In response to uploaded Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01), on RDSO's Website dated 09.04.2025, reasoned document has been prepared as under:

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-
0.0Forward			2023(Revision- 01)
0.0Forward			
 1.1 As a part of system improvement in procurement of track items, track items of similar functional requirements and basic material viz. Grooved Rubber Sole plates (GRSP), Composite Grooved Rubber Sole plates (CGRSP) and Nylon Cord Reinforced GRSP are clubbed together into one single item, hereby known as 'Rail Pad'. In this context following present specifications have been merged in the present specification: i) IRS specification for 6mm thick Grooved Rubber Sole Plate, Sl. no. IRS/T-47 ii)—IRS specification for 10 mm thick Grooved Rubber Pad (Provisional)-1989 iii) IRS Specification for 6.2mm Composite Grooved Rubber Sole Plate, no. M&C/RP-198/2006 iv) IRS Specification for 10mm Composite Grooved Rubber Sole Plate, no. M&C/RP-200/2007 v) IRS Specification for 6mm thick Nylon Cord Reinforced Grooved Rubber Sole Plate, no. M&C/RP-201/2020 (Rev-1) 	Nil	No Change proposed	1.1 As a part of system improvement in procurement of track items, track items of similar functional requirements and basic material viz. Grooved Rubber Sole plates (GRSP), Composite Grooved Rubber Sole plates (CGRSP) and Nylon Cord Reinforced GRSP are clubbed together into one single item, hereby known as 'Rail Pad'. In this context following present specifications have been merged in the present specification: i) IRS specification for 6mm thick Grooved Rubber Sole Plate, Sl. no. IRS/T-47 ii) IRS specification for 10 mm thick Grooved Rubber Pad (Provisional)-1989 iii) IRS Specification for 6.2mm Composite Grooved Rubber Sole Plate, no. M&C/RP-198/2006 iv) IRS Specification for 10mm Composite Grooved Rubber Sole Plate, no. M&C/RP-200/2007 v) IRS Specification for 6mm thick Nylon Cord Reinforced Grooved Rubber Sole Plate, no. M&C/RP-201/2020 (Rev-1)
1.2 For the purpose of deciding whether a particular requirement of this standard is complied with the final value observed and calculate expressing the results of a test or analysis, shall require to be rounded off in accordance with IS:2. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard specification.	Nil	No Change proposed	2.0 For the purpose of deciding whether a particular requirement of this standard is complied with the final value observed and calculate expressing the results of a test or analysis, shall require to be rounded off in accordance with IS:2. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard specification.
1.0 Scope			
1.1 This specification covers the requirements, method of	Nil	No Change propose	d1.1 This specification covers the requirements,

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tests, sampling and scheme of testing for Rail Pads for			method of tests, sampling and scheme of
placing beneath rails, at rail seat of the PSC sleepers i.e.			testing for Rail Pads for placing beneath
Grooved Rubber Sole Plate (6mm & 10mm thick), Composite Grooved Rubber Sole plates (6.2mm & 10mm			rails, at rail seat of the PSC sleepers i.e. Grooved Rubber Sole Plate (6mm & 10mm
thick) & Nylon Cord Reinforced GRSP (6mm & 10mm			thick). Composite Grooved Rubber Sole
thick).			plates (6.2mm & 10mm thick) & Nylon Cord
ulion).			Reinforced GRSP (6mm & 10mm thick).
1.2 All the provisions contained in RDSO's ISO apex	Nil	No Change	1.2 All the provisions contained in RDSO's ISO
documents (latest versions) subsequent		proposed	apex documents (latest versions)
versions/amendments thereof, shall be binding and		p. opcocu	subsequent versions/amendments thereof,
applicable on the successful vendor(s) in the tenders			shall be binding and applicable on the
floated by Railways to maintain quality of products			successful vendor(s) in the tenders floated
supplied to Railways.			by Railways to maintain quality of products
•			supplied to Railways.
2.1The latest versions of BIS specification as follows and the	Nil	No Change	2.1 The latest versions of BIS specification as
RDSO drawing of the Rail pads under manufacture shall be		proposed	follows and the RDSO drawing of the Rail
available at the manufacturer's works premises.			pads under manufacture shall be available
			at the manufacturer's works premises.
2.1.1IS: 7503(Part I to IV): Glossary of terms used in Rubber	Nil	No Change	2.1.1 IS: 7503(Part I to IV): Glossary of terms
Industry.		proposed	used in Rubber Industry.
2.1.2IS:3400(Part 1):2021: Methods of test for vulcanized	Nil	No Change	2.1.2 IS:3400(Part 1):2021: Methods of test for
rubbers: Part 1 Tensile stress strain properties (3 rd revision).		proposed	vulcanized rubbers : Part 1 Tensile stress
			strain properties (3rd revision).
2.1.3IS:3400(Part II): 2014(Reaffirmed 2019): Methods of test	Nil	No Change	2.1.3 IS:3400(Part II): 2014(Reaffirmed 2019):
for vulcanized rubbers : Part II Determination of Hardness		proposed	Methods of test for vulcanized rubbers :
0.4.410.0.400/P. 4.10.0.0040/P. 450.400/P. 4			Part II Determination of Hardness
2.1.4IS:3400(Part IV): 2012(Reaffirmed 2017): Methods of tests	Nil	No Change	2.1.4 IS:3400(Part IV): 2012(Reaffirmed 2017):
for vulcanized rubbers: part IV Accelerated ageing and Heat		proposed	Methods of tests for vulcanized rubbers:
resistance			part IV Accelerated ageing and Heat
2.1.5IS:3400(Part IX): 2020: - Methods of test for vulcanized	Nil	No Change	resistance 2.1.5 IS:3400(Part IX): 2020: – Methods of test for
rubbers: Part IX Determination of Density	INII	proposed	vulcanized rubbers: Part IX Determination
rubbers. Fait ix Determination of Density		proposed	of Density
2.1.6IS: 3400(Part X)-1977 (Reaffirmed 2019): Methods of tests	Nil	No Change	2.1.6 IS: 3400(Part X)-1977 (Reaffirmed 2019):
for vulcanized rubbers: part X compression set at constant		proposed	Methods of tests for vulcanized rubbers:
strain (first revision)		ly, elected	part X compression set at constant strain
,			(first revision)
2.1.7IS: 3400(Part XIII)-1983(Reaffirmed 2019): Methods of	Nil	No Change	2.1.7 IS: 3400(Part XIII)-1983(Reaffirmed 2019):
tests for vulcanized rubbers: part XIII Tension Set		proposed	Methods of tests for vulcanized rubbers:
			part XIII Tension Set
2.1.8IS: 3400(Part XV)-1971(Reaffirmed 2019): Methods of	Nil	No Change	2.1.8 IS: 3400(Part XV)-1971(Reaffirmed 2019):

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tests for vulcanized rubbers: part XV volume resistivity of electrically conducting and antistatic rubbers.		proposed	Methods of tests for vulcanized rubbers: part XV volume resistivity of electrically conducting and antistatic rubbers.
2.1.9 IS: 3400(Part 22):1984(Reaffirmed 2019) - Methods of test for vulcanized rubber: Part 22 Chemical analysis.	Nil	No Change proposed	2.1.9 IS: 3400(Part 22):1984(Reaffirmed 2019) - Methods of test for vulcanized rubber: Part 22 Chemical analysis.
2.1.10IS: 2-1960(Reaffirmed: 2021): Rules for rounding off numerical values	Nil	No Change proposed	2.1.10 IS: 2-1960(Reaffirmed: 2021): Rules for rounding off numerical values
2.1.11IS: 4905: 2015(Reaffirmed: 2020): Random sampling and Randomization procedure (First revision)	Nil	No Change proposed	2.1.11 IS: 4905: 2015(Reaffirmed: 2020): Random sampling and Randomization procedure (First revision)
2.1.12 ASTM-D-945-Method of test for mechanical properties of Elastomeric vulcanizates under compressive or shear strain by mechanical oscillographs.	Nil	No Change proposed	2.1.12 ASTM-D-945-Method of test for mechanical properties of Elastomeric vulcanizates under compressive or shear strain by mechanical oscillographs.
2.1.13ASTM-D-2138: Method of test for Adhesion between Cord and Rubber (H-Pull test)	Nil	No Change proposed	2.1.13 ASTM-D-2138: Method of test for Adhesion between Cord and Rubber (H- Pull test)
2.1.14 ASTM-E1131- 08: Standard Test Method for Compositional Analysis by Thermogravimetry	Patil Rail Infrastructure Pvt. Ltd.: OK	TGI test is added in the specification. Accordingly, the ASTM standard is added.	2.1.14 ASTM-E1131- 08: Standard Test Method for Compositional Analysis by Thermogravimetry
2.1.15 ISO 11358-1: Plastics — Thermogravimetry (TG) of polymers Part-1 General principles	Patil Rail Infrastructure Pvt. Ltd.: OK	TGI test is added in the specification. Accordingly, the ISO standard is added.	2.1.15 ISO 11358-1: Plastics — Thermogravimetry (TG) of polymers Part-1 General principles
2.1.16BS-ISO 1431-1-2024: Rubber, vulcanized or thermoplastic — Resistance to ozone cracking, Part 1: Static and dynamic strain testing	Patil Rail Infrastructure Pvt. Ltd.: OK	Ozone test is added in the specification. Accordingly, the ISO standard was added. However, IS: 3400 Part-20:2021 contains the testing	2.1.16 IS: 3400 Part-20:2021, Resistance to Ozone Cracking (Static Strain Test)

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		details, hence, reference to this	2020(1001000000000)
		code.	
2.1.17ASTM D5963: (Rubber Property—Abrasion Resistance	Patil Rail Infrastructure Pvt.Ltd.:	Rebound	2.1.17 IS: 3400 Part-11:2021, Rebound
(Rotary Drum Abrader))	Or DIN Abrsion tester as per DIN	Resilience test is	Resilience Measures the energy return
	53516	added in the specification and	capability of rubber after deformation.
		specification and hence, IS	
		standard for	
		rebound test is	
		referred.	
		Abrasion test is	
		covered in para 2.1.18.	
2.1.18ISO 4649: (Rubber—Determination of resistance to	Nil	Abrasion test is	2.1.18 IS: 3400 Part-3:2021, Abrasion Resistance
abrasion using a rotating cylindrical drum device)		added in the	Assesses the wear resistance of rubber
		specification.	materials.
		Accordingly, the ISO standard	
		was added. As	
		IS: 3400 Part-	
		3:2021 covers	
		the abrasion test,	
		the same is referred.	
-	Patil Rail Infrastructure Pvt.Ltd.:	In the proposed	Not added in the specification
	ASTM D430 DeMattia Flexing	revision of the	
	machine to determine rubber	specification,	
	deterioration – Dymanic fatigue	durability test for rail pad has been	
	Dymanic laugue	added. Therefore,	
		the suggested	
		Dynamic Fatigue	
		test will not be	
2.2 IS: 7151: 1991(Reaffirmed :2018): Corrugated Fibreboard	Nil	required. No Change	2.2 IS: 7151: 1991(Reaffirmed :2018): Corrugated
Boxes for para dropping of supplies.		proposed	Fibreboard Boxes for para dropping of
			supplies.
2.3 The specific provisions in this standard specification over-	1.M/s Shah Elastomer:	No Change	2.3 The specific provisions in this standard
ride those in the above BIS specifications where these are	2.M/s Shiva Industries:		specification over-ride those in the above

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not in conformity with one another. The specific	Over the years BIS specifications are	proposed.	BIS specifications where these are not in
requirement given in the drawing of the Rail pads will	incorporated in various IRS		conformity with one another. The specific
over-ride the relevant provision of this specification.	specification and testing methodology	The provisions of	requirement given in the drawing of the
	is adopted from the same. BIS	this Specification	Rail pads will over-ride the relevant
	specification is a standard	which are at	provision of this specification
	specification having various provisions	variance with BIS	
	which should not be ignored or over-	specifications	
	ride as these are followed in several	have been	
	products similar to rail pads. The time	framed	
	frame and percentage variation	considering	
	acceptable on different parameters	special requirements of	
	mentioned in Appendix-R are vague and derived from nowhere having no	requirements of the Railway.	
	basis. Whereas in BIS specification	Therefore, in	
	the time frame for testing is correctly	case of any non-	
	mentioned for variable and constant	conformance, the	
	parameters and followed since many	provisions of IRS	
	years. So we suggest that the	T-55 shall prevail.	
	provisions of BIS should not over-ride		
	with provisions of Appendix-R and	Procedure for	
	Appendix-R should be modified	Picking up	
	accordingly.	samples from the	
	3,	lot already	
		passed by	
		inspecting	
		official/agency in	
		the vendor	
		premises or from	
		consignee	
		end/field is given	
		in the Appendix-	
		R.	
		The provision was	
		made as per the	
		experience and	
		testing conducted	
		on the product.	
3.0 RAW MATERIAL			

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raile, contained in the 2020 (nontrient on)		rtomanto	2023(Revision- 01)
3.1 The Rail Pad shall be manufactured from virgin base	1.Adinath Industries:	The comments of	3.1 The Rail Pad shall be manufactured from
material only i.e. using Natural Rubber, Ribbed Smoked	2.M/s Parashath Enterprises:	the firms are	virgin base material only i.e. using Natural
Sheet (RSS) either of grade 1 to 4 or 2 or a blend with	3. M/s Shiva Industries:	acceptable in	Rubber, Ribbed Smoked Sheet (RSS)
Styrene Butadiene Rubber (SBR) and/or Poly Butadiene	Currently we are using grade RSS 1	view of limited	either of grade RSS1, RSS2 or RSS3 or a
Rubber (PBR). The Rail Pad shall not be manufactured	to 4 for manufacturing of Rail Pad.	availability of	blend with Styrene Butadiene Rubber
using reclaimed/ re-refined/ recycled/ regenerated rubber.	We are achieving testing parameters	RSS1 and RSS2.	(SBR) and/or Poly Butadiene Rubber
	as per relevant clauses 5.1 or 5.2 or	Therefore, RSS3	(PBR). The Rail Pad shall not be
	5.3 of specification by using grade 3	has also been	manufactured using reclaimed/ re-refined/
	or 4 also. Major consumption of	included in this	recycled/ regenerated rubber.
	natural rubber is RSS-4 even tyre	para.	
	companies use RSS-3 & Rss-4		
	Hence, there is no need for change		
	of grade from RSS 1-4 to 1 or 2.		
	4. Ameenji Industries:		
	Technically there is no much Change		
	in RSS1 or 2 & RSS 3 or 4 of Natural		
	Rubber. And RSS 1 or 2 availability is very less in the market compare to		
	RSS 3 or 4. Majority of available		
	grade is RSS 4 in the market.		
	grade is 1000 4 in the market.		
	5.M/s Shah Elastomer:		
	To achieve the required properties of		
	the rail pad apart from the polymer,		
	different chemicals, accelerators,		
	antioxidants play a vital role. RSS-4 is		
	widely used as the most common		
	form of natural rubber to manufacture		
	rail pads and in the past properties		
	have been achieved using this grade.		
	Is there any study to prove that by the		
	use of only RSS-1 or 2 grade NR, the		
	required properties can be achieved?.		
	Keeping in view the mass requirement		
	of rail pads the availability of RSS-1		
	and 2 in the market is very minimal as		
	# compared to RSS-4. This can be		
	verified by Rubber Board. So we		
	suggest that RSS -1 to 4 should be		
	continued to be allowed for		

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	manufacture of rail pad.		,
	6.M/s Shri Radha Polymers: As is commonly known RSS 4 grade is the most widely uséd grade of Natural rubber, due to its quality, versatility in compounding and its		
	availability in large quantity. It is used widely in Tyre and Automobile industry. Marketwise the availability due to high production and use of RSS 4 grade is vast and hence removing it from use in Rail Pads is a not technically and commercially viable option.		
	7M/s V K Enterprises: Use of Natural Rubber RSS-1 or2 is unwarranted and unsubstantiated as no vendor has ever conducted any pilot study to ascertain the impact of use of these grades on the final results.		
	8.M/s ROYAL FASTENERS NE The removal of RSS 3 & 4 seems restrictive. Considering major production of Natural Rubber is RSS 4, and even tyre companies use RSS 3 & RSS 4, we suggest re-evaluating this clause to include them.		
	9.M/s ROYAL ELASTOMERS RSS 3 & RSS 4 should be retained, as major production is of RSS 4 and it is used by tyre companies		
	Patil Rail Infrastructure Pvt.Ltd.: The Rail Pad shall be manufactured from virgin base material only i.e.		

