

HEVEA RUBBER TECHNOLOGIES PRIVATE LIMITED

CM 021519M-199-97-C003010 - 2.1. Development Part, P.M.A. Road, Governmentality P.O, Kottayam - 686 012, Kerala, India - GSTIN:32AAK687871218

ANNEXURE – LABORATORY FACILITIES FOR TESTING OF ELASTOMERIC BEARING / ELASTOMER (STR CAUSE 6.3)

STR Reference Clause Reference Clause 6.3 – Laboratory facilities available with the fabricator / firm Submitted to Research Designs and Standards Organisation (RDSO), Ministry of Railway, Lucknow

Sr. No.	STR Ref.	Facility required	Test Method / Standard	Equipment provided	Asset Tag	Make	Model No.	Serial / Machine No.	Capacity / Range	Qty.	Year of Mfg./ Comm.	Status	Out-sourced Laboratory / Mtd.	Remarks
1	(I)	Universal tensile strength testing machine	IS 3400 Pt.1 / IRC:83 Pt-II	UTM – rubber tensile	HR/TLAB/01	Scientific Equipment & Testing	2	7189	0-500 N (100-500 N)	1	1989	In-house	—	Rubber durometer, tensile, elongation and tear/adhesion test also can be done with an additional fixture
2	(I)	Universal tensile strength testing machine (second unit)	IS 3400 Pt.1 / IRC:83 Pt-II	UTM – rubber tensile	HR/TLAB/07	MCS	1	HR/TPMC92	0-500 N (100-500 N)	1	2021	In-house	—	
3	(II)	Fixture for load deflection test with suitable electromechanical load testing machine	IRC:83 Pt-II	load deflection fixture on the proof-load machine	HR/TLAB/03	Hydrotrak (France) / IFA (load cells)	RCQ25H9	134519, 139599, 134419	600 T vertical / 100 T horizontal	1	1989	In-house	—	Hydrotrak 600 T frame commissioned 1989. Load deflection measuring system added 2019 (see SI.5).
4	(III)	Fixture for bond test with suitable electromechanical load testing machine	IRC:83 Pt-II	Bond test fixture on the proof-load machine	HR/TLAB/03	Hydrotrak (France) / IFA (load cells)	RCQ25H9	134519, 139599, 134419	600 T vertical / 100 T horizontal	1	1989	In-house	—	Full-bearing bond test per IRC:83 Pt-II. Distinct from the specimen heel deflection test at CI.6.3.1(IV), which is done on the 0-500 N machine.
5	(IV)	Minimum TWO SETs of suitable fixture for compression load deflection test with suitable electromechanical load testing machine	IRC:83 Pt-II	Compression load deflection fixture on the proof-load machine	HR/TLAB/03	Hydrotrak (France) / IFA (load cells) / LVDTs - 6 nos.	RCQ25H9	134519, 139599, 134419	600 T vertical / 100 T horizontal / LVDTs 0-50 mm - 4 numbers, LVDTs 0-150 mm - 2 nos.	6	2019	In-house	—	Load Deflection is measured using LVDTs. 4 sets are used for
6	(V)	Calibrated measuring tape	—	Steel measuring tape	HR/TLAB/08	krystal equipment	—	—	Up to 1 metre	1	2025	In-house	—	Calibration certificate enclosed.
7	(VI)	Calibrated Vernier Caliper	—	Vernier caliper (friction instrument set)	HR/TLAB/07	Multitoyo	20245	GM466 / JCK750	10 mm	5	2021/2024/2025	In-house	—	Enter year – To read the same as CI.6.3.11.
8	(VII)	Calibrated parallelism meter	IRC:83	Parallelism meter	HR/TLAB/06	Multitoyo	20465	—	10 mm	1	2019	In-house	—	
9	(VIII)	Aging oven / Chamber	DN 53508 / IS 3400 Pt.4	Hot-air ageing oven	HR/TLAB/11	ACE	AB-5-72	NE/53/65	300 °C	1	2022	In-house	—	Also used for oil swelling per DN 53521.
10	(IX)	Compression set testing apparatus	DN 53517 / ASTM D 395 Method B	Compression set lg.	HR/TLAB/04	Fabricated in-house	—	002	6 specimens per test	1	2005	In-house	—	Used with the ageing oven at SI.9.
11	(X)	Minimum TWO Nos. shore hardness testers	IS 3400 Pt.2	Shore A hardness testers	HR/TLAB/06	Bcecl	Shore II (Analogue)	004_005	25-90 Shore A	2	2023	In-house	—	Two units against a required minimum of two.
12	(XI)	— with standard test pieces	IS 3400 Pt.2	Reference hardness blocks	HR/TLAB/08	Bcecl	-	-	25 Shore A, 50 Shore A and 75 Shore A	2	2023	In-house	—	Reference blocks are forming part of CI.6.3(IX). Enter make and calibration details.
13	(XII)	Separate laboratory testing hydraulic press with temperature control, digital indicator frame and pressure gauge	—	Laboratory test slab moulding press	HR/TLAB/13	Micro Vision	HT-160	—	200 °C	1	2018	In-house	—	Fixed with temperature control, digital indicator frame and pressure gauge.
14	(XIII)	Separate laboratory mixing mill	—	Laboratory two-roll mixing mill – Niox section	HR/TLAB/14	Synthosh	Nowo01	Nowo01	10-15 kg per batch	1	2025	In-house	—	Located in the Niox section of the works, used for daily quality control mixes and test-slab preparation. Enter roll size (diameter x face length).
15	(XIV)	Viscometer to check viscosity of adhesive	—	Viscometer	HR/TLAB/05	Siron Medical	—	003	30 mL	1	2024	In-house	—	
16	(XV)	Specific gravity testing apparatus	IS 3400 Pt.9	Specific gravity / density apparatus	HR/TLAB/07	Hallmark Mechanics	PRAC/TUM 213-10N	38302831	210 g	1	2022	In-house	—	
17	Additional	Universal Testing Machine for steel – yield, elongation, ultimate tensile	IS 1608 Pt.1	UTM – steel	HR/TLAB/02	Krysal equipment	UTM-40E	2014/1087	400 kN	1	2014	In-house	—	Used additionally. Also delivered at CI.6.4(II). Used for steel only.
18	Additional	Rheometer (M/D)	—	Cure Characteristics of compound batches	HR/TLAB/12	Micro Vision	MV-MDR	1082	20 N.m	1	2022	In-house	—	Used additionally. Completes the batch quality-control loop with SI.13 and SI.14.
19	Additional	Pneumatic specimen cutting machine (3 nos.)	IS 3400 Pt.1 / ASTM D 624	Cutting blades with hydraulic press	3000 kg/5000 kg	LEC / Royal	—	Specimens up to 8 mm thickness	2021 / 2025	2	2021 / 2025	In-house	—	Used additionally. Punch-hill and tear specimen preparation. Enter model and serial for each unit.

