6.2.2.3	Electrically insulating footwear	5.11	EN 50321	R	-do-	-do-	-do-	-do-
6.2.3	Resistance to inimical environments							-do-
6.2.3.1	Heat insulation of sole complex	5.12	ISO 20344:2011	R	2 from different sizes	1	-do-	-do-
6.2.3.2	Cold insulation of sole complex	5.13	-do-	R	-do-	-do-	-do-	-do-
6.2.4	Energy absorption of seat region	5.14	-do-	R	1 pair from each of 3 sizes	1 pair	-do-	-do-
6.2.5	Water resistance	5.15.1 or 5.15.2	-do-	R	3 pairs (minimum 2 different sizes)	1 pair	-do-	-do-
6.2.6	Ankle protection	5.17	-do-	R	-do-	-do-	-do-	-do-
6.2.7	Cut resistance	6.14, 6.2.8.4	-do- IS 15298 (Pt 4)	R	-do-	-do-	-do-	-do-
6.3	UPPER							-do-
6.3	Water penetration and absorption	6.13	ISO 20344:2011	R	3	1	Alternate control unit	-do-
6.4	OUTSOLE							-do-
6.4.1	Resistance to hot contact	8.7	ISO 20344:2011	R	-do-	1	-do-	-do-
6.4.2	Resistance to fuel oil	8.6.1	-do-	R	1 from each of 3 sizes	1	-do-	-do-

Note-1:

- i) Where samples are required from each of three sizes, these shall comprise the largest, the smallest and a middle size of the footwear under test.
- ii) If one or two sizes are only manufactured in any particular control unit, then samples from the available sizes are to be tested.
- iii) If any sample of any size fails, the production of the particular control unit to be treated as fail.
- iv) If it is not possible to obtain a large enough test piece from the footwear, then a sample of the material from which the component has been manufactured may be used instead and this should be noted in the test report.

Note-2: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-3: Levels of control given in column 3 are obligatory.

Note-4: For clause 6, additional requirements, testing facilities are required to be established only if those additional requirements are mentioned in the scope of licence.