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	using Natural Rubber, Ribbed Smoked Sheet (RSS) either of grade 1 to 4 or 2 or a blend with Styrene Butadiene Rubber (SBR) and/or Poly Butadiene Rubber (PBR) or other special synthetic rubber. The Rail Pad shall not be manufactured using reclaimed/ re- refined/ recycled/ Page 3 of 35 regenerated rubber.		
3.2 For Rail Pad made of natural rubber with a particular grade of RSS 1 to 4 or 2, the manufacturer should have valid license from Rubber Board for procurement of the natural rubber and to be used for manufacturing of Rail pads.	Nil	The Para has been revised as per comments on Para 3.1.	For Rail Pad made of natural rubber with a particular grade of RSS1, RSS2 or RSS3, the manufacturer should have valid license from Rubber Board for procurement of the natural rubber to be used for manufacturing of Rail pads.
3.3 During inspection of Rail pads, the supplier should submit invoice with e-way bill in support of procurement of natural rubber of a particular grade from the sources having valid license from Rubber Board with proof of filing annual return with Rubber Board. Further, invoice of carbon blacks of suitable ASTM grades or as per ASTM D 1765 procured from the primary manufacturing sources or their authorized dealer shall be submitted at the time of RDSO inspection. A record shall be maintained showing procurement & consumption of natural rubber and carbon blacks used for the production of Rail pads.	1. Patil Rail Infrastructure Pvt.Ltd.: During inspection of Rail pads, the supplier should submit invoice with eway bill insupport of procurement of natural rubber of a particular grade from the sources having valid license from Rubber Board with proof of filing annual return with Rubber Board. Further, invoice of carbon blacks of suitable ASTM grades or as per ASTM D 1765 or Silica (Ultrasil VN3 or equivalent) as per ATSM D 2413 procured from the primary manufacturing sources or their authorized dealer shall be submitted	Comments of the firm are accepted. Accordingly Para has been revised.	3.3 During inspection of Rail pads, the supplier should submit invoice with e-way bill in support of procurement of natural rubber of a particular grade RSS1, RSS2 or RSS3 from the sources having valid license from Rubber Board with proof of filing annual return with Rubber Board. Further, invoice of carbon blacks of suitable ASTM grades or as per ASTM D 1765, silica (particle size < 20 microns) procured from the primary manufacturing sources or their authorized dealers shall be submitted at the time of RDSO inspection. A record shall be maintained showing procurement
3.4 For Nylon Cord Reinforced GRSP, the supplier should submit the purchase invoice along with e-way bill, in support of procurement of nylon cord of style 1260/2 with	at the time of RDSO inspection. A record shall be maintained showing procurement & consumption of natural rubber and carbon blacks used for the production of Rail pads. Nil	Mismatch of thickness and Denier has been	and consumption of natural rubber and carbon blacks used for the production of Rail pads. 3.4 For Nylon Cord Reinforced GRSP, the supplier should submit the purchase invoice along with e-way bill, in support of

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minimum 2400 Denier.		corrected by specifying nylon cord of style 1680/2 with minimum 3200 Denier.	procurement of nylon cord of style 1680/2 with minimum 3200 Denier.
4.0 MANUFACTURE			
4.1 Each mix/batch of compound shall be prepared with natural rubber content not less than 55% and subject to their conforming to the requirement as given in relevant clauses 5.1 or 5.2 or 5.3 of this specification	1.Adinath Industries: 2.M/s Parashath Enterprises: As per our ongoing formulation, testing results are meeting with this specification where natural rubber content is less than 55 %. Using natural rubber content more than 55% can affect some testing parameters both GRSP & in compound of CGRSP. Also layer A & layer B has different hardness and to maintain in natural rubber with content more than 55% is not possible. There should be a range of rubber content to be 40-60% to make balance of properties for different compound like A & B When a new Specification design for product comes, lot of exercise needed to develop it by research, designing, formulation, processing & testing etc. We request you to please share the compounding formulation considering that there has been sample testing done at your end before drafting this parameter. 3. M/s Ameenji Industries: Since we have two types of	The comments of the firm have been examined. The Para has accordingly been modified.	4.1 Each mix/batch of compound shall be prepared with natural Rubber blended with SBR and / or Poly Butadiene Rubber (PBR). In each mix/batch, the polymer content shall not be less than 50% and the product shall conform to the requirements stipulated in relevant clauses 5.1 or 5.2 or 5.3 of this specification.
	compound in use for Composite rail Pads, It should be in between 50 to 60% because varied percentage of rubber as per design is required for		

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	60 to 85 shore A hardness		2023(Nevision-01)
	4 .M/s Bony polymers Pvt.Ltd.		
	Comments: Each mix/Batch of		
	Compound shall be prepared with		
	Blend of Natural and synthetic Rubber		
	content at not less than 55% of		
	polymer and subject to conforming to		
	the requirement as given in relevant		
	clauses 5.1or 5.2 or 5.3 of this		
	specification Reason : The groove		
	pad must be composed of a blend of		
	natural rubber and synthetic rubbers		
	such as SBR (StyreneButadiene		
	Rubber), PBR (Polybutadiene		
	Rubber), or other suitable polymers		
	that provide excellent dynamic		
	performance. This aligns with Clause		
	No. 3.1, which allows the compounder		
	reasonable flexibility to use advanced		
	polymers to enhance the compound's		
	overall performance characteristics.		
	5.M/s Shah Elastomer:		
	To achieve the required properties of		
	the rail pad apart from the polymer,		
	different chemicals, accelerators,		
	antioxidants play a vital role. The		
	specification covers 6 different rail		
	pads. Is there any specific study to		
	prove that by using more than 55%		
	natural rubber the required properties		
	as elaborated by you on clauses		
	5.1,5.2 or 5.3 can be achieved?. The		
	specification also permits the blending of natural rubber with other		
	polymers like SBR and PBR. So the		
	percentage of natural rubber cannot		
	be defined until there is a specific		
	study to prove that all the properties		

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	mentioned in these clauses can be		
	achieved by using more than 55%		
	natural rubber.		
	6. M/s Shiva Industries:		
	As per our ongoing formulation,		
	testing results are meeting with this		
	specification where natural rubber		
	content is less than 55 %. Using		
	natural rubber content more than 55		
	% can affect some testing		
	parameters. When a new design product comes, lot of exercise needed		
	to develop it by research, designing,		
	formulation, processing & testing		
	etc. Hence this SN should be omitted.		
	Sto. Horios tine of Chicara be difficult.		
	7.M/s Shri Radha Polymers:		
	The compound used to make Rail		
	Pads is a mix of different chemicals,		
	polymers, fillers, carbon black,		
	accelerators. The combination used to		
	get the desired properties is a		
	complex jugglery. By setting a		
	minimum % for the use of natural		
	rubber in the formulation will surely		
	affect the achievement of properties		
	as laid in 5.1, 5.2. 5.3. By increasing		
	the polymer content, achieving the		
	Hardness to get Relaxed Modulus will		
	be challenging, since higher the		
	polymer content, the more elastic and soft the end product becomes. Instead		
	a range should be given for example		
	40-55%, which will ensure proper		
	usage and give chough margin to get		
	the chemical formulation which		
	achieves the desired test proporties of		
	Rail Pads. In case RDSO has		
	conducted some trial formulation or		
	testing on this criteria the same may		

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	kindly be shared so as to enable us study the results.		2020(1001010111111111111111111111111111
	8 .M/s V K Enterprises :: It is not possible for any vendor to comment on percentage of Natural Rubber at 55% without studying its impact on final results.		
	9.M/s ROYAL FASTENERS NE Manufacturing mandates a minimum of 55% RSS 1 or 2 per batch. Given the dynamics of Rubber Compounding, it is advisable to provide a range, preferably 40- 60% rubber content, to accommodate the varying hardness & physical test requirements. We request RDSO to share the compound recipe since achieving all test results with 55% rubber content appears technically challenging.		
	10.M/s ROYAL EASTOMERS Recommend changing the absolute value 55% RSS 1 or 2 requirement to a flexible 40-60% rubber content to meet physical test requirements. Please consider sharing a compound recipe, as it appears difficult to meet all required parameters with the specified rubber content.		
	11. Patil Rail Infrastructure Pvt.Ltd.: Each mix/batch of compound shall be prepared with natural rubber content not less than 55% (52%) and subject to their conforming to the requirement as given in relevant clauses 5.1or 5.2 or 5.3 of this specification.		

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rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55- 2023(Revision- 01)
4.1 4.2 Each mix/batch of compound shall be tested for Relaxed Modulus (before ageing) and electrical resistance (before water immersion) and subject to their conforming to the requirement as given in relevant clauses 5.1	Nil	No Change proposed	4.2 Each mix/batch of compound shall be tested for Relaxed Modulus (before ageing) and electrical resistance (before water immersion) and subject to their conforming to the requirement as given in relevant clauses 5.1or 5.2 or 5.3, the manufacture of Rail pad shall be undertaken from such mix / compound.
4.2 4.3 The Composite Grooved Rubber Sole plates (CGRSP) shall consist of two layers of different rubber compound A & B conforming to the properties as stipulated in clause 5.2 integrally vulcanized and physically inseparable. The CGRSP thus obtained shall conform to the requirement as given in clause 5.2.	Nil	No Change proposed	4.3 The Composite Grooved Rubber Sole plates (CGRSP) shall consist of two layers of different rubber compound A & B conforming to the properties as stipulated in clause 5.2 integrally vulcanized and physically inseparable. The CGRSP thus obtained shall conform to the requirement as given in clause 5.2.
4.3 4.4 The thickness of layer conforming to Compound 'A' and Compound 'B' for 6.2mm & 10mm CGRSP are as under:	Nil	No Change proposed	4.4 The thickness of layer conforming to Compound 'A' and Compound 'B' for 6.2mm & 10mm CGRSP are as under:
i) For 6.2mm CGRSP: Thickness of Compound 'A': 3.0mm(approx.) Compound 'B' 3.5mm(approx.) and the thickness of the Composite GRSP: 6.2 +0.5 /-0.0 mm. ii) For 10mm CGRSP: Thickness of Compound 'A': 7±0.5 mm Compound 'B': 3±0.5 mm) and the thickness of the Composite GRSP: 10+0.7 /-0.0 mm.			i) For 6.2mm CGRSP: Thickness of Compound 'A': 3.0mm(approx.) Compound 'B' 3.5mm(approx.) and the thickness of the Composite GRSP: 6.2 +0.5 /-0.0 mm. ii) For 10mm CGRSP: Thickness of Compound 'A': 7±0.5 mm
4.4 4.5 Nylon Cord Reinforced GRSP shall consist of two layers of same compound of GRSP reinforced in between with two layers of treated Nylon Cord placed cross wise to each other in the regular section and a thin rubber layer between two layers of reinforcement. Care shall be exercised to avoid displacement and exposure of the cords during vulcanization. Nylon Cord shall conform to the requirements of the properties specified in the	1.M/s Shah Elastomer For both nylon cord GRSP (6mm & 10mm) the construction should be mentioned clearly and separately, mentioning the number of layers of cord in each GRSP and the thickness of rubber on top and bottom.	Comments of the firm are not accepted. The layer of the cord is already mentioned in this Para. However, thickness of	4.5 Nylon Cord Reinforced GRSP shall consist of two layers of same compound of GRSP reinforced in between with two layers of treated Nylon Cord placed perpendicular to each other in the regular section and a thin rubber layer between the two layers of the reinforcement. Care shall be exercised to avoid displacement and exposure of the cords during vulcanization. Nylon Cord

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	standard under clause 5.3.1.		rubber on top and bottom cannot be specified as the product is manufactured by hot molding press.	shall conform to the requirement stipulated in the standard under clause 5.3.1.
4.5 4.6	The Rail pads shall conform to the requirements of the properties specified in this specification under relevant clause 5.1 or 5.2 or 5.3 as applicable and 7 & 9.	Nil	No Change proposed	4.6 The Rail pads shall conform to the requirements of the properties specified in this specification under relevant clause 5.1 or 5.2 or 5.3 as applicable and 7 & 9.
5.0	PHYSICAL PROPERTIES OF RAIL PADS:	1.M/s Shah Elastomer: These new introduced tests shall not improve the quality of the rail pads as the existing tests covered in the existing specification are sufficient to determine the quality of rail pads. Already the specification has been revised multiple times in the recent past introducing costly testing machines. One of those machines such as Impact Attenuation is used once in 5 years. The introduction of these tests shall unnecessarily increase the cost of capital infrastructure and put financial burden on existing vendors who are mostly MSME's. The whole purpose of Make in India policy shall fail if we are regularly bound to purchase costly testing machines. 2.M/s Shiva Industries: These new introduced tests shall not improve the quality of the rail pads as the existing tests covered in the existing specification are sufficient to determine the quality of rail pads. Already the specification has been	To control the quality of rubber pad during its service life, and to avoid faster deterioration, the additional testing has been added.	

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55- 2023(Revision- 01)
	revised multiple times in the recent		
	past introducing costly testing		
	machines. One of those machines such		
	as Impact Attenuation is used once in 5		
	years.		
	The RDSO should conduct field trial		
	for a minimum of 8 years in different		
	geographical/atmospheric climate		
	as per ISO:12944-Part 5 on Indian		
	Railway track system for validation.		
	How will it be possible for MSME		
	vendors to survive in competitive		
	environment if the specification is		
	revised in every two years against		
	the stipulated time of 5 years. On		
	2nd May 2025, a report released by		
	NITI Aayog titled "Enhancing		
	Competitiveness of MSMEs in India"		
	identifying key challenge and presenting a set of systemic reforms		
	aimed at boosting their		
	competitiveness. It is unfortunate that		
	instead of encouraging and promoting		
	MSME vendors, RDSO is imposing		
	restriction to MSME for elimination.		
	(iii) Scope of use in Indian Railway in		
	lieu of 10 mm thick NCGRSP is not		
	clear. If at all required, a separate		
	specification for this item may be		
	framed instead of revision of existing		
	IRS-T-55-2023.		
5.1 PHYSICAL PROPERTIES OF FINISHED 6MM & 10MM TH	ICK GROOVED RUBBER SOLE PLATES		
	1.Adinath Industries:	i) For	SN
SN	2.M/s Parashath Enterprises:	improvement in	Property/Test
roperty/Test	3.M/s Shiva Industries:	the rubber pad,	Units
Units	Duration of ageing changed from 96	the minimum	Acceptance value for 6mm thick GRSP
Acceptance value for 6mm thick GRSP	hours to 72 hours on T-55-2023 from	polymer content	Acceptance value for 10mm thick GRSP
Acceptance value for 10mm thick GRSP	the previous specification. After	(50%) is fixed in	Test Method
Test Method	running two years of specification,	the rubber pad.	1

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1	ageing period again changed. Again,	This test will	Hardness
Hardness	we have to set our formulation to	restrict extra	Shore 'A'
Shore 'A'	achieve the parameters as per 5.1,	and unwanted	75-85
75-85	5.2 and 5.3. Also IS Standard or	addition of filler	70-80
70-80	any standard doesn't recommend for	material in the	Appendix 'A'
Appendix 'A'	96 hours ageing. Hence, ageing	rubber pad and	2
2	duration shall remain at 72 hours as	enhance its	Tensile Strength
Fensile Strength	per IS standard.	service life.	
	For SN 09 of Table:	ii) Ozone test	Appendix 'B'
Annandiy 'D'	1. Patil Rail Infrastructure Pvt.Ltd.:	identified the	Appendix B
Appendix 'B'	Approved value ± 5, Subject to not	use of	a) Before ageing
a) Before ageing	exceeding 27%(15%)	Antioxidant and	Kg/cm ²
Kg/cm ²		Antiozonant in	120 (min)
120 (min)	For SN 14 of Table:	the rubber pad.	120 (min)
120 (min)	1.Adinath Industries:	and radder page.	120 (11111)
120 (11111)	2.M/s Parashath Enterprises:	These	
	The test result should be verified	chemicals are	b)After ageing at 100+1°C for 72 96+ 0/-2 hrs
o)After ageing at 100+_1°C for 72 96+ 0/-2 hrs	before we determine the test	used in the	Kg/cm ²
Kg/cm ²		rubber pad for	100 110 (min)
100 110 (min)	requirement.	protection	100 110 (min)
100 110 (min)			
	3. Ameenji Industries:	against	
	Ok, In between 50 to 60% as used two	weathering.	c)Retention after ageing
s)Retention after ageing	types of compounds in the Composite	0	, %
%	Rail Pads. And the Avg. Rubber	Comment of the	80 (min)
80 (min)	content >55 %.	firm M/s Ameenji	70 (min)
70 (min)		Industries:	
	4. M/s Shiva Industries:	"No surface cracks	3
3	5.M/s Shri Radha Polymers:	should be found	Elongation at break
Elongation at break	Ok, This test may be incorporated in	when the test	
-	the Specification subject to the	condition is	
	acceptance of a range for the polymer	"Ozone	
	usage as mentioned above in the	concentration: 25	Appendix 'B'
Appendix 'B'	comments for 4.0/4.1. The acceptance	pphm, Elongation:	
	of 55% minimum level of polymer	30% stretch,	a) Before ageing
a) Before ageing	content is not technically possible	Temperature 40	%
%	considering the complexity in	°C ± 2 °C 24hrs	200 (min)
200 (min)	achieving the test results of the	duration" has been	200 (min)
200 (min)	parameters of Rail Pad.	examined and	
	parameters of Rail Fau.	found reasonable.	
	6 Patil Pail Infrastructure Put I tol	Hence, a	b)After ageing at 100±1°C for 72 96 + 0/-2 hrs
o)After ageing at 100 <u>+</u> 1°C for 72 96 + 0/-2 hrs	6. Patil Rail Infrastructure Pvt.Ltd.:	rionoc, a	%