NOTES

- All the items requirements of STR Clause 6.3 are met in-house at the premises of Hevea Rubber Technologies Private Limited.
- The proof-load machine (as per HR/TLAB/03) comprises a Hydrotrak 600 tonne frame commissioned in 1989, to which an IFA load-deflection measuring system, model RCQ25H9, was added in 2019. Both years are stated against the respective facilities at SI.3, 4 and 5.
- The bond test at SI.4 is a full-bearing test under IRC:83 Part-4 and is performed on the proof-load machine. It is distinct from the specimen-heel adhesion strength test to IS 3400 Part IV-A declared at Clause 6.3.1, which is performed on the 0-500 N machine.
- The laboratory mixing mill at SI.14 and the laboratory press at SI.13 together support batch-wise quality control: a sample of every compound batch is mixed, cured into a test slab, and checked for hardness, tensile strength, elongation and specific gravity before release to production. Batch-wise quality-control records are maintained and available for inspection.
- Calibration certificates for all measuring and testing equipment are current and enclosed as a separate annexure in compliance with STR Clauses 3.1(III) and 7.2.

Certified that the particulars given above are true and correct, and that the facilities declared are owned by and located at the premises of Hevea Rubber Technologies Private Limited.

HEVEA RUBBER TECHNOLOGIES PRIVATE LIMITED														
CM 0219/KM/499/97/G003/10 - 2.1. Development Plan, V.K.A. Road, Poonathuruthi P.O., Kottayam - 686 012, Kerala, India - GSTIN:32AAC61672128														
ANNEXURE – LABORATORY FACILITIES FOR TESTING OF ELASTOMERIC BEARING / ELASTOMER (STR CLAUSE 6.3)														
STR Reference	RDSO Doc. No. RS-S-7.3.1-10, Version 2.0, effective 01.05.2006 – Elastomeric Bearings for Railway Bridge / RDB (IRC-83 part-II)													
Clause Reference	Clause 6.3 – Laboratory facilities available with the fabricator / firm													
Submitted to	Research Designs and Standards Organisation (RDSO), Ministry of Railways, Lucknow													
Sl. No.	STR Ref.	Facility required	Test Method / Standard	Equipment provided	Asset Tag	Make	Model No.	Serial / Machine No.	Capacity / Range	Qty.	Year of Mfg. / Comm.	Status	Out-sourced Laboratory / Mtd.	Remarks

Authorized Signatory
Kuldeep Kuldeep Managing Director



HEVEA RUBBER TECHNOLOGIES PRIVATE LIMITED

CM 02519K-199-97-CO03-10 2.1. Development Part, M.A. Road, Governmentality P.O, Kottayam - 686 012, Kerala, India - GSTIN:32AAK68787128

ANNEXURE – ELASTOMER CHARACTERISATION TESTING (STR CAUSE 6.3.1)

STR Reference IRISQ Doc. No.BS-5.7.3.1-10, Version 2.0, effective 01.05.2016 – Elastomeric Bearings for Railway Bridges / R/Bs (IRC-89 Part-II)

Clause Reference Clause 6.3.1 – Testing facilities available in-house or out-sourced to a NABL / NARCB accredited laboratory

Submitted to Research Designs and Standards Organisation (RDSON), Ministry of Railway, S. Lucknow

Where a facility is available both in-house and under an accredited MOU, both are declared. Out-sourced testing is covered by MOU with the laboratory named against each item.

Sr. No.	STR Ref.	Facility required	Test Method / Standard	Equipment provided	Asset Tag	Make	Model No.	Serial / Machine No.	Capacity / Range	Qty.	Year of Mfg./ Comm.	Status	Out-sourced Laboratory / MOU	Remarks
1	(i)	Rubber / Elastomer testing facilities – ozone resistance	ISO 1481-1	Ozone testing chamber	HRTLAB/9	Ozone Ioda technology	OZ-MDA-OCT	OZ-MDA-949	150 ppm	1	2012	In-house	—	Ozone resistance testing performed in-house
2	(i)	— along with spectrophotometer	ASTM D3577	Infrared spectrophotometer	—	Brüker	—	—	Qualitative analysis	1	—	Out-sourced	Rubber Board (Rubber Research Institute of India), Kottayam – NABL accredited, MOU.	Spectrophotometry performed at Rubber Board under MOU.
3	(ii)	Polymer content testing facilities	ASTM D-297	Wet-chemical analysis set-up	HRTLAB/5	Chemicals, reagents, distillation glassware, extractions	—	—	—	1 set	2015	In-house «Out-sourced	Rubber Board (Rubber Research Institute of India), Kottayam – NABL accredited, Technical Consultancy Division – TGA	In-house wet-chemical route, with Rubber Board as the accredited route.
4	(iii)	Air content testing facilities	IS 3400 Pt. X/III	Muffle furnace	HRTLAB/8	Keml	TC244	1329	Ambient to 1000 °C	1	2014	In-house «Out-sourced	Rubber Board (Rubber Research Institute of India), Kottayam – NABL accredited, Technical Consultancy Division – TGA	—
5	(iv)	Polymer identification testing	IS 3400 Pt. X/III	Thermogravimetric Analyzer with wet-chemical support	HRTLAB/10	LCGC Bio Analytic Solution	860/00700	TGA-22-0021	1100 °C	1	2013	In-house	—	—
6	(iv)	— confirmation by infrared spectroscopy	ASTM D3577	Infrared spectrophotometer (FTIR)	—	Brüker	—	—	Qualitative analysis	1	—	Out-sourced	Rubber Board (Rubber Research Institute of India), Kottayam – NABL accredited, Technical Consultancy Division	Identification of polymers and chemicals at Rubber Board.
7	(v)	Pyrolysis testing facilities	IS 3400 Pt. X/III	Pyrolysis / TGA set-up	HRTLAB/10	LCGC Bio Analytic Solution	860/00700	TGA-22-0021	1100 °C	1	2013	In-house	—	—
8	(iv)	Percentage polymer content	IS 3400 Pt. X/III	Thermogravimetric Analyzer (TGA)	HRTLAB/10	LCGC Bio Analytic Solution	860/00700	TGA-22-0021	1100 °C	1	2013	In-house «Out-sourced	Rubber Board (Rubber Research Institute of India), Kottayam – NABL accredited, Technical Consultancy Division – named in contract.	—
9	(vi)	Adhesion strength of elastomer to steel plate	IS 3400 Pt. X/IV, Para A	UVN with adhesion (peel) fixture	HRTLAB/1	Scientific Equipment & Testing	2	7189	0-500 N (100-500 N)	1	1999	In-house	—	Specimen-level peel test. Distinct from the full-bearing bond test at CI 6.3 (iii).
10	(vi)	Polymer identification and confirmation of percentage polymer content and ash content by TGA method	TGA	Thermogravimetric Analyzer with muffle furnace	HRTLAB/10 «18	LCGC Bio Analytic Solution	860/00700	TGA-22-0021	1100 °C	1	2013	In-house «Out-sourced	Rubber Board (Rubber Research Institute of India), Kottayam – NABL accredited, Technical Consultancy Division – TA.	TGA thermograms enclosed as earlier test certificates.
14	Additional	Mangle Mill	—	—	—	—	—	—	—	—	—	Out-sourced	Rubber Board (Rubber Research Institute of India), Kottayam – NABL accredited, Technical Consultancy Division – TA.	—

Confirmed that the particulars given above are true and correct, and that the facilities declared are owned by and located at the premises of Hevea Rubber Technologies Private Limited.