Draft IRS Specification for Rail pad for placing beneath	Comments of Stake holders	RDSO's	Final Draft IRS Specification for Rail pad for
rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55-
			2023(Revision- 01)
%	Thermogravimetric Analysis (TGA) for	procedure has	150 160 (min.)
150 160 (min.)	Rubber content >55(52)	been included in	150 160 (min.)
150 160 (min.)		Appendix-T.	
	For SN 15 of Table:		
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1.Adinath Industries:		c)Retention after ageing
c)Retention after ageing	2.M/s Parashath Enterprises:	iii) Vertical	%
% 65 (min.)	As this test is for 0.5 million cycles, in	Rebound test	65 (min.)
60 (min.)	this test lot of time consumed for	and Abrasion	60 (min.)
00 (11111.)	testing of approx. 27 hours for 1	test indicate	4
4	sample Testing. In regular inspection	proper curing of	Relaxed Modulus at 100% elongation
Relaxed Modulus at 100% elongation	it is not possible to conduct this test	the rubber pad.	Treated Wooding at 100% clongation
Totalia madala at 100% diongalon	for every lot. This is a fastening		
	assembly test of the entire	Any reduction in	
	component ie. Rail clip, Liner,rubber	curing time	Appendix 'C'
Appendix 'C'	pad ,Insert & sleeper any Variation	merely to	
	on any component will affect the	manufacture	a) Before ageing
a) Before ageing	result of the test Hence ti should not	more pads will	Kg/cm ²
Kg/cm ²	be used to check Rubber Pad. It is a	be checked by	45-60
45-60	design test of the entire fastening	these tests.	50-75
50-75	assembly and not to check a		
	particular component.	The Rail pad is	
1		subjected to	b)Change after ageing at 100±1°C for 72 96 + 0/-2 hrs
b)Change after ageing at 100±1°C for 72 96 + 0/-2 hrs	3. M/s Ameenji Industries:	abrasion due to	% of
% of	Since Generally, this test is	creep between	actual
actual value	applicable for Complete set of	the rail and	value +30(max)
+30(max)	fastening assembly components	sleeper. Hence	-10
-10	including Rail Clip, Liner, Rail Pad,	the abrasion test	±40
±40	Insert & Sleeper, the test may not be	is required.	140
±40	so use full since all other test		
	parameter to check .Rail Pad almost	iv) Durability	5
5	ensures & delivers the required	Test ascertains	Compression set subjected to 50% compression at
Compression set subjected to 50% compression at 100±1°C for	outcome.	the long term	100±1°C for 24+0/-2 hrs
24+0/-2 hrs		performance of	<u> </u>
%	4M/s Shiva Industries:	the rubber pad.	30(max)
30(max)	As this test is for 0.5 million cycles, in		30(max)
30(max)	this test lot of time consumed for	The durability	Appendix 'D'
Appendix 'D'	testing of approx. 27 hours for 1	test can be	6
6	sample testing. In regular inspection it	conducted	Tension set subjected to 50% stretch at 100±1°C for
Tension set subjected to 50% stretch at 100±1°C for 24+0/-2 hours	is not possible to conduct this test for	simultaneously	24+0/-2 hours
% 05(mm)	every lot. Hence this tests to be	with the ageing	% 05()
25(max)	,	of the product	25(max)
25(max)			25(max)

Draft IRS Specification for Rail pad for placing beneath rails	, Seriar hents of Stake holders	RDSO's Remarks	
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Appendix 'E'	omitted.	which shall take	Appendix 'E'
7		04 days. Hence,	7
ad Compression Test	5.M/s Shri Radha Polymers:	no additional	Load Compression Test
mm	This is a test of the fastening	time will be	mm
0.4-0.6	components comprising of the entire	required for this	0.4-0.6
0.7-1.0	components consisting of Elastic Rail	test.	0.7-1.0
Appendix 'F'	Clip, Liner, Rubber Pad, Insert &		Appendix 'F'
	Sleeper the results of this test are	Durability test	8
ectrical resistance	dependent on the entire set of fittings	will be	Electrical resistance
Before immersion	being used. This test is meant for the	conducted with	a) Before immersion
After immersion	durability test of the entire fastening	the assembly.	b) After immersion
viega	,		Mega
Jiiii3	system as a whole and cannot be used	However, before	Ohms
	to ascertain the quality of Rail Pad.	and after test	
100(min)	Hence cannot be made applicable for	shall be done on	100(min)
00(min)	testing quality of rubber pads.	the rubber pad.	100(min)
		No other	
	6 .M/s ROYAL FASTENERS NE:	components i.e.	100(min)
()	Under Physical Properties, while a	ERC and Liner	100(min)
··	certain % of rubber content is	will affect the	Appendix 'G'
	acceptable by TGA, parameters like	performance of	9
sh content	Inclined Repeated Load Test should be	pad	Ash content
%	considered as design tests for	p and	%
Approved value ± 5, Subject to not exceeding 27%	fastening assemblies, not for individual	v) Aging time of	Approved value ± 5, Subject to not exceeding 27%
	components like rubber pads.	96 hour was	Approved value ± 5, Subject to not exceeding 27%
S: 3400 (Part 22)	oomponomo mo rassor pado.	applicable in the	IS: 3400 (Part 22)
0			10
ecific gravity		previous version	Specific gravity
	For SN 46 of Table:	of the	=
Approved value ± 0.03,	For SN 16 of Table:		Approved value ± 0.03,
Subject to not exceeding 1.27	A A alternation for allernations	is experienced	Subject to not exceeding 1.27
Approved value ± 0.03,	1.Adinath Industries:	that lesser	Approved value ± 0.03,
Subject to not exceeding 1.27	2.M/s Parashath Enterprises:	ageing time is	Subject to not exceeding 1.27
S:3400 (Part IX)	The test result should be verified	not sufficient to	IS:3400 (Part IX)
1	before we determine the requirement	ensure proper	11
cant Stiffness Test			Secant Stiffness Test
(N/mm	3. Ameenji Industries:	material. Hence,	KN/mm
50-250	Ok, the test results will be verified and	ageing time with	150-250
	will be submitted to fix the test		100-170
Appendix 'H'	requirement.	the respective	Appendix 'H'
12	Toganomoni.	values as per	12
· · · · · · · · · · · · · · · · · · ·	4M/s Shiva Industries:	previous version	Impact Attenuation Test
	4W/S SHIVA INQUSTRIES:	of specification	
· .	EM/- Obal Dadle - D 1	or opcomodion	0/2
%	5.M/s Shri Radha Polymers: If this test is added, then at first RDSO	has been	% 30

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
40	should provide data or test results on	restored.	40
(min)	the basis of which this test is being		(min)
Appendix 'I'	considered for addition of the		Appendix 'I'
13	specification, and only after due		13
Veight Test	consideration of the above the test may		Weight Test
gm	or may not be added.		gm
Should not exceed Max weight given in Appendix 'N' 'M'	or may not be added.		Should not exceed Max weight given in Appendix 4
Should not exceed Max weight given in Appendix 'N' 'M'	For SN 17 of Table:		'M'
Appendix 'O' 'N'	1.Adinath Industries:		Should not exceed Max weight given in Appendix 'N
14			'M'
hermogravimetric Analysis (TGA) for Polymer content	2.M/s Parashath Enterprises:		Appendix 'O'-'N'
%	As per the test method BS ISO 1431-1-		14
>55	2024, Sample thickness is 2.0 mm ±0.2		Thermogravimetric Analysis (TGA) for Polymer content
>50	mm. But our product thickness is more		%
ASTM-E1131-08	than this. So, this test is not applicable		>50
15	for it. Also, ozone test is recommended		>50
nclined Repeated Load Test (Durability Test)	for other rubber like Nitrile, EPDM,		ASTM-E1131- 08
	Fluor carbon etc. Natural rubber		15
0.5 million cycle	product is not applicable for it.		Inclined Repeated Load Test (Durability Test)
0.5 million	регология аррилами то та		
ycle	3. Ameenji Industries:		0.5 million cycle
Appendix 'K'	Ok. No surface cracks should be found		0.5 million
16	when the test condition is "Ozone		ycle
Resilience by Vertical Rebound			Appendix 'K'
%	concentration: 25pphm Elongation:		16
Will be fixed after sample test	30%strech, Temperature 40 °C ± 2 °C		Resilience by Vertical Rebound
Will be fixed after sample test	24hrs duration".		%
ASTM D-2632/			Will be fixed after sample test
Appendix 'L'	4M/s Shiva Industries:		Will be fixed after sample test
17	As per the test method BS ISO 1431-		ASTM D-2632/
Dzone tes	1-2024, Sample thickness is 2.0 mm		Appendix 'L' IS:3400-11
	±0.2 mm. But our product thickness is		17
No cracks	more than this. So, this test is not		Ozone tes
No cracks	applicable for it. Also, ozone test is		
BS-ISO 1431-1-2024	recommended for other rubber like		No cracks
18	Nitrile, EPDM, Fluro carbon etc.		No cracks
brasion Test	Natural rubber product is not		BS-ISO 1431-1-2024- IS:3400-20
%	·		18
Volume reduced not more than 20%	applicable for it. Hence, this test may		Abrasion Test
Volume reduced not more than 20%	be omitted.		%
ASTM D5963 or			Volume reduced not more than 20%
ISO 4649	5.M/s Shri Radha Polymers:		Volume reduced not more than 20%
Note:	Considering the fact that the rail pads		ASTM D5963 or
110101	are being used since past so many		ISO 4649

[Oraft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
i)	Impact Attenuation test shall be conducted on both type of product at RDSO during initial approval.	years and the ageing tests aircady being performed on the pads, this test		IS:3400-3
ii)	Impact Attenuation test shall be conducted on both type of product at RDSO or firm's lab or independent lab during quality audit of firms by RDSO.	is not required to be added. The addition of this test will only add financial burden on the company with no actual contribution towards		Note: i) Impact Attenuation test shall be conducted
iii)	Test for 6mm GRSP : All the tests shall be carried out on 6 mm thick finished pad.	enhancing the quality of life of rubber pads.		on both type of product at RDSO during initial approval.
iv)	Test for 10mm GRSP : All the tests shall be carried out on 10mm thick finished pad.	6. M/s ROYAL FASTENERS NE: The Ozone Test should be limited to type tests conducted at NABL		ii) Impact Attenuation test shall be conducted on both type of product at RDSO or firm's lab or independent lab during quality audit of firms by RDSO.
		accredited labs, not part of regular testing.		iii) Test for 6mm GRSP : All the tests shall be carried out on 6 mm thick finished pad.
		M/s Royal Elastomers : Ozone Test should be a type test conducted at NABL labs, not a routine one.		iv) Test for 10mm GRSP : All the tests shall be carried out on 10mm thick finished pad.
		For SN 18 of Table: 1.Adinath Industries: 2.M/s Parashath Enterprises: As per draft specification one sample to be tested for 0.2 million cycles which is required lots of time to test where 25- 40 lots of material are inspected every month in almost every company. Since the Rail Pad is in static mode beneath rail hence abrasion test is not required.		
		3. Ameenji Industries: Ok. The Volume loss shall not more than 20%.		
		4. M/s Shiva Industries: 5.M/s Shri Radha Polymers: Abrasion Test is widely applicable to rubber products which have dynamic loading or application involving motion.		

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	Since Rail Pads are under static load, the applicability of this test for Rail Pads is of no use, hence should not be considered.		
	6. M/s ROYAL FASTENERS NE:		
	The proposed Abrasion Test may not be essential given that Rail Pads remain static beneath the rails. 7. M/s Royal Elastomers: Abrasion Test may be omitted, given the static application of the rail pads.		
	New Property Added at SN 18 1. Patil Rail Infrastructure Pvt.Ltd.: Flex Property Test-No Crack-ASTMD430		
5.2 PHYSICAL PROPERTIES OF FINISHED 6.2MM & 10	MM THICK COMPOSITE GROOVED RU	BBER SOLE PLATE	
	OMM THICK COMPOSITE GROOVED RU	i) For	S.N.
S.N.	1.Adinath Industries: 2.M/s Parashath Enterprises	i) For improvement in	S.N. Property/
S.N. Property/	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries:	i) For improvement in the rubber pad,	S.N. Property/ Test
S.N. Property/ Test	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96	i) For improvement in the rubber pad, the minimum	S.N. Property/ Test Units
S.N. Property/ Test Units	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from	i) For improvement in the rubber pad, the minimum polymer content	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification,	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad.	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again,	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to achieve the parameters as per 5.1,5.2	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra and unwanted	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 &	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to achieve the parameters as per 5.1,5.2 and 5.3. Also IS Standard or any	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra and unwanted addition of filler	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A'
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 & Softer side (Compound 'B') 60-70	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to achieve the parameters as per 5.1,5.2 and 5.3. Also IS Standard or any standard doesn't recommend for 96	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra and unwanted addition of filler material in the	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 &
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 & Softer side (Compound 'B') 60-70 Harder side (Compound 'A') 75-85 &	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to achieve the parameters as per 5.1,5.2 and 5.3. Also IS Standard or any standard doesn't recommend for 96 hours ageing. Hence, ageing duration	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra and unwanted addition of filler material in the rubber pad and	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 & Softer side (Compound 'B') 60-70
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 &	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to achieve the parameters as per 5.1,5.2 and 5.3. Also IS Standard or any standard doesn't recommend for 96	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra and unwanted addition of filler material in the	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 & Softer side (Compound 'B') 60-70 Harder side (Compound 'B') 60-70
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 & Softer side (Compound 'B') 60-70 Harder side (Compound 'A') 75-85 & Softer side (Compound 'B') 60-70 Appendix 'A'	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to achieve the parameters as per 5.1,5.2 and 5.3. Also IS Standard or any standard doesn't recommend for 96 hours ageing. Hence, ageing duration shall remain at 72 hours as per IS standard.	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra and unwanted addition of filler material in the rubber pad and enhance its service life.	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 & Softer side (Compound 'B') 60-70 Harder side (Compound 'A') 75-85 &
S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 & Softer side (Compound 'B') 60-70 Harder side (Compound 'B') 60-70 Softer side (Compound 'B') 60-70	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to achieve the parameters as per 5.1,5.2 and 5.3. Also IS Standard or any standard doesn't recommend for 96 hours ageing. Hence, ageing duration shall remain at 72 hours as per IS	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra and unwanted addition of filler material in the rubber pad and enhance its	S.N. Property/ Test Units Acceptance Value for 6.2mm thick Composite GRSP Acceptance Value for 10mm thick Composite GRSP Test Method 1. Hardness Shore 'A' Harder side (Compound 'A')75-85 & Softer side (Compound 'B') 60-70 Harder side (Compound 'B') 60-70

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	values of After Ageing properties. This	Antioxidant and	
Appendix 'B'	is completely arbitrary and unfounded.	Antiozonant in	
		the rubber pad.	Appendix 'B'
	For SN 15 of Table:		
a)Before ageing	1.Adinath Industries:	These	
Kg/cm ²	2.M/s Parashath Enterprises	chemicals are	a)Before ageing
120(min) 125(min)	The test result should be verified	used in the	Kg/cm ² 120(min)
125(11111)	before we determine the test	rubber pad for	125(min)
	requirement.	protection	123(11111)
o)After ageing at 100±1°C for 72 96 + 0/-2 hrs		against	
Kg/cm ²	3. Ameenji Industries:	weathering.	b)After ageing at 100±1°C for 72 96 + 0/-2 hrs
100(min)	Ok, In between 50 to 60% as used two		Kg/cm ²
110 (min)	types of compounds in the Composite	Comment of the	100(min)
. ,	Rail Pads. And the Avg. Rubber	firm M/s Ameenji	110 (min)
	content >55 %.	Industries:	
c)Retention after ageing		"No surface cracks	
%	4. M/s Shiva Industries:	should be found	c)Retention after ageing
80(min)	5.M/s Shri Radha Polymers:	when the test	%
80(min)	Ok, This test may be incorporated in	condition is	80(min)
_	the Specification subject to the	"Ozone	80(min)
3.	acceptance of a range for the polymer	concentration: 25	
Elongation at break	usage as mentioned above in the	pphm, Elongation:	3.
	comments for 4.0/4.1. The	30% stretch,	Elongation at break
	acceptance of 55% minimum level of	Temperature 40	
uppendix 'B'	polymer content is not technically	°C ± 2 °C 24hrs	
ppendix b	possible considering the complexity in	duration" has been	Appendix 'B'
	achieving the test results of the	examined and	T TPONGIA D
a)Before ageing	parameters of Rail Pad.	found reasonable.	
%		Hence, a	a)Before ageing
250(min)	6.M/s Shakti Industries:	procedure has	%
250(min)	If TGA increase to 55 than Hardness &	been included in	250(min)
	Relax Modulus will not meet the	Appendix-T.	250(min)
	required spec value.		
o)After ageing at100 <u>+</u> 1°C for 72 96 +0/-2 hrs	(Value should be greater than 45.)		
%		iii) Vertical	b)After ageing at100±1°C for 72 96 +0/-2 hrs
180(min)	For SN 16 of Table:	Rebound test	%
180(min)	1.Adinath Industries:	and Abrasion	180(min)
	2.M/s Parashath Enterprises	test indicate	180(min)
a)Detention often agains	As this test is for 0.5 million cycles, in	proper curing of	
c)Retention after ageing %	this test lot of time consumed for	the rubber pad.	c)Retention after ageing
		1	

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60(min)	sample Testing. In regular inspection	Any reduction in	60(min)
	it is not possible to conduct this test	curing time	60(min)
4.	for every lot. This is a fastening	merely to	
Relaxed Modulus at 100% elongation	assembly test of the entire component	manufacture	4.
	ie. Rail clip, Liner, rubber pad ,Insert &	more pads will	Relaxed Modulus at 100% elongation
	sleeper any Variation on any	be checked by	
Annondiv (C)	component will affect the result of the	these tests.	
Appendix 'C'	test Hence ti should not be used to		Annandiy (C)
	check Rubber Pad. It is a design test	The Rail pad is	Appendix 'C'
a)Before ageing	of the entire fastening assembly and	subjected to	
Kg/cm ²	not to check a particular component.	abrasion due to	a)Before ageing
25-45		creep between	Kg/cm ²
25-45	3. Ameenji Industries:	the rail and	25-45
	Since Generally, this test is applicable	sleeper. Hence	25-45
	for Complete set of fastening	the abrasion test	
b)Change after ageing at 100±1°C for 72 96 + 0/-2 hours	assembly components including Rail	is required.	
% of	Clip, Liner, Rail Pad, Insert & Sleeper.		b)Change after ageing at 100±1°C for 72 96 + 0/-2
actual	the test may not be so use full since	iv) Durability	hours
value	all other test parameter to check Rail	Test ascertains	% of
+30	Pad almost ensures & delivers the	the long term	actual
-10	required outcome.	performance of	value
+30		the rubber pad.	+30
-10	4M/s Shiva Industries:		-10
-	As this test is for 0.5 million cycles, in	The durability	+30
5. Compression set subjected to 50% compression at 100±1°C for	this test lot of time consumed for	test can be	-10
24+0/-2 hours	testing of approx. 27 hours for 1	conducted	5.
%	sample testing. In regular inspection it	simultaneously	Compression set subjected to 50% compression at
30(max)	is not possible to conduct this test for	with the ageing	100+1°C for 24+0/-2 hours
30(max)	every lot. Hence this test to be omitted.	of the product	%
Appendix 'D'		which shall take	30(max)
6.	5.M/s Shri Radha Polymers:	04 days. Hence,	30(max)
Tension set subjected to 50% stretch at 100±1°C for 24+0/-2 hours	This is a test of the fastening	no additional	Appendix 'D'
%	components comprising of the entire	time will be	6.
25(max)	components consisting of Elastic Rail	required for this	Tension set subjected to 50% stretch at 100±1°C for
25(max)	Clip, Liner, Rubber Pad, Insert &	test.	24+0/-2 hours
Appendix 'E'	Sleeper. the results of this test are		%
7.	dependent on the entire set of fittings	Durability test	25(max)
Load Compression Test, min	being used. This test is meant for the	will be	25(max)
mm	durability test of the entire fastening	conducted with	Appendix 'E'
0.6-0.9 0.9-1.2	system as a whole and cannot be used	the assembly.	7.
0.9-1.2 Appendix 'F'	to ascertain the quality of Rail Pad.	However, before	Load Compression Test, min

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8.	Hence cannot be made applicable for	and after test	0.6-0.9	
Electrical resistance	testing quality of rubber pads.	shall be done on	0.9-1.2	
		the rubber pad.	Appendix 'F'	
	6M/s V K Enterprises :	No other	8.	
	The value of the Durability test has	components i.e.	Electrical resistance	
Appendix 'G'	been fixed at 0.5 million cycles without	ERC and Liner		
\ D()	conducting any actual study on the	will affect the		
a) Before immersion	product.	performance of		
Mega		pad	Appendix 'G'	
Ohms	For SN 17 of Table:		Defensions	
100(min)	1.Adinath Industries:	v) Aging time of	c) Before immersion	
100(min)	2.M/s Parashath Enterprises	96 hour was	Mega Ohms	
	The test result should be verified	applicable in the	100(min)	
b) After immersion	before we determine the requirement.	previous version	100(min)	
Mega		of the	100(11111)	
Ohms	3. Ameenji Industries:	specification. It		
100(min)	Ok. the test results will be verified and	is experienced	d) After immersion	
100(min)	will be submitted to fix the test	that lesser	Mega	
	requirement.	ageing time is	Ohms	
9.	requirement.	not sufficient to	100(min)	
Ash content	4M/s Shiva Industries:	ensure proper	100(min)	
-	5.M/s Shri Radha Polymers:	ageing of the		
Approved value ± 5, For Compound 'A' 27% (Max)	If this test is added, then at first RDSO	material. Hence,	9.	
For Compound 'B' 20% (Max)	should provide data or test results on	ageing time with	Ash content	
Approved value ± 5, For Compound 'A' 27% (Max)		0 0	-	
For Compound 'B' 20% (Max)	the basis of which this test is being	the respective	Approved value ± 5, For Compound 'A' 27% (Max)	
	considered for addition of the	values as per	For Compound 'B' 20% (Max)	
S: 3400 (Part 22)	specification, and only after due	previous version	Approved value ± 5, For Compound 'A' 27% (Max)	
10.	consideration of the above the test may	of specification	For Compound 'B' 20% (Max)	
Specific gravity	or may not be added.	has been		
%		restored.	S: 3400 (Part 22)	
Approved value ± 0.03, For Compound 'A' 1.27 (max)	6.M/s V K Enterprises :		10.	
For Compound 'B' 1.17 (Max)	We understand that this test is meant		Specific gravity	
Approved value ± 0.03, For Compound 'A' 1.27 (max)	for testing of track fittings as a whole		%	
For Compound 'B' 1.17 (Max)	rather than just Rail pad.		Approved value ± 0.03, For Compound 'A' 1.27 (max)	
IS:3400 (Part IX)			For Compound 'B' 1.17 (Max) Approved value ± 0.03, For Compound 'A' 1.27 (max)	
15:3400 (Part IX)	For SN 18 of Table:			
Secant Stiffness	1.Adinath Industries:		For Compound 'B' 1.17 (Max)	
KN/mm	2.M/s Parashath Enterprises		IS:3400 (Part IX)	
100-240	As per the test method BS ISO 1431-		13.3400 (Part IX)	
100-1270	1-2024, Sample thickness is 2.0 mm		Secant Stiffness	
Appendix 'H'	±0.2 mm. But our product thickness is		KN/mm	

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12.	more than this. So, this test is not		100-240
Impact Attenuation	applicable for it. Also, ozone test is		100-170
%	recommended for otherrubber like		Appendix 'H'
30(min)			12.
40(min)	Nitrile, EPDM, Fluor carbon etc.		Impact Attenuation
Appendix 'I'	Natural rubber product is not		%
13.	applicable for it.		30(min)
Adhesion			40(min)
Kgf	3. Ameenji Industries:		Appendix 'I'
8(min)	Ok, No surface cracks should be found		13.
8(min)	when the test condition is "Ozone		Adhesion
Appendix 'J'	concentration: 25pphm Elongation:		Kgf
14.	30%strech, Temperature 40 °C ± 2 °C		8(min)
Weight Test	24hrs duration".		8(min)
gm			Appendix 'J'
Should not exceed Max weight given in Appendix 'N' 'M'	4 .M/s Shiva Industries:		14.
Should not exceed Max weight given in Appendix 'N' 'M'	As per the test method BS ISO 1431-1-		Weight Test
3 13 1 17	2024, Sample thickness is 2.0 mm ±0.2		gm
Appendix 'O' ' N'	mm. But our product thickness is more		Should not exceed Max weight given in Appendix 'N'
15	than this. So, this test is not applicable		'M'
Thermogravimetric Analysis (TGA) for Polymer content	for it. Also, ozone test is recommended		Should not exceed Max weight given in Appendix 'N'
%	for other rubber like Nitrile, EPDM,		'M'
>55	, , ,		
>50	Fluro carbon etc. Natural rubber		Appendix 'O' 'N'
ASTM-E1131- 08	product is not applicable for it. Hence,		15
16	this test may be omitted.		Thermogravimetric Analysis (TGA) for Polymer
Inclined Repeated Load Test (Durability Test)			content
	5.M/s Shakti Industries:		%
0.5 million cycle	Natural rubber not suitable for ozone		>50
0.5 million cycle	resistance. (Not Recommended).		>50
			ASTM-E1131- 08
Appendix 'K'	6.M/s Shri Radha Polymers:		16
17	Considering the fact that the rail pads		Inclined Repeated Load Test (Durability Test)
Resilience by Vertical Rebound	are being used since past so many		
%	years and the ageing tests aircady		0.5 million cycle
Will be fixed after sample test	being performed on the pads, this test		0.5 million cycle
Will be fixed after sample test	is not required to be added. The		
ASTM D-2632/	· · · · · · · · · · · · · · · · · · ·		Appendix 'K'
Appendix 'L'	addition of this test will only add		17
18	financial burden on the company with		Resilience by Vertical Rebound
Ozone tes	no actual contribution towards		%
	enhancing the quality of life of rubber		Will be fixed after sample test
No cracks	pads.		Will be fixed after sample test
No cracks			ASTM D-2632/

Draf	t IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-
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BS ISO 19 Abrasio % Volume Volume	rails, Serial No. T- 55-2023 (Revision- 01) 1431-1-2024 In Test reduced not more than 20% reduced not more than 20% D5963 or	7.M/s V K Enterprises: The Ozone test may be conducted at any NABL accredited lab or at RDSO M&C lab at regular interval rather than at every inspection batch. 8. M/s Royal Elastomers: Ozone Test should be a type test conducted at NABL labs, not a routine one. For SN 19 of Table: 1.Adinath Industries: 2.M/s Parashath Enterprises As per draft specification one sample to be tested for 0.2 million cycles which is required lots of time to test where 25- 40 lots of material are inspected every month in almost every company. Since the rail pads is in static mode beneath rail hence abrasion test is not required. 3. M/s Ameenji Industries: Ok. The Volume loss shall not more than 20%. 4. M/s Shiva Industries: 5.M/s Shri Radha Polymers: Abrasion Test is widely applicable to rubber products which have dynamic loading or application involving motion. Since Rail Pads are under static load, the applicability of this test for Rail Pads is of no use, hence should not be considered.		placing beneath rails, Serial No. T- 55-
		M/s Royal Elastomers : Abrasion Test may be omitted, given the static application of the rail pads.		
		Test may be omitted, given the static		

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			1. Patil Rail Infrastructure Pvt.Ltd.: Flex Property Test-Cycle-0.3million cycle- 0.3million cycle -ASTMD430		
	For tests on Specific Gravity and As compound A & B shall be carried out fro pad-		Nil	No Change proposed	5.2.1 For tests on Specific Gravity and Ash Content for compound A & B shall be carried out from the finished pad-
	For tests on Specific Gravity and As compound A & B shall be carried out fro pad-		Nil	No Change proposed	5.2.1 For tests on Specific Gravity and Ash Content for compound A & B shall be carried out from the finished pad-
5.2.3.1 5.2.3.1 SN 1. 2. 3.	DYNAMIC PROPERTIES FOR COMP The tests as laid down in the clause sha for compound B for the purpose of pr or approval of manufacturer and they be repeated at specified interval by tinspecting / purchasing authorities at This method of tests shall be as per AS Properties Resilience at 20% deformation, min. Static modulus (kg/sqcm) at 20% deformation Effective dynamic modulus (kg/sqcm) at 20% deformation Oscillating decay, min.	Il be applicable roduct approval shall, however, the approving / their discretion.	Nil	No Change proposed	5.2.3 DYNAMIC PROPERTIES FOR COMPOSITE GRSP 5.2.3.1 The tests as laid down in the clause shall be applicable for compound B for the purpose of product approval or approval of manufacturer and they shall, however, be repeated at specified interval by the approving / inspecting / purchasing authorities at their discretion. This method of tests shall be as per ASTM-D-945. SN Properties Values 1. Resilience at 20% deformation, 80 min. 2. Static modulus (kg/sqcm) at 55-65 20% deformation 3. Effective dynamic modulus 70-90 (kg/sqcm) at 20% deformation 4. Oscillating decay, min. 0.35
5.2.3.2	Before testing the Dynamic properties of tests of Hardness, Ash Content and should be done and should conformentioned in Clause 5.2	Specific gravity	Nil	No Change proposed	5.2.3.2 Before testing the Dynamic properties of compound B, tests of Hardness, Ash Content and Specific gravity should be done and should conform to values mentioned in Clause 5.2
5.2.3.3	Dynamic Properties Test shall be compound B on both types of Comp		Nil	No Change	5.2.3.3 Dynamic Properties Test shall be conducted for compound B on both

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RDSO during initial approval and / or at firm's premises during quality audit of firms by RDSO		proposed	types of Composite GRSP at RDSO during initial approval and / or at firm's premises during quality audit of firms by RDSO
5.3 PHYSICAL PROPERTIES OF FINISHED 6MM THICK	NYLON CORD REINFORCED GROOVE	D RUBBER SOLE P	LATES
SN Property/Test Units Acceptance value for 6mm thick Nylon Cord Reinforced GRSP Acceptance value for 10 mm thick Nylon Cord Reinforced GRSP Test Method 1. Hardness Shore 'A' 75-85 75-85 Appendix 'A' 2. Tensile Strength	1.Adinath Industries: 2.M/s Parashath Enterprises 3. M/s Shiva Industries: Duration of ageing changed from 96 hours to 72 hours on T-55-2023 from the previous specification. After running two years of specification, ageing period again changed. Again, we have to set our formulation to achieve the parameters as per 5.1,5.2 and 5.3. Also IS Standard or any standard doesn't recommend for 96 hours ageing. Hence, ageing duration shall remain at 72 hours as per IS standard.	i) For improvement in the rubber pad, the minimum polymer content (50%) is fixed in the rubber pad. This test will restrict extra and unwanted addition of filler material in the rubber pad and enhance its service life.	SN Property/Test Units Acceptance value for 6mm thick Nylon Cord Reinforced GRSP Acceptance value for 10 mm thick Nylon Cord Reinforced GRSP Test Method 1. Hardness Shore 'A' 75-85 75-85 Appendix 'A' 2. Tensile Strength
Appendix 'B' 3. a) Before ageing Kg/cm² 120 (min) 120 (min) 4. b)After ageing at 100±1°C for 72 96 + 0/-2 hours Kg/cm² 100 (min) 100 (min) 5. c)Retention after ageing % 80 (min) 80 (min)	For SN 09 of Table: Patil Rail Infrastructure Pvt.Ltd.: Approved value ± 5, Subject to not exceeding 27% (15%) For SN 11 of Table: 1.Adinath Industries: 2.M/s Parashath Enterprises The test result should be verified before we determine the test requirement. 3. Ameenji Industries: Ok, In between 50 to 60% as used two types of compounds in the Composite Rail Pads. And the Avg. Rubber content >55 %.	ii) Ozone test identified the use of Antioxidant and Antiozonant in the rubber pad. These chemicals are used in the rubber pad for protection against weathering. Comment of the firm M/s Ameenji Industries:	Appendix 'B' 3. a) Before ageing Kg/cm² 120 (min) 4. b)After ageing at 100±1°C for 72 96 + 0/-2 hours Kg/cm² 100 (min) 100 (min) 5. c)Retention after ageing % 80 (min)
6. Elongation at break	4. M/s Shiva Industries:	"No surface cracks	80 (min)

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	5.M/s Shri Radha Polymers	should be found	6.
	Ok,This test may be incorporated in	when the test	Elongation at break
	the Specification subject to the	condition is	
Appendix 'B'	acceptance of a range for the polymer	"Ozone	
7.	usage as mentioned above in the	concentration: 25	
a) Before ageing	comments for 4.0/4.1. The	pphm, Elongation:	Appendix 'B'
%	acceptance of 55% minimum level of	30% stretch,	7.
200 (min)	polymer content is not technically	Temperature 40	a) Before ageing
200 (min)	possible considering the complexity in	°C ± 2 °C 24hrs	% 300 (min)
0	achieving the test results of the	duration" has been	200 (min) 200 (min)
8. b) After againg at 100 11%C for 72 06 1 0/ 2 hours	parameters of Rail Pad.	examined and	200 (min)
b)After ageing at 100±1°C for 72 96 + 0/-2 hours %	,	found reasonable.	8.
76 150 (min.)	6. Patil Rail Infrastructure Pvt.Ltd.:	Hence, a	b)After ageing at 100±1°C for 72 96 + 0/-2 hours
150 (min.)	Thermogravimetric Analysis (TGA) for	procedure has	%
130 (11111.)	Rubber content >55 (52)	been included in	150 (min.)
9.	rabber content - co (cz)	Appendix-T.	150 (min.)
c)Retention after ageing	For SN 12 of Table:	Appendix 1.	100 (11111.)
%	1.Adinath Industries:		9.
65 (min.)	2.M/s Parashath Enterprises	iii) Vertical	c)Retention after ageing
65 (min.)	As this test is for 0.5 million cycles, in	Rebound test	, , , , , , , , , , , , , , , , , , ,
	this test lot of time consumed for	and Abrasion	65 (min.)
10.	testing of approx. 27 hours for 1	test indicate	65 (min.)
Relaxed Modulus at 100% elongation	sample Testing. In regular inspection	proper curing of	
	it is not possible to conduct this test	the rubber pad.	10.
	for every lot. This is a fastening	the rubber pau.	Relaxed Modulus at 100% elongation
		Any reduction in	
Appendix 'C'	assembly test of the entire component	curing time	
11.	ie. Rail clip, Liner,rubber pad ,Insert &		
a) Before ageing	sleeper any Variation on any	merely to	Appendix 'C'
Kg/cm ²	component will affect the result of the	manufacture	11.
45-60	test Hence ti should not be used to	more pads will	a) Before ageing
45-60	check Rubber Pad. It is a design test	be checked by	Kg/cm ²
40	of the entire fastening assembly and	these tests.	45-60
12.	not to check a particular component.	The Delt word :	45-60
b)Change after ageing at 100±1°C 72 96 + 0/-2 hours		The Rail pad is	12
% of actual	3. Ameenji Industries:	subjected to	12. b)Change after ageing at 100+1°C 72 96 + 0/-2
value	Since Generally, this test is applicable	abrasion due to	, , , , , , , , , , , , , , , , , , , ,
+30(max)	for Complete set of fastening	creep between	hours % of
-10	assembly components including Rail	the rail and	actual
+30(max)	Clip, Liner, Rail Pad, Insert & Sleeper.	sleeper. Hence	value
-10	the test may not be so use full since	the abrasion test	+30(max)
	all other test parameter to check Rail		-10