Authorised Signatory
Rakesh Narayan, NABL Accredited Director



HEVEA RUBBER TECHNOLOGIES PRIVATE LIMITED

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ANNEXURE — TEST FACILITIES FOR STEEL (STR CLAUSE 6.4)

STR Reference RISO Doc. No. BS-5.7.3.1-10, Version 2.0, effective 01.05.2006 — Elastomeric Bearings for Railway Bridges / RDBs (IRC-88 Part-II)

Clause Reference Clause 6.4 — Test facilities for mild steel, available in-house or out-sourced to a NABL / NBCh accredited laboratory

Submitted to Research Designs and Standards Organisation (RDSO), Ministry of Railways, Lucknow

Testing under this clause is out-sourced to NABL accredited laboratories under MOU. The in-house steel UTM at S.1 is declared as in process verification capability.

Sr. No.	STR Ref.	Facility required	Test Method / Standard	Equipment provided	Asset Tag	Make	Model No.	Serial / Machine No.	Capacity / Range	Qty.	Year of Mfg./ Comm.	Status	Out-sourced Laboratory / MOU	Remarks
1	(i)	Compressive & Tensile strength testing facility	IS 1608 / IRC-83	Steel UTM in-house certification out-sourced	HRTLAB/02	Kyral Equipment	UTM-40E	2014/087	400 kN	1	2014	In-house «Out-sourced	LR20H METCAL Engineering Laboratory Pvt Ltd, Chennai (NABL) — Mou dated 23.06.2026, valid 65 months to 23.11.2031 — Chemical composition, as per MOU	In-house UTM used for in-process verification of steel laminates.
2	(ii)	Bend stress testing facilities	IS 1599 / IRC-83	—	—	—	—	—	—	—	—	Out-sourced	23.11.2031 — LR20H METCAL Engineering Laboratory Pvt Ltd, Chennai (NABL) — Mou dated 23.06.2026, valid 65 months to 23.11.2031 — Chemical composition, as per MOU	—
3	(iii)	Impact Strength testing facilities	IS 1737 / IRC-83	—	—	—	—	—	—	—	—	Out-sourced	23.11.2031 — LR20H METCAL Engineering Laboratory Pvt Ltd, Chennai (NABL) — Mou dated 23.06.2026, valid 65 months to 23.11.2031 — Chemical composition, as per MOU	—
4	(iv)	Hardness testing facilities	IS 1500 / IRC-83	—	—	—	—	—	—	—	—	Out-sourced	23.11.2031 — LR20H METCAL Engineering Laboratory Pvt Ltd, Chennai (NABL) — Mou dated 23.06.2026, valid 65 months to 23.11.2031 — Chemical composition, as per MOU	—
5	(v)	Chemical testing for determination of chemical composition	IS 2268 / IRC-83	—	—	—	—	—	—	—	—	Out-sourced	23.11.2031 — LR20H METCAL Engineering Laboratory Pvt Ltd, Chennai (NABL) — Mou dated 23.06.2026, valid 65 months to 23.11.2031 — Chemical composition, as per MOU	—
6	(vi)	Ultrasonic Testing facilities	IS 4225 / ASTM	—	—	—	—	—	—	—	—	Out-sourced	Matrix Inspection & Engineering Services — as per MOU	Confirm MOU validly meets the 65-month minimum.
7	(vi)	Liquid Penetration Testing facilities	ASTM E165	—	—	—	—	—	—	—	—	Out-sourced	Matrix Inspection & Engineering Services — as per MOU	Confirm MOU validly meets the 65-month minimum.

NOTES

1. Copies of the MOU, NABL accreditation certificates with scope annexures, and previous test certificates issued by each laboratory are enclosed separately.

2. The undertaking required under Clause 6.5, in the Annexure A format, is enclosed separately, certifying that the in-house facilities can accomplish manufacture and testing per IRC-83-2018 (Part-II) and that the out-sourced facilities have been inspected and found in order.

Certified that the particulars given above are true and correct, and that the facilities declared are owned by and located at the premises of Hevea Rubber Technologies Private Limited.

Authorized Signatory

Kulwin Kurien, Managing Director