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13.	Pad almost ensures & delivers the	is required.	+30(max)
Compression set subjected to 50% compression at	required outcome.		-10
100±1°C for 24+0/-2 hours	1	iv) Durability	
%	4.M/s Shiva Industries:	Test ascertains	13.
30(max)	As this test is for 0.5 million cycles, in	the long term	Compression set subjected to 50% compression at
30(max)	this test lot of time consumed for	performance of	100±1°C for 24+0/-2 hours
Appendix 'D'	testing of approx. 27 hours for 1	the rubber pad.	%
14.	sample testing. In regular inspection it	the rubber pau.	30(max)
Tension set subjected to 50% stretch at 100±1°C for 24+0/-2 hours	is not possible to conduct this test for	The durability	30(max)
%	· ·	test can be	Appendix 'D'
25(max)	every lot. Hence this test to be omitted.	conducted	14.
25(max)			Tension set subjected to 50% stretch at 100±1°C for
Appendix 'E'	5.M/s Shri Radha Polymers:	simultaneously	24+0/-2 hours
15.	This is a test of the fastening	with the ageing	%
Load Compression Test	components comprising of the entire	of the product	25(max)
mm	components consisting of Elastic Rail	which shall take	25(max)
0.3-0.5	Clip, Liner, Rubber Pad, Insert &	04 days. Hence,	Appendix 'E'
0.5-0.8	Sleeper. the results of this test are	no additional	15.
Appendix 'F'	dependent on the entire set of fittings	time will be	Load Compression Test
16.	being used. This test is meant for the	required for this	mm
Electrical resistance	durability test of the entire fastening	test.	0.3-0.5
	system as a whole and cannot be used		0.5-0.8
	to ascertain the quality of Rail Pad.	Durability test	Appendix 'F'
	Hence cannot be made applicable for	will be	16.
Appendix 'G'	testing quality of rubber pads.	conducted with	Electrical resistance
17.	leating quanty of rubber page.	the assembly.	
a) Before immersion	For SN 13 of Table:	However, before	
Mega	1.Adinath Industries:	and after test	
Ohms	2.M/s Parashath Enterprises	shall be done on	Appendix 'G'
100(min)	•	the rubber pad.	17.
	The test result should be verified	No other	c) Before immersion
100(min)	before we determine the requirement		Mega
		components i.e.	Ohms
40	3. Ameenji Industries:	ERC and Liner	100(min)
18.	Ok, the test results will be verified and	will affect the	400())
b) After immersion	will be submitted to fix the test	performance of	100(min)
Mega	requirement.	pad	
Ohms (100/min)			40
100(min)	4.M/s Shiva Industries:	v) Aging time of	18.
100(min)	5.M/s Shri Radha Polymers:	96 hour was	d) After immersion
40	If this test is added, then at first RDSO	applicable in the	Mega
19.	should provide data or test results on	previous version	Ohms
Ash content	the basis of which this test is being	of the	100(min)
%	The second of the second of the second	<u> </u>	100(min)

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rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55- 2023(Revision- 01)				
Approved value + 5	considered for addition of the	specification. It	2020(100131011-01)				
Subject to not exceeding 27%	specification, and only after due	is experienced	19.				
Approved value	consideration of the above the test may	that lesser	Ash content				
<u>+ 5</u>	or may not be added.	ageing time is	%				
Subject to not exceeding 27%	or may not be added.	not sufficient to	Approved value + 5				
IS: 3400 (Part 22)	For SN 14 of Table:	ensure proper	Subject to not exceeding 27%				
20.	1.Adinath Industries:	ageing of the	Approved value				
Specific gravity		material. Hence,	<u>+</u> 5				
-	2.M/s Parashath Enterprises	· · · · · · · · · · · · · · · · · · ·	Subject to not exceeding 27%				
Approved value + 0.03,	As per the test method BS ISO 1431-1-	ageing time with	IS: 3400 (Part 22)				
Subject to not exceeding 1.27	2024, Sample thickness is 2.0 mm ±0.2	the respective	20.				
Approved value	mm. But our product thickness is more	values as per	Specific gravity				
+ 0.03,	than this. So, this test is not applicable	previous version	-				
Subject to not exceeding 1.27	for it. Also, ozone test is recommended	of specification	Approved value + 0.03,				
IS:3400 (Part IX)	for other rubber like Nitrile, EPDM,	has been	Subject to not exceeding 1.27				
11	Fluor carbon etc. Natural rubber	restored.	Approved value				
Thermogravimetric Analysis (TGA) for Polymercontent	product is not applicable for it.		+ 0.03,				
%			Subject to not exceeding 1.27				
>55	3. Ameenji Industries:		IS:3400 (Part IX)				
>50	Ok, No surface cracks should be found		11				
AS	when the test condition is "Ozone		Thermogravimetric Analysis (TGA) for				
M-E1131- 08	concentration: 25pphm Elongation:		Polymercontent				
12	30%strech, Temperature 40 °C ± 2 °C		%				
Inclined Repeated Load Test (Durability Test)	24hrs duration".		>50				
	241118 duration .		>50				
0.5 million cycle	4 M/s Obits In desertation		AS				
0.5 million cycle	4 .M/s Shiva Industries:		M-E1131- 08				
Appendix 'K'	As per the test method BS ISO 1431-1-		12				
13	2024, Sample thickness is 2.0 mm ±0.2		Inclined Repeated Load Test (Durability Test)				
Resilience by	mm. But our product thickness is more						
Vertical Rebound	than this. So, this test is not applicable		0.5 million cycle				
%	for it. Also, ozone test is recommended		0.5 million cycle				
Will be fixed after sample test	for other rubber like Nitrile, EPDM,		Appendix 'K'				
Will be fixed after sample test	Fluro carbon etc. Natural rubber		13				
ASTM D-2632/	product is not applicable for it. Hence,		Resilience by				
Appendix 'L'	this test may be omitted.		Vertical Rebound				
14			%				
Ozone test	5.M/s Shri Radha Polymers:		Will be fixed after sample test				
	Considering the fact that the rail pads		Will be fixed after sample test				
	are being used since past so many		ASTM D-2632/				
No cracks	years and the ageing tests aircady		Appendix 'L' IS:3400-11				
No cracks			14				
BS ISO 1431-1-2024	being performed on the pads, this test		Ozone test				
15	is not required to be added. The	1					

Draft IRS Specification for R	Draft IRS Specification for Rail pad for placing beneath		RDSO's	Final Draft IRS Specification for Rail pad for
rails, Serial No. T- 55-	rails, Serial No. T- 55- <mark>2023 (Revision- 01)</mark>		Remarks	placing beneath rails, Serial No. T- 55-
				2023(Revision- 01)
& Compression Set te finished pad. All other the prepared test slab size 200 x 130 mm us vulcanized to the same and conditions of the without any infringeme		addition of this test will only add financial burden on the company with no actual contribution towards enhancing the quality of life of rubber pads. 6. M/s Royal Elastomers: Ozone Test should be a type test conducted at NABL labs, not a routine one. For SN 15 of Table: 1.Adinath Industries: 2.M/s Parashath Enterprises As per draft specification one sample		No cracks No cracks BS-ISO 1431-1-2024-IS:3400-20 15 Abrasion Test % Volume reduced not more than 20% Volume reduced not more than 20% ASTM D5963 or ISO 4649 IS:3400-3 Note: i) Hardness, Load-compression,
For the purpose of composition of the rub finish product, Inspecting the their discretion shaped both on the test slabs	of confirming/co-relating the ober test slabs with that of the ng/Purchasing authorities may all perform the following tests and the products, and shall ements as given under:-	to be tested for 0.2 million cycles which is required lots of time to test where 25- 40 lots of material are inspected every month in almost every company. Since the rail pads is in static mode beneath rail hence abrasion test is not required.		Electrical Resistance & Compression Set test shall be carried out on the finished pad. All other tests shall be carried out from the prepared test slabs 6+ 0.5/-0.0mm thick and of size 200 x 130 mm using the same compound and vulcanized to the same degree. General procedures and conditions of the tests shall be as per IS:3400
Specific Gravity: within ±0.02 % Ash Content: within ±5%	The results shall be than 20%. 4. M/s Shiva Industries: 5.M/s Shri Radha Polymers: Abrasion Test is widely applicable to rubber products which have dynamic loading or application involving motion. Since Rail Pads are under static load, the applicability of this test for Rail		without any infringement upon special conditions laid down in the respective appendices of this specification. For the purpose of confirming/corelating the composition of the rubber test slabs with that of the finish product, Inspecting/Purchasing authorities may at their discretion shall perform the following tests both on the test slabs	
		Pads is of no use, hence should not be considered. New Property Added 1. Patil Rail Infrastructure Pvt.Ltd.: Flex Property Test-Cycle-0.3million		and the products, and shall comply with the requirements as given under:- Polymer identification: Identical Specific Gravity: The results shall be within ±0.02 % Ash Content: The results shall be

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)			rails, Serial No. T- 55-2023 (Revision- 01)			RDSO's Remarks	р	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)				
				сус	ele- 0.3millio	n cycle -AS	ГМD430		within :	±5%		
	PHYSICAL PROPERTI		'LON CORD: ensure proper adhesion	1. F	Patil Rail In	frastructure	Pvt.Ltd.:	Denier values have been modified to	5.3.1	PHYSICAL PROPE CORD:	RTIES C	OF NYLO
	en the rubber and Cord				Propert	Values	Method	eliminate the	The c	ords shall be suitable	y treated	to ensur
The N	ylon Cord shall be o	of style 1	260/2 and the physical conform to the following		ies Denier(gms/90 00mete rs), Min	2400 (1260/2) or (2x1260)	of Tests IS:4910 Part I:1989 (Reaffir	mismatch of thickness and denier.	specification The N	adhesion between the ed in this standard. Iylon Cord shall be of the physical properties	style 12 6	60/2 1680/
SN	Properties	Value s	Method of Tests				med 2018)			conform to the following		
1	Denier(gms/9000m eters), Min	2400	IS:4910 Part I:1989 (Reaffirmed 2018)		No. of ends/in	24±2	IS:1963 (Reaffir		SN	Properties	Value	Method
2	No. of ends/inch	24±2	IS:1963 (Reaffirmed 2004)		ch		med 2004)			Торолио	s	of Tests
3	Thickness(mm), min	0.75 0.68	IS 4910 Part VIII: 1989 (Reaffirmed 2018)		Thickne ss(mm) , min	0.75 0.68	IS 4910 Part VIII: 1989		1	Denier(gms/9000m eters), Min	2400 3200	IS:4910 Part I:1989
4	Load at Break(Kg), min	16	IS 4910 Part II:1989 (Reaffirmed 2018)				(Reaffir med					(Reaffir
5	Elongation at	20	IS 4910 Part II:1989				2018)					2018)
6	break(%), max No. of twists/m	380/40 0 385±1	(Reaffirmed 2018) ASTM-D-885M		Load at Break(Kg), min	16	IS 4910 Part II:1989 (Reaffir		2	No. of ends/inch	24±2	IS:1963 (Reaffir med 2004)
		5			Florant	20	med 2018) IS 4910		3	Thickness(mm), min	0.75	IS 4910 Part
					Elongat ion at break(%),	(15-25)	Part II:1989 (Reaffir					VIII: 1989 (Reaffir med
					max		med 2018)		A	Load at Prock(Kr.)	16	2018)
					No. of twists/	380/400 385±15	ASTM- D-885M		4	Load at Break(Kg), min	16	IS 4910 Part II:1989

Draft	IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)		RDSO's Remarks		Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)				
							(Reaffir med 2018)		
				5	Elongation at break(%), max	20	IS 4910 Part II:1989 (Reaffir med 2018)		
				6	No. of twists/m	380/4 00 320±1 5	ASTM- D-885M		
5.3.2 A I	PHESION BETWEEN THE CORD AND RUBBER:		•						
5.3.2.2	Adhesion between Cord and Rubber (H-Pull test) shall be 10kgf, min. tested in a manner ASTM-D-2138. The Peel Adhesion shall be 4.0Kgf.(min.), tested as per IS:3400 Part V:1986(Reaffirmed 2019) with test specimen of 20mm width cut from the Nylon Cord Reinforced Grooved Rubber Sole Plate. Peel Adhesion Test shall be conducted during initial approval and / or at firm's premises during quality audit of firms.	1.M/s Shah Elastomer: Peel adhesion test is mentioned only at the time of quality audit, and H- pull test is included in regular tests. Peel adhesion is related to product and for conducting H-pull test, samples are specially prepared from same compound. So we suggest that Peel adhesion test should be included as a regular test and h-pull test should be done only at the time of quality audit or initial approval.	The comments of the firm are accepted and the Para has been modified	mann condu firm's 5.3.2. (min), (Reaf width Groov shall or at f	all test) shall be 10 kg er ASTM-D-2138. Houcted during initial appremises during quality 2 The Peel Adhesic tested as per IS: firmed 2019) with test cut from the Nylor yed Rubber Sole Plate. be conducted during in firm's premises during of	gf, min. to Pull test proval ar audit of to shall to 3400 Pa specimen a Cord Peel Adh	ested in a shall be and / or at firms. De 4.0 kgf rt V:1986 of 20 mm Reinforced resion Test roval and /		
The bre Sole Pla specime Reinford value of less that specime	aking load of Nylon Cord Reinforced Grooved Rubber at the tested at a machine speed of 300mm/minute on test at an of 20±0.5mm width, cut from the Nylon Cord at Grooved Rubber Sole Plate shall be 350kgf min(mid 5 test specimen arranged in decreasing order) and not an 325kgf for any individual test specimen. The test are shall be cut from sole plates such that the groove as with the central line of the test specimen.	Nil	No Change proposed	The It Groov speed 20±0. Reinfo 350kg arrang 325kg specir the gr	preaking load of Nyloved Rubber Sole Plate of 300mm/minute of 5mm width, cut from proced Grooved Rubber of min(mid value of ged in decreasing order of for any individual testimens shall be cut from toove coincides with the pecimen	tested at n test sp n the Ni Sole Pla 5 test r) and no t specime sole plates	a machine ecimen of ylon Cord te shall be specimen t less than n. The test s such that		

		Remarks	placing beneath rails, Serial No. T- 55- 2023(Revision- 01)
6.0 FINGER PRINTING OF CHEMICAL COMPOSITION (SPECIFIC GRAVITY AND ASH CONTENT: Specific gravity and Ash content of Rail pads shall be as per the relevant clause 5.1 or 5.2 or 5.3 as applicable. Finger printing of chemical composition of Rail pads shall be done by measuring the values of specific gravity and ash content. The values of Specific Gravity and Ash content shall not	Nil	No Change proposed	6.0 FINGER PRINTING OF CHEMICAL COMPOSITION (SPECIFIC GRAVITY AND ASH CONTENT: Specific gravity and Ash content of Rail pads shall be as per the relevant clause 5.1 or 5.2 or 5.3 as applicable. Finger printing of chemical composition of Rail
vary from initial approved values and specified tolerance duly communicated to the firm at the time of approval so that there will be no major change in composition of Rail pads in regular supply. The manufacturer if so desires shall be permitted to seek changes in the specific gravity and percent ash content of the approved samples within specified tolerances subject to the maximum limits set forth for these properties in relevant clause 5.1 or 5.2 or 5.3 as applicable. Any such changes will be permitted after evaluation of fresh samples by RDSO as per the extant policy.			pads shall be done by measuring the values of specific gravity and ash content. The values of Specific Gravity and Ash content shall not vary from initial approved values and specified tolerance duly communicated to the firm at the time of approval so that there will be no major change in composition of Rail pads in regular supply. The manufacturer, if so desires shall be permitted to seek changes in the specific gravity and percent ash content of the approved samples within specified tolerances subject to the maximum limits set forth for these properties in relevant clause 5.1 or 5.2 or 5.3 as applicable. Any such changes will be permitted after
			evaluation of fresh samples by RDSO as per the extant policy.
Rail pads shall meet with requirement of dimensions and tolerances as per the relevant drawings. The sample pads shall be checked for the dimensions by means of approved inspection gauges as per RDSO drawings. Unless otherwise specified tolerance of ±5mm shall be allowed on the length, + 0/-2 mm on width, and + 0.5/-0.0 mm on the thickness.	Nil	No Change proposed	Rail pads shall meet with requirement of dimensions and tolerances as per the relevant drawings. The sample pads shall be checked for the dimensions by means of approved inspection gauges as per RDSO drawings. Unless otherwise specified tolerance of ±5mm shall be allowed on the length, + 0/-2 mm on width, and + 0.5/-0.0 mm on the thickness.
8.0 MARKING: Each Rail pad shall bear the following marking in 0.8mm deep	Nil	No Change proposed	8.0 MARKING: Each Rail pad shall bear the following marking in

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
raised letters/figures as shown in the respective drawings of rail pad:			0.8mm deep raised letters/figures as shown in the respective drawings of rail pad:
 a) Manufacturers' initials or trade mark. b) First 2 digit for the month and last two digit for years as follows: 01-02. 02-02 etc. c) Drawing Number Note: For easy identification of the 'TOP' surface of pad in field, a yellow colour un-vulcanized rubber label of minimum preferable size 25mm X 10mm shall be stick on the Compound 'A' hard layer side of Composite GRSP before vulcanization. After vulcanization, the yellow label should be distinctly visible on the 'TOP' surface of the pad. Marking should be done on Compound 'A' hard layer side of Composite GRSP. 			a) Manufacturers' initials or trade mark. b) First 2 digit for the month and last two digit for years as follows: 01-02. 02-02 etc. c) Drawing Number Note: For easy identification of the 'TOP' surface of pad in field, a yellow colour un-vulcanized rubber label of minimum preferable size 25mm X 10mm shall be stick on the Compound 'A' hard layer side of Composite GRSP before vulcanization. After vulcanization, the yellow label should be distinctly visible on the 'TOP' surface of the pad. Marking should be done on Compound 'A' hard layer side of Composite GRSP.
9.0 FREEDOM FROM DEFECTS:	Nil	No Change proposed	9.0 FREEDOM FROM DEFECTS:
The Rail pads shall have clean cut sides and shall be free from defects such as porosity, blow holes or the presence of any other extraneous matter. The Rail pads shall also have smooth surface and the grooves shall be unobstructed at the ends and along their whole length. In case of Nylon Cord Reinforced GRSP, there shall be no exposure of Nylon Cord outside the pad surface and within the grooves.			The Rail pads shall have clean cut sides and shall be free from defects such as porosity, blow holes or the presence of any other extraneous matter. The Rail pads shall also have smooth surface and the grooves shall be unobstructed at the ends and along their whole length. In case of Nylon Cord Reinforced GRSP, there shall be no exposure of Nylon Cord outside the pad surface and within the grooves.
10.0 PRE-ACCEPTANCE TESTS:	Nil	No Change proposed	10.0 PRE-ACCEPTANCE TESTS:
10.1 In case of unapproved and unregistered firms, prior to			10.1 In case of unapproved and unregistered

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rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55- 2023(Revision- 01)
regular production samples of rail pad shall be approved			firms, prior to regular production samples of
by the approving authority as per test scheme given in			rail pad shall be approved by the approving
Appendix 'K' 'O'.			authority as per test scheme given in
			Appendix 'K' 'O'.
10.2 For approval/acceptance, the sample shall meet the			
requirements given in 5.1 or 5.2 or 5.3 as applicable and			10.2 For approval/acceptance, the sample
7 & 9 of this specification.			shall meet the requirements given in
			5.1 or 5.2 or 5.3 as applicable and 7 &
			9 of this specification.
11.0 ACCEPTANCE TESTS			
11.1 LOT SIZE :	Nil	No Change	11.1 LOT SIZE:
For the purpose of inspection, 10,000 numbers of rail and or		proposed	For the numbers of inspection, 10,000 numbers of re
For the purpose of inspection, 10,000 numbers of rail pad or part thereof shall constitute a lot. However for Nylon cord			For the purpose of inspection, 10,000 numbers of rapad or part thereof shall constitute a lot. However for
Reinforced GRSP, 5000 nos. or part thereof shall be count a			Nylon cord Reinforced GRSP, 5000 nos. or pa
lot.			thereof shall be count a lot.
11.2 SAMPLE SIZE : Sampling scale for dimensional, and	Nil	No Change	11.2 SAMPLE SIZE : Sampling scale for
visual check shall be as follows:		proposed	dimensional, and visual check shall be as
		p spesse	follows:
Quantity of pads Number of samples			
Per lot 25			Quantity of pads Number of samples
1 61 100			Per lot 25
The system of sampling shall be as per IS: 4905.			1 3.13.
The system of sampling shall be as per less to see			The system of sampling shall be as per IS: 4905.
For Nylon cord Reinforced GRSP, Minimum 1% of the lot size,			
subject to minimum 10 nos. samples per lot shall be checked			For Nylon cord Reinforced GRSP, Minimum 1%
for dimensions and tolerances stipulated in the drawing.			of the lot size, subject to minimum 10 nos.
			samples per lot shall be checked for dimensions
Ten nos. samples of Nylon cord Reinforced GRSP shall be			and tolerances stipulated in the drawing.
selected at random from each lot, and shall be subjected to			
destructive tests as required for conducting various tests			Ten nos. samples of Nylon cord Reinforced
specified. However, any deviation in the distribution of the			GRSP shall be selected at random from each lot,
samples for different tests shall be at the discretion of the			and shall be subjected to destructive tests as
Inspecting/Purchasing authority.			required for conducting various tests specified.
			However, any deviation in the distribution of the
			samples for different tests shall be at the
44.0 TECTO.	Detil Deil Infrastructure Det 14.1	Commonts of the	discretion of the Inspecting/Purchasing authority
11.3 <u>TESTS:</u>	Patil Rail Infrastructure Pvt.Ltd.:	Comments of the	11.3 TESTS :
1.3.1 Except for dimensions and Weight Test, the scheme of	For 11.3.4: One sample Rail pads per lot shall be	firm are not clear.	11.3.1 Except for dimensions and Weight Test,

Dra	ft IRS Specification for Rail pad for placing beneath	Comments of Stake holders	RDSO's	Final Draft IRS Specification for Rail pad for
Dia	rails, Serial No. T- 55-2023 (Revision- 01)	Commission of Grane Horacia	Remarks	placing beneath rails, Serial No. T- 55-
				2023(Revision- 01)
	testing for the inspection of a lot of Rail pads shall be as	tested for Abrasion test for 0.2 million	However,	the scheme of testing for the inspection of
	per Appendix 'K' 'O'.	eycle (loss of volume or weight) in	separate	a lot of Rail pads shall be as per Appendix
		accordance with the ASTM D5963	Appendix-S for	'O'.
11.3.2		(Rubber Property—Abrasion	conducting the	1100 7
	the criteria for acceptance and rejection of the particular	Resistance (Rotary Drum Abrader)) or		11.3.2 The test methods shall be as per
	test shall be as per relevant Clause 5.1 or 5.2 or 5.3 and clauses 7 & 9. However, all the values obtained shall	ISO 4649 (Rubber—Determination of resistance to abrasion using a rotating	added.	Appendix 'A' to 'O' and the criteria for
	meet the requirement of the specification.	cylindrical drum device).		acceptance and rejection of the particular test shall be as per relevant Clause 5.1 or
	meet the requirement of the specification.	cymruncar drum device).		5.2 or 5.3 and clauses 7 & 9. However, all
11.3.3 V	Weight Test: The sample Rail pads shall be checked for			the values obtained shall meet the
	the weight by means of digital weighing machine, and			requirement of the specification.
	shall meet with the requirement of maximum weight as			
	given in Appendix 'N' 'M'.			11.3.3 Weight Test: The sample Rail pads shall be
				checked for the weight by means of digital
	Sample size for weight test shall be as per IS-2500			weighing machine, and shall meet with the
	(Part-1):2000 assuming an AQL of 2.5% and inspection			requirement of maximum weight as given
	level II. For weight test, the sample size and the			in Appendix 'N' 'M'.
	acceptance & rejection number is summarized in Appendix 'O' 'N' of this standard.			Sample size for weight test shall be as per
	Appendix of the standard.			IS-2500 (Part-1):2000 assuming an AQL
Note:	Weight test shall be done only for rail pads mentioned in			of 2.5% and inspection level II. For weight
	Appendix 'N' 'M' of this specification.			test, the sample size and the acceptance
	·			& rejection number is summarized in
	One sample Rail pads per lot shall be tested for Abrasion			Appendix 'O' 'N' of this standard.
	est for 0.2 million cycle in accordance with the ASTM			
	05963 (Rubber Property—Abrasion Resistance (Rotary			Note: Weight test shall be done only for rail pads
1	Orum Abrader)) or ISO 4649 (Rubber—Determination of			mentioned in Appendix 'M'of this
1	esistance to abrasion using a rotating cylindrical drum levice).			specification.
	ievice).			11.3.4 One sample Rail pads per lot shall be tested
				for Abrasion test for 0.2 million cycle in
				accordance with the ASTM D5963 (Rubber
				Property—Abrasion Resistance (Rotary
				Drum Abrader)) or ISO 4649 (Rubber—
				Determination of resistance to abrasion
12.0	RE-TEST:			using a rotating cylindrical drum device).
	Should the test results be not satisfactory in more than	Nil	No Change	12.1 Should the test results be not satisfactory in
	one property under test clause 11.3 (excluding	1411	proposed	more than one property under test clause
1	dimensions) no re-testing shall be done and the entire lot		F P0000	11.3 (excluding dimensions) no re-testing
	is rejected and the rejected rail pads shall be cut into			shall be done and the entire lot is rejected

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pieces and made unusable.			and the rejected rail pads shall be cut into
			pieces and made unusable.
12.2 Should the samples fail in only one property under test	Nil	No Change	12.2 Should the samples fail in only one property
clause 11.3 (other than dimensions and weight test) the		proposed	under test clause 11.3 (other than
particular test shall be repeated in the same manner with			dimensions and weight test) the particular
twice the number of samples drawn from the same lot. For acceptance of the lot, each sample should meet with			test shall be repeated in the same manner with twice the number of samples drawn
the acceptance requirements of that particular test. If the			from the same lot. For acceptance of the
samples fail again, the entire lot will be rejected.			lot, each sample should meet with the
cumpled fail again, the online let will be rejected.			acceptance requirements of that particular
			test. If the samples fail again, the entire lot
			will be rejected.
12.3 Should the samples fail in dimensions, the manufacture	Nil	No Change	12.3 Should the samples fail in dimensions, the
may re-offer the Rail pads lot-wise, only once after		proposed	manufacture may re-offer the Rail pads lot-
sorting out the defectives, after written permission from			wise, only once after sorting out the
the inspecting authority. The re-offered material, only if it passes the dimension test, shall be inspected for all the			defectives, after written permission from the inspecting authority. The re-offered
tests in terms of clause 11.3, if the re-offered samples fail			material, only if it passes the dimension
again, the entire lot will be rejected.			test, shall be inspected for all the tests in
			terms of clause 11.3, if the re-offered
			samples fail again, the entire lot will be
			rejected.
12.4 Should the samples fail in weight test, the entire lot shall	Nil	No Change	12.4 Should the samples fail in weight test, the
be rejected. However, this test shall be done only for rail		proposed	entire lot shall be rejected. However, this
pads mentioned in Appendix 'N' 'M' of this specification.			test shall be done only for rail pads
			mentioned in Appendix 'N' 'M' of this specification.
			specification.
13.0 FINAL INSPECTION/TESTING AND	Nil	No Change	13.0 FINAL INSPECTION/TESTING AND
DOCUMENTATION:		proposed	DOCUMENTATION:
The manufacturer shall correcut the final inequation and testing			The manufacturer shall correct the first
The manufacturer shall carryout the final inspection and testing internally in accordance with the requirement of tests under			The manufacturer shall carryout the final inspection and testing internally in accordance
clause 11.3 and submit the internal test report along with the			with the requirement of tests under clause 11.3
inspection call.			and submit the internal test report along with the
			inspection call.
14.0 PACKING:			
14.1 The Rail pads shall be packed such that each of pads in	1. Ameenji Industries Generally the	The comments of	14.1 The Rail pads shall be packed such that
following packages are placed flat on top of one another	NCRGRSP should be supplied in the	the firm have	each of pads in following packages are
and bound by rubber bands in two perpendicular directions.	form of Sets and each set contains different sizes of pads, it is not	been examined.	placed flat on top of one another and bound
uii cululis.	unicient sizes of paus, it is not	<u> </u>	by rubber bands in two perpendicular

Draft IRS Specification for Rail pad for placing beneath	Comments of Stake holders	RDSO's	Final Draft IBS Specification for Bail and for
	Comments of Stake holders		Final Draft IRS Specification for Rail pad for
rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55- 2023(Revision- 01)
	feasible to bundle the pads and	For. NCGRSP	directions.
a) 50 pads of 6.2mm Composite GRSP/6mm GRSP or	makes confusion in the installation at	and GRSP for	directions.
b) 25 pads of 10mm Composite GRSP/ GRSP or	consignee end.	turnouts are to be	d) 50 pads of 6.2mm Composite
c) 50 pads for 6mm or 25 pads for 10mm or part thereof	consigned cha.	placed in sealed.	GRSP/6mm GRSP or
for Nylon Cord Reinforced GRSP, the rail pads for one	2.M/s Shri Radha Polymers:	moisture-proof,	e) 25 pads of 10mm Composite GRSP/
set turnout should preferably be packed suitably for	As the GRSP and NCGRSP for	and dust-resistant	GRSP or
easy identification.	turnouts consists of different drawings	polyethylene	f) 50 pads for 6mm or 25 pads for 10mm or
	in different quantities it is impossible to	bags and the	part thereof for Nylon Cord Reinforced
	pack in lots of 50 nos. hence the same	bag shall be	GRSP, the rail pads for one set turnout
	cannot be made applicable to NCGRSP and GRSP for turnouts.	vacuum-sealed to	should preferably be packed suitably for
	NOCKOF and OKOF for turnouts.	remove excess	easy identification.
	3.M/s ROYAL FASTENERS NE:	air.	_
	For Packing (14.1 c and 14.2), fixed		
	bundling and vacuum-sealed		
	packaging are difficult for Turnout Sets		
	as turnout sets are variable size of		
	pads, so it cannot be clubbed together.		
14.2 Packing Method:	1.Adinath Industries:		14.2 Packing Method:
The rubber bands used for packing the pads shall be of 15-20	There is no problem at current	At present, rail	The rubber bands used for packing the pads shall
mm width and due care shall be taken to avoid any extra	packing where product remains safe	pads are to be	be of 15-20 mm width and due care shall be
stress developed in such packing.	and it protects from environmental	tested for all	taken to avoid any extra stress developed in
The wall made aball he accounts made d in accled made to	condition supported by corrugated	parameters up to	such packing.
The rail pads shall be securely packed in sealed, moisture-	boxes confirming to IS:7151 In case of	the period of one	The rail nade shall be accurate packed in scaled
proof, and dust-resistant polyethylene bags. Each bag shall be	Tune out sets or NCR GRSP Sets	year at the	The rail pads shall be securely packed in sealed,
vacuum-sealed to remove excess air, ensuring optimal	pads are different size of pad it is not possible to bundle these pad and	consignee end. Hence the	moisture-proof, and dust-resistant polyethylene bags. Each bag shall be vacuum-sealed to
protection against environmental factors.	packed as per your required.	moisture-proof,	remove excess air, ensuring optimal protection
Six such sealed packets placed flat one upon another shall then	packed as per your required.	and dust-resistant	against environmental factors.
be placed in a plastic bag / HDPE bag (except PVC bag) and	2. Ameenji Industries :	polyethylene	against crivironinicritar ideters.
this bags shall be placed in a corrugated box conforming to	Generally, this moisture-proof.	bags with	Six such sealed packets placed flat one upon
IS:7151-91, a quality suitable for para dropping of supplies	and dust-resistant packing is	vacuum-sealing	another shall then be placed in a plastic bag /
and has waterproofing property for the outer layers of the box,	recommended for highly	is required to	HDPE bag (except PVC bag) and this bags shall
to avoid any damage in transit. This corrugated box shall also	environmental sensitive components	ensure	be placed in a corrugated box conforming to
be bound by two plastic straps of 15-20mm width in two	like medical & electronic devices, etc.	preservation of	IS:7151-91, a quality suitable for para dropping
perpendicular directions using suitable strapping tensioner &	to not exposed to environmental	the quality of rail	of supplies and has waterproofing property for
sealer tool. The packing shall ensure that no displacement of	conditions. But, Rail Pads will be used	pad during	the outer layers of the box, to avoid any damage
rail pads should occur during transit.	in extreme environmental conditions	storage.	in transit. This corrugated box shall also be
	and load applications Hence, this type		bound by two plastic straps of 15-20mm width in
	of packing may not be required and		two perpendicular directions using suitable
	the existing packing condition is		strapping tensioner & sealer tool. The packing

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	enough. 3.M/s Parashath Enterprises There is no problem at current packing where product remains safe and it protects from environmental condition supported by corrugated confirming boxes to specification and has water proofing property for the outer layer of box, to avoid any damage in transit. In case of Turn out sets or NCR GRSP Sets, since there are different sizes of pads it is not feasible to bundle these pads. 4.M/s Shah Elastomer:		shall ensure that no displacement of rail pads should occur during transit.
	Polyethylene Bags are not environment friendly being non-biodegradable. Rubber Pads are used in extreme environments and as such do not require such packaging norms. Existing packing criteria is sufficient to safeguard the pads. In case of Turnout Sets since there are various sizes of pads it is not feasible to bundle the pads, so bundling should be exempted for these items.		
	5. M/s Shiva Industries: There is no problem at current packing where product remains safe and it protects from environmental condition supported by corrugated boxes confirming to IS:7151 for para dropping of supplies and has water proofing property for the outer layer of box, to avoid any damage in transit. Hence addition of vacuum sealed bag name should be omitted. 5.M/s Shri Radha Polymers:		

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	The present packing system being		
	followed has been in place since		
	many years and has been quite		
	satisfactory. Also there doesn't seem		
	to be any recorded complaints		
	regarding the same.		
	The present system of using HDPE		
	bags ensures that packed material		
	stays intact in the bag and doesn't get		
	spread out even if there is damage to		
	the outside corrugated bags during		
	loading unloading and transit.		
	Polyethylene bags cannot provide		
	durability in packing and will get tor or		
	damaged if the material spreads out		
	after damage to the corrugated box.		
	Also the fine and sharp edges of the		
	rubber itself can damage the PE bags.		
	In casc of Turnout Sets (GRSP or		
	NCR GRSP), it will be very difficult to		
	pack the pads in the suggested		
	bundle i.e. 50 pads for 6mm or 25		
	pads for 10mm thick pads as it		
	comprises of many different drawings		
	in different numbers. The applicability		
	of this type of packing will result in		
	additional cost due to the packing		
	process becoming time consuming		
	and cumbersome.		
	6.M/s ROYAL FASTENERS NE:		
	For Packing (14.1 c and 14.2), fixed		
	bundling and vacuum-sealed		
	packaging are difficult for Turnout Sets		
	as turnout sets are variable size of		
	pads, so it cannot be clubbed together.		
	page, so it carriet be clubbed together.		
4.23 The boxes shall be sealed and labeled bearing:	Nil	No Change	23 The boxes shall be sealed and labe
a) Name of supplier		proposed	bearing:
b) Purchase order number and date		h - h	a) Name of supplier
c) Quantity			b) Purchase order number and dat

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d) Consignee e) Lot no. f) Box no.			c) Quantity d) Consignee e) Lot no. f) Box no.
15.0 TEST FACILITIES: The Rail pad manufacturer shall install all the necessary test facilities for inspection of Rail pad in a separate well lit, clean and properly ventilated laboratory cum inspection room provided with easily maintainable floor and platform.	Nil	No Change proposed	Test facilities: The Rail pad manufacturer shall install all the necessary test facilities for inspection of Rail pad in a separate well lit, clean and properly ventilated laboratory cum inspection room provided with easily maintainable floor and platform.
The inspection gauges for dimensional check shall conform to the respective gauge drawings. The manufacturer shall submit two sets of inspection gauges for approval by inspecting officer. One set shall be used as 'Master Gauge' and shall be preserved safely by the Rail pad manufacturer. The second set shall be for use by the inspecting officer. For internal checks the firm should use separate set of gauges.	Nil	No Change proposed	The inspection gauges for dimensional check shall conform to the respective gauge drawings. The manufacturer shall submit two sets of inspection gauges for approval by inspecting officer. One set shall be used as 'Master Gauge' and shall be preserved safely by the Rail pad manufacturer. The second set shall be for use by the inspecting officer. For internal checks the firm should use separate set of gauges.
17.0 DISPOSAL OF REJECTED GROOVED RUBBER SOLE PLATES: The rejected Rail pads shall be cut into pieces and made unusable.	Nil	No Change proposed	17.0 DISPOSAL OF REJECTED GROOVED RUBBER SOLE PLATES: The rejected Rail pads shall be cut into pieces and made unusable.
18.0 GENERAL: 18.1 The manufacturer shall furnish at his own cost, the Rail pads required for all tests and shall provide necessary manpower and facilities for carrying out tests at his cost. 18.2 Purchaser/Inspecting officer shall have free access to the works of the manufacturer at all reasonable times and shall be at liberty to inspect the manufacturing at	Nil	No Change proposed	18.0 GENERAL: 18.1 The manufacturer shall furnish at his own cost, the Rail pads required for all tests and shall provide necessary manpower and facilities for carrying out tests at his cost. 18.2 Purchaser/Inspecting officer shall have free access to the works of the

	IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
m a m co	ny stage and to call for records pertaining to canufacture and testing which shall be made vailable within a reasonable time. All test and reasuring equipments shall have valid calibration ertificates to ensure accurate, reliable and reproducible test results. The material shall be offered for inspection as per call tter given in Appendix "L":"P".			manufacturer at all reasonable times and shall be at liberty to inspect the manufacturing at any stage and to call for records pertaining to manufacture and testing which shall be made available within a reasonable time. All test and measuring equipments shall have valid calibration certificates to ensure accurate, reliable and reproducible test results.
	he material shall be stored as per the guidelines laid own in Appendix 'M' 'Q' .			18.3 The material shall be offered for inspection as per call letter given in Appendix 'P'.18.4 The material shall be stored as per the guidelines laid down in Appendix 'Q'.
	APPENDIX 'A' (IRST-55- 2023-2025)	Nil	No Change proposed	APPENDIX 'A' (IRST-55-2025)
	DETERMINATION OF HARDNESS			DETERMINATION OF HARDNESS
A.1	Number of test samples. Five sample Rail pads shall be considered for hardness test.			A.1 Number of test samples. Five sample Rail pads shall be considered for hardness test.
A.2 A.2.1	Test Methods: Apparatus: Shore 'A' durometer			A.2 Test Methods: A.2.1 Apparatus: Shore 'A' durometer
A 3 A3.1	Test method IS: 3400 Part II shall apply It is proposed that minimum 5 samples shall be checked for shore hardness 'A'. However, following method may be adopted for checking hardness of the Rail pads. The Rail pads under test shall be placed on another Rail pad of same drawing, such that the grooves at upper side of both the Rail pads are on the same line. Hardness shall be measured on the portion of the pad in which no groove exists. Five measurements shall be taken at different places on each sole plate.			A 3 Test method IS: 3400 Part II shall apply A3.1 It is proposed that minimum 5 samples shall be checked for shore hardness 'A'. However, following method may be adopted for checking hardness of the Rail pads. The Rail pads under test shall be placed on another Rail pad of same drawing, such that the grooves at upper side of both the Rail pads are on the same line. Hardness shall be measured on the portion of the pad in

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A.4 Report: A.4.1: All measurements to be reported. Each individual test value shall meet the acceptance requirement of this specification.			which no groove exists. Five measurements shall be taken at different places on each sole plate.
			A.4 Report: A.4.1: All measurements to be reported. Each individual test value shall meet the acceptance requirement of this specification.
APPENDIX 'B'	Nil	No Change	APPENDIX 'B'
(IRST-55- 2023 -2025)		proposed	(IRST-55- 2025)
DETERMINATION OF TENSILE STRENGTH AND ELONGATION AT BREAK %			DETERMINATION OF TENSILE STRENGTH AND ELONGATION AT BREAK %
B.1 No. of test samples – Five test specimens shall be tested			B.1 No. of test samples – Five test specimens shall be tested
B.2 Test Method IS:3400 Pt.I shall apply.			B.2 Test Method IS:3400 Pt.I shall apply.
B.2.1 The test specimens shall be in the shape of dumb bell. The Dumb-bell shall have the outline and dimensions as			B.2.1 The test specimens shall be in the shape of dumb bell. The Dumb-bell shall have
shown in Figure-3. Two test specimens shall be cut			the outline and dimensions as shown in
from each of the five pads such that the groove			Figure-3. Two test specimens shall be cut
coincides with the central line of the test specimen. The			from each of the five pads such that the
part between the upper edges of the connecting shoulders shall have uniform width and thickness along			groove coincides with the central line of the test specimen. The part between the
its length. Gauge length (Lo=50mm) shall be marked			upper edges of the connecting shoulders
on the test specimens for measuring the elongation.			shall have uniform width and thickness along its length. Gauge length
B.2.2 Five test specimens, one from each of the five sample			(Lo=50mm) shall be marked on the test
pads, shall be tested before ageing and the remaining			specimens for measuring the elongation.
five test specimens shall be tested after ageing at 100 ±			D 2 2. Five test angeliment and from each of the
1°C for 72 96+ 0/-2 hours in an air oven as per IS : 3400 Pt. IV. "Accelerated ageing". The specimens cut			B.2.2 Five test specimens, one from each of the five sample pads, shall be tested before
from the same pads shall bear the same number.			ageing and the remaining five test specimens shall be tested after ageing at
B.3 <u>Tensile strength (T.S.)</u>			100 ± 1°C for 96+ 0/-2 hours in an air
B.3.1 The tensile strength shall be calculated by the formula:			oven as per IS : 3400 Pt. IV. "Accelerated ageing". The specimens cut from the

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T.S. (Kg/cm ²) = <u>Breaking load (kg)</u>			same pads shall bear the same number.
Initial cross-sectional			
area (cm²)			B.3 <u>Tensile strength (T.S.)</u>
			B.3.1 The tensile strength shall be calculated
Note: For calculating the initial cross-sectional area of the test			by the formula:
specimen, sectional area of grooves shall not be			T.S. (Kg/cm²) = Breaking load (kg)
deducted.			Initial cross-sectional area
B.3.2 Percent retention of tensile strength after ageing:			(cm ²)
B.3.2.1 Percent retention of tensile strength after ageing shall			Note: For calculating the initial cross-sectional
be calculated with respect to the reported values before and			area of the test specimen, sectional area
after ageing.			of grooves shall not be deducted.
B.3.2.2 The percent retention of tensile strength after ageing			or groot oo chaii not zo accaetca.
shall be calculated by the formula:-			B.3.2 Percent retention of tensile strength
% retention of T.S. = T.S. after ageing X 100			after ageing:
T.S. before ageing			B.3.2.1 Percent retention of tensile strength after
B.3.3 Elongation at break			ageing shall be calculated with respect to the
B.3.3.1 The elongation at break shall be expressed in percent			reported values before and after ageing.
and calculated by the formula:			B.3.2.2 The percent retention of tensile strength
			after ageing shall be calculated by the
Elongation at break (%) = <u>L - 50</u> X 100			formula:-
			% retention of T.S. = <u>T.S. after</u>
50			ageing X 100
where: L= Length in mm between bench marks at break.			T.S. before
B.3.4. Percent retention of elongation after ageing			ageing B.3.3 Elongation at break
B.3.4.1 Percent retention of elongation after ageing shall be			B.3.3.1 The elongation at break shall be
calculated with respect to reported values before and			expressed in percent and calculated by
after ageing.			the formula:
B.3.4.2 Percent retention of the elongation at break after			Floogration at brook (9/) =1 50 × 100
ageing shall be calculated by the formula:			Elongation at break (%) = <u>L - 50</u> X 100 50
% retention = Elongation at break (%) after ageing X 100			where: L= Length in mm between bench marks
Elongation at break (%) before ageing.			at break.
			B.3.4. Percent retention of elongation after
B.4 Report:			ageing
B.4.1 All measurements to be reported. Each individual test			B.3.4.1 Percent retention of elongation after
value shall meet the acceptance requirement of this specification.			ageing shall be calculated with respect to
apecinication.			reported values before and after ageing.
			B.3.4.2 Percent retention of the elongation at

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FIGURE 3 All dimensions are in millimeters Note: The above sample shall be cut from top side of Rail pads.			break after ageing shall be calculated by the formula: % retention = Elongation at break (%) after ageing X 100 Elongation at break (%) before ageing. B.4 Report: B.4.1 All measurements to be reported. Each individual test value shall meet the acceptance requirement of this specification. 50 ± 2
APPENDIX 'C'	Nil	No Change	APPENDIX 'C'
(IRST-55- 2023- 2025)		proposed	(IRST-55- 2025)
DETERMINATION OF MODULUS (RELAXED) AT 100 % ELONGATION			DETERMINATION OF MODULUS (RELAXED) AT 100 % ELONGATION
C.1 Number of test samples -Three test pads shall be considered for the tests.			C.1 Number of test samples -Three test pads shall be considered for the tests.
 C.2 Test specimens. C.2.1 Test specimens shall be cut and marked in similar manner as indicated in clause B.2.1 of Appendix 'B'. C.2.2 Three dumb bell specimens, one from each of the three sample pads shall be tested before ageing and the remaining three test specimens shall be tested after ageing at 100 ± 1°C for 72 96+ 0/-2 hours in an air oven, as per IS: 3400 Part IV, "Accelerated ageing". 			C.2 Test specimens. C.2.1 Test specimens shall be cut and marked in similar manner as indicated in clause B.2.1 of Appendix 'B'. C.2.2 Three dumb bell specimens, one from each of the three sample pads shall be tested before ageing and the remaining three test specimens shall be tested after ageing at

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rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55-
C.3. For test methods IS: 3400 Part I shall apply. The test			2023(Revision- 01) 100 ± 1°C for 96+ 0/-2 hours in an air
specimen shall be stretched to 100% of its gauge length			oven, as per IS : 3400 Part IV,
(i.e. upto 100mm) at the rate of 450-600 mm/mt. and then			"Accelerated ageing".
allowed to return to the normal position at the same rate.			C.3. For test methods IS: 3400 Part I shall apply.
Immediately after the first stretching, the test specimen			The test specimen shall be stretched to
shall be re-stretched to 100% of its gauge length (i.e. upto			100% of its gauge length (i.e. upto 100mm)
100mm) at the same rate, and the load shall be recorded.			at the rate of 450-600 mm/mt. and then
,			allowed to return to the normal position at the
C.4 Calculations and Reporting:			same rate. Immediately after the first
C.4.1 Calculations			stretching, the test specimen shall be re-
C.4.1.1 Modulus (relaxed) at 100% elongation shall be			stretched to 100% of its gauge length (i.e.
calculated by the formula:			upto 100mm) at the same rate, and the load
Modulus (relaxed) = <u>Load at 100 % elongation</u>			shall be recorded.
(Kg)			
Initial cross-sectional area			C.4 Calculations and Reporting:
(cm ²)			C.4.1 Calculations
			C.4.1.1 Modulus (relaxed) at 100% elongation
C.4.1.2 The initial cross-sectional area of the test specimen			shall be calculated by the formula:
shall be considered in the same manner as in Clause			Modulus (relaxed) = Load at 100 % elongation
B.3.1 of Appendix 'B'. C.4.1.3 Calculation of change of relaxed modulus after			(Kg) Initial cross-sectional area
ageing at $100 \pm 1^{\circ}$ C for $\frac{72}{96} + 0/-2$ hours shall be as			(cm²)
given below:			(GIII)
% change= <u>B - A</u> X 100			C.4.1.2 The initial cross-sectional area of the
A A			test specimen shall be considered in
where A = Relaxed Modulus before ageing.			the same manner as in Clause B.3.1 of
B = Relaxed modulus after ageing.			Appendix 'B'.
			C.4.1.3 Calculation of change of relaxed
C.4 Report:			modulus after ageing at 100 ± 1° C for
C.4.1 All measurements to be reported. Each individual test			96+ 0/-2 hours shall be as given below:
value shall meet the acceptance requirement of this			% change= <u>B - A</u> X 100
specification.			A
			where A = Relaxed Modulus before ageing.
60±2			B = Relaxed modulus after ageing.
Lo = 50			
251/0			C.4 Report:
153			C.4.1 All measurements to be reported. Each
73 0.5			individual test value shall meet the
140±5 -14±05R.			acceptance requirement of this specification.
FIGURE			specification.
FIGURE 3			

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
All dimensions in millimeters			60±2
Note: The above sample shall be cut from top side of Rail pads.			FIGURE 3 All dimensions in millimeters Note: The above sample shall be cut from top side of Rail pads.

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
APPENDIX 'D'	Nil	No Change	APPENDIX 'D'
(IRST-55- 2023- 2025)		proposed	(IRST-55- 2025)
DETERMINATION OF COMPRESSION SET SUBJECTED TO 50% COMPRESSION D.1 Number of test samples. Three test pads shall be considered for the tests. D.2 Test specimens. D.2.1 Three round test specimens, one from each of the three			DETERMINATION OF COMPRESSION SET SUBJECTED TO 50% COMPRESSION D.1 Number of test samples. Three test pads shall be considered for the tests. D.2 Test specimens.
sample test pads shall be cut 37 + 0.0/-0.3 mm in diameter and whose axial plane coincides with that of one of the grooves.			D.2.1 Three round test specimens, one from each of the three sample test pads shall be cut 37 + 0.0/-0.3 mm in diameter and whose axial plane coincides with that of one of the
D.3 Test Method. D.3.1For testing IS.3400 (Part X) shall apply.			grooves.
D.3. IFOI testing is.3400 (Fait A) stial apply.			D.3 Test Method.
 D.3.2 Thickness of test specimen (To) shall be measured and it shall be compressed in a compression device to 50% of its original thickness (To) by using suitable spacers. D.3.3 The assembly shall be kept at 100 ± 1°C for 24 + 0/-2 hours in an air oven. 			D.3.1For testing IS.3400 (Part X) shall apply. D.3.2 Thickness of test specimen (To) shall be measured and it shall be compressed in a compression device to 50% of its original thickness (To) by using suitable spacers.
D.3.4 The device shall then be removed from the oven and allowed to cool at ambient temperature for 30-35 minutes. The test specimen shall then be removed from the device. The thickness (Tr) of test specimen shall be measured after 24 hours but not later than 48 hours from the time of removal from the device.			 D.3.3 The assembly shall be kept at 100 ± 1°C for 24 + 0/-2 hours in an air oven. D.3.4 The device shall then be removed from the oven and allowed to cool at ambient temperature for 30-35 minutes. The test specimen shall then be removed from the
D.4 Calculation and Reporting. D.4.1 Calculations:			device. The thickness (Tr) of test specimen shall be measured after 24 hours but not later than 48 hours from the time of removal from the device. D.4 Calculation and Reporting. D.4.1 Calculations: Compression set (%) shall be calculated by the

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
D.5.1 All measurements to be reported. Each individual test			formula:
value shall meet the acceptance requirement of this			Compression set (%) = $\frac{\text{To} - \text{Tr}}{-}$ X 100
specification.			То
			D.5 Report:
			D.5.1 All measurements to be reported. Each
			individual test value shall meet the
			acceptance requirement of this
			specification.

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
APPENDIX 'E'	Nil	No Change	APPENDIX 'E'
(IRST-55- 2023- 2025)		proposed	(IRST-55- 2025)
DETERMINATION OF TENSION SET(%) SUBJECTED TO 50% STRETCH			DETERMINATION OF TENSION SET(%) SUBJECTED TO 50% STRETCH
E.1 Number of test samples.			E.1 Number of test samples.
Three test pads shall be considered for tests.			Three test pads shall be considered for tests.
E.2 Test specimens.			E.2 Test specimens.
E.2.1 Three test specimens of the type (Dumb bell) described in			E.2.1 Three test specimens of the type (Dumb
clause B.2.1of Appendix 'B' shall be prepared one from			bell) described in clause B.2.1of Appendix
each of the three sample test pads.			'B' shall be prepared one from each of the
E.3 Test Method			three sample test pads.
E.3.1 For testing IS: 3400 part XIII shall apply.			E.3 Test Method
E.3.2 The gauge length of 50 mm shall be marked on the test			E.3.1 For testing IS: 3400 part XIII shall
specimen and it shall be stretched in a suitable			apply.
stretching device upto 50% of the gauge length.			E.3.2 The gauge length of 50 mm shall be
E.3.3 The device shall be then kept at $100 \pm 1^{\circ}$ C for $24 + 0/-2$			marked on the test specimen and it shall
hours in an air oven.			be stretched in a suitable stretching
E.3.4 The device shall then be withdrawn from the oven and			device upto 50% of the gauge length.
allowed to cool at ambient temperature in stretched			E.3.3 The device shall be then kept at 100 ± 1°C
condition for 30-35 mts and then freed.			for 24 + 0/-2 hours in an air oven.
E.3.5 The deformed length (Lr) over the gauge mark shall be			E.3.4 The device shall then be withdrawn from
measured after 24 hours but not later than 48 hours on			the oven and allowed to cool at ambient
removal from the oven.			temperature in stretched condition for 30-
			35 mts and then freed.
E.4 Calculation and Reporting.			E.3.5 The deformed length (Lr) over the gauge
E.4.1 Calculations			mark shall be measured after 24 hours but
Tension set (%) shall be calculated by the formula			not later than 48 hours on removal from the oven.
Tension set (%) = <u>Lr-50</u> X 100			E.4 Calculation and Reporting.
50			E.4.1 Calculations
E.5 Report:			Z. I. I Salodidiono
2.0 <u>1.0port.</u>			Tension set (%) shall be calculated by
E.5.1 All measurements to be reported. Each individual test			the formula
value shall meet the acceptance requirement of this			

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-
			2023(Revision- 01)
specification.			Tension set (%) = <u>Lr-50</u> X 100
			50
			E.5 Report:
			E.5.1 All measurements to be reported. Each
			individual test value shall meet the
			acceptance requirement of this specification.

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
APPENDIX 'F'	Nil	No Change	APPENDIX 'F'
		proposed	
(IRST-55- 2023- 2025)			(IRST-55- 2025)
LOAD COMPRESSION TEST			LOAD COMPRESSION TEST
F.1 Two number samples to be tested per lot. The sample size will be same as the pad offered for inspection, only the horns (if there any) to be chopped off. The load to be applied, may be calculated as follows:- 1			F.1 Two number samples to be tested per lot. The sample size will be same as the pad offered for inspection, only the horns (if there any) to be chopped off. The load to be applied, may be calculated as follows:- 1
F.3 Test Condition: F.3.1 Test shall be carried out at 27± 2°C and at relative			fully automated and computerized with provision of recording of the readings of both dial gauges
humidity 65 ± 5%.			on applied loads.
F.4 Test Method: The test specimen shall be placed between two rigid metal			F.3 Test Condition: F.3.1 Test shall be carried out at 27± 2°C and
plates, the surfaces of which shall be smooth and shall			at relative humidity $65 \pm 5\%$.
absolutely flush with each other. The size of the plates shall be			at relative numicity 00 ± 5%.
210mm X 140mm (min.). A piece of '0' number emery paper			F.4 Test Method:

		DD001	F: 15 (1500)(7 (1) (5 1) 1(
Draft IRS Specification for Rail pad for placing beneath	Comments of Stake holders	RDSO's	Final Draft IRS Specification for Rail pad for
rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55-
shall be inserted between the test specimen and the metal			2023(Revision- 01) The test specimen shall be placed between two
plates both at the top and bottom. The measurement of			rigid metal plates, the surfaces of which shall be
thickness variation shall be carried out by means of two dial			smooth and shall absolutely flush with each other.
gauges of least count 0.01mm attached with hydraulic press			The size of the plates shall be 210mm X 140mm
and located in the middle of the shorter sides of the test			(min.). A piece of '0' number emery paper shall be
specimen.			inserted between the test specimen and the metal
Specimen.			plates both at the top and bottom. The
Note: If required two layer of '0' number emery paper shall be			measurement of thickness variation shall be
inserted between the test specimen and the metal plates both			carried out by means of two dial gauges of least
at the top and bottom in case of 10mm GRSP/10mm			count 0.01mm attached with hydraulic press and
Composite GRSP			located in the middle of the shorter sides of the
Odriposite Ortor			test specimen.
F.4.1 For GRSP (6mm & 10mm thick) & Nylon Cord			test specimen.
Reinforced GRSP(6mm thick):			Note: If required two layer of '0' number emery
Tremioroda Ortor (omin tillok).			paper shall be inserted between the test
Two consecutive loading of 20 x A t shall be applied before any			specimen and the metal plates both at the top
deformation 260			and bottom in case of 10mm GRSP/10mm
readings are taken. A load of A t shall be then applied and			Composite GRSP
the dial gauges 260			Composite Cities
shall be adjusted for '0' reading. Loads in tonnes for 5, 10 & 15	t		F.4.1 For GRSP (6mm & 10mm thick) &
in the formula given above, then applied and when each load is			Nylon Cord Reinforced GRSP(6mm thick):
static for one minute, the dial gauge readings shall be recorded			
at load corresponding to 15 tonnes. The deformation to be			Two consecutive loading of 20 x A t shall be
considered for report shall be the average of the readings taker			applied before any deformation
from 2 dial gauges at load corresponding to 15 tonnes, which			260
shall not differ more than 0.3mm for a given load.			readings are taken. A load of A t shall be then
			applied and the dial gauges
F.4.2 For Composite GRSP (6.2mm thick):			260
			shall be adjusted for '0' reading. Loads in tonnes
Two consecutive loading of 15 t shall be applied before any			for 5, 10 & 15 t in the formula given above, then
deformation readings are taken. A load of 100 kg shall be then			applied and when each load is static for one
applied and the dial gauges shall be adjusted for '0' reading.			minute, the dial gauge readings shall be recorded
Loads in tonnes for 1, 2, 3, 5,10,15 & 20 then applied and when			at load corresponding to 15 tonnes. The
each load is static for one minute, the dial gauge readings shall			deformation to be considered for report shall be the
be recorded. The deformation to be considered for report shall			average of the readings taken from 2 dial gauges
be the average of the readings taken from 2 dial gauges at			at load corresponding to 15 tonnes, which shall not
each load, which shall not differ more than 0.2mm for a given			differ more than 0.3mm for a given load.
load.			
			F.4.2 For Composite GRSP (6.2mm thick):
F.4.3 For Composite GRSP (10mm thick) & Nylon Cord			
Reinforced GRSP (10mm thick):			Two consecutive loading of 15 t shall be applied

Draft IRS Specification for Rail pad for placing beneath	Comments of Stake holders	RDSO's	Final Draft IRS Specification for Rail pad for
rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55-
Two consecutive loading of 27 x A t shall be applied before any deformation s 260 Reading are taken. A load of A t shall be then applied and the dial gauges shall 260 be adjusted for '0' reading. Loads in tonnes for 2, 3, 5,10,15 & 20 then applied and when each load is static for one minute, the dial gauge readings shall be recorded at load corresponding to 20 tonne. The deformation to be considered for report shall be the average of the readings taken from 2 dial gauges at each load, which shall not differ more than 0.3 mm for a given load. F 5 - Report			before any deformation readings are taken. A load of 100 kg shall be then applied and the dial gauges shall be adjusted for '0' reading. Loads in tonnes for 1, 2, 3, 5,10,15 & 20 then applied and when each load is static for one minute, the dial gauge readings shall be recorded. The deformation to be considered for report shall be the average of the readings taken from 2 dial gauges at each load, which shall not differ more than 0.2mm for a given load. F.4.3 For Composite GRSP (10mm thick) & Nylon Cord Reinforced GRSP (10mm thick):
F.5.1 For GRSP (6mm & 10mm thick) & Nylon Cord Reinforced GRSP(6mm thick): F.5.1.1 Compression (mm) at a load 15 X A t for the two samples to be reported. F.5.2 For Composite GRSP (6.2mm thick): F.5.2.1 Calculate specific stress Kg/cm² by dividing the each applied load by the area (A) of the pad under test. Plot a graph of specific stress (Kg/cm²) as 'Y' axis and deflection (mm) as 'X' axis. The deflection (mm) shall be noted corresponding to specific stress 3.85 Kg/cm²			Two consecutive loading of 27 x A t shall be applied before any deformation s 260 Reading are taken. A load of A t shall be then applied and the dial gauges shall 260 be adjusted for '0' reading. Loads in tonnes for 2, 3, 5,10,15 & 20 then applied and when each load is static for one minute, the dial gauge readings shall be recorded at load corresponding to 20 tonne. The deformation to be considered for report shall be the average of the readings taken from 2 dial gauges at each load, which shall not differ more than 0.3 mm for a given load.
as d1 and 57.70 Kg/cm2 as d2 and the difference between (d2-d1) shall be within the specified limit. The deflection at a specified stress of 1.2x260x1000Kg/cm² A shall not be less than 0.15 mm where the factor 260 is the area of the standard reference pad. F.5.3 For Composite GRSP (10mm thick) & Nylon Cord			F 5 - Report F.5.1 For GRSP (6mm & 10mm thick) & Nylon Cord Reinforced GRSP(6mm thick): F.5.1.1 Compression (mm) at a load 15 X A t for the two samples to be reported. 260
Reinforced GRSP(10mm thick): F.5.3.1 Compression (mm) at a load 20 x A t for the two sole plates.			F.5.2 For Composite GRSP (6.2mm thick): F.5.2.1 Calculate specific stress Kg/cm² by
260			dividing the each applied load by the area (A) of the pad under test. Plot a

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
F.5.4 All measurements to be reported. Each individual test value shall meet the acceptance requirement of this specification.			graph of specific stress (Kg/cm²) as 'Y' axis and deflection (mm) as 'X' axis. The deflection (mm) shall be noted corresponding to specific stress 3.85 Kg/cm2 as d1 and 57.70 Kg/cm2 as d2 and the difference between (d2-d1) shall be within the specified limit. The deflection at a specified stress of 1.2x260x1000Kg/cm² A shall not be less than 0.15 mm where the factor 260 is the area of the standard reference pad.
			F.5.3 For Composite GRSP (10mm thick) & Nylon Cord Reinforced GRSP(10mm thick): F.5.3.1 Compression (mm) at a load 20 x A t for the two sole plates.
			F.5.4 All measurements to be reported. Each individual test value shall meet the acceptance requirement of this specification.

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-
,			2023(Revision- 01)
APPENDIX 'G'	Nil	No Change proposed	APPENDIX 'G'
(IRST-55- 2023- 2025) DETERMINATION OF ELECTRICAL RESISTANCE			(IRST-55-2025) DETERMINATION OF ELECTRICAL RESISTANCE
G.1 No. of test samples. G.1.1 Three test samples shall be considered for the test. G.1.2 Samples shall be tested first as such and again after immersion in distilled water for 48 hours at ambient temperature.			G.1 No. of test samples. G.1.1 Three test samples shall be considered for the test. G.1.2 Samples shall be tested first as such and again after immersion in distilled water for 48
G.2 Preparation of the test specimen The surface of the sole plate test specimens shall be gently rubbed with fine emery cloth for the purpose of removing any thin superficial layer of insulating substances with which they may be covered.			hours at ambient temperature. G.2 Preparation of the test specimen The surface of the sole plate test specimens shall be gently rubbed with fine emery cloth for the purpose of removing any thin
G.3 Apparatus. Million Mega ohm-metre or any other suitable equipment capable of measuring electrical resistance more than 500 Megaohms.			superficial layer of insulating substances with which they may be covered. G.3 Apparatus.
G.4 Test Method. G.4.1 For testing IS:3400 (Part XV) shall apply. G.4.2 The test arrangement shall be as given in Figure 4.			Million Mega ohm-metre or any other suitable equipment capable of measuring electrical resistance more than 500 Megaohms.
The test specimen shall be placed on a metal plate whose dimensions are not less than those of the sole plates. On the test specimen shall then be placed a metal ring of iron or brass whose outer diameter shall be 92mm, inner diameter shall be 92			G.4 Test Method. G.4.1 For testing IS:3400 (Part XV) shall apply. G.4.2 The test arrangement shall be as given
72mm and height 30 mm. Inside the metal ring a cylindrical metallic disc of iron or brass having 62 ± 1 mm diameter & height 30 mm, shall be placed in concentric fashion & subjected to a load of about 50 kg. The measuring circuit shall be completed as given in figure 4. Measurement shall			in Figure 4. The test specimen shall be placed on a metal plate whose dimensions are not less than those of the sole plates. On the test specimen shall then be placed a metal ring of iron or brass whose outer diameter
be carried out at 200-250 volts after a charge lasting for 60 seconds and measurements shall be repeated after reversing the direction of the current.			shall be 92mm, inner dia 72mm and height 30 mm. Inside the metal ring a cylindrical metallic disc of iron or brass having 62 ± 1 mm diameter & height 30 mm, shall be placed in concentric fashion & subjected to a load of
G.4.3 In case of test specimen immersed in distilled water it shall be ensured that the sole plates before being tested on			about 50 kg. The measuring circuit shall be

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removal from water shall be wiped off with a dry cloth or			completed as given in figure 4. Measurement
blotting paper so that no apparent trace of water remains,			shall be carried out at 200-250 volts after a
especially in the grooves.			charge lasting for 60 seconds and measurements shall be repeated after
G.5 -Report			reversing the direction of the current.
G.5.1 All the Individual test value before as well as after			
immersion under water shall be reported and should meet			G.4.3 In case of test specimen immersed in
the minimum requirement laid down before and after reversal of current.			distilled water it shall be ensured that the sole
reversal of current.			plates before being tested on removal from
			water shall be wiped off with a dry cloth or
APPROX: LOAD 50 Kg.			blotting paper so that no apparent trace of
, C-			water remains, especially in the grooves.
STANDARDISATION RESISTANCE			G.5 -Report
SOLE PLATE TO BE TESTED.			G.5.1 All the Individual test value before as
+_			well as after immersion under water shall be
-T -T			reported and should meet the minimum
10- (622)			requirement laid down before and after
A + B +			reversal of current.
distribute-			APPROX: LOAD 50 kg.
Figure 4			STANDARDIS ATION
Figure-4			SOLE PLATE TO BE TESTED.
			+
			10-63-
			A DE COMMANDE
	l NU		dhiiiiiiic -
APPENDIX- H	Nil	No Change	APPENDIX- H
(IRST-55- 2023 -2025)		proposed	(IRST-55-2025) SECANT STIFFNESS TEST
SECANT STIEFNESS TEST			H.1 Place the test pad between steel platens, as
SECANT STIFFNESS TEST			shown in Figure1. A piece of '0' number
H.1 Place the test pad between steel platens, as shown			emery paper shall be placed between the
in Figure 1. A piece of '0' number emery paper shall			pad and the platens, with the abrasive side
be placed between the pad and the platens, with the			against the pad.
abrasive side against the pad.			

Draf	t IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
H.2	Steel plate to give bearing area equal to rail foot Fixed bottom platten Figure 1 Apply consecutive loading of 100 KN at a rate of 50±			Figure 1 H.2 Apply consecutive loading of 100 KN at a rate of 50± 10 KN/min and remove it, six times. The loading times at 100 KN shall each be at least 12 seconds.
11.2	10 KN/min and remove it, six times. The loading times at 100 KN shall each be at least 12 seconds.			H.3 Upon release of the final pre-conditioning deformation a pre-load up to 100N shall be applied before setting deflection measuring devices to zero.
H.4	Upon release of the final pre-conditioning deformation a pre-load up to 100N shall be applied before setting deflection measuring devices to zero. Apply a compressive force up to 100 KN at a rate of 50 ± 10 KN/min. As the load increases, record continuously the displacement at the four corners. From this record, determine the displacements with applied loads of 20 KN and 90 KN. If the difference between the largest and smallest of the four displacement measurements is more than 30% of the mean value, the test results are invalid, and the test must be repeated, ensuring that the pad is suitably placed in the test machine. If the difference is less than 30% of the mean, calculate the mean displacement, S_{20} , with 20 KN applied, and the mean displacement, S_{90} , with 90 KN applied. For used pads drawn from service, this difference shall be considered as 40%, max.			H.4 Apply a compressive force up to 100 KN at a rate of 50 ± 10 KN/min. As the load increases, record continuously the displacement at the four corners. From this record, determine the displacements with applied loads of 20 KN and 90 KN. If the difference between the largest and smallest of the four displacement measurements is more than 30% of the mean value, the test results are invalid, and the test must be repeated, ensuring that the pad is suitably placed in the test machine. If the difference is less than 30% of the mean, calculate the mean displacement, S ₂₀ , with 20 KN applied, and the mean displacement, S ₉₀ , with 90 KN applied. For used pads drawn from service, this difference shall be considered as 40%, max.
H.5	Two number samples to be tested per lot and each individual value shall meet the requirement of the specification.			H.5 Two number samples to be tested per lot and each individual value shall meet the requirement of the specification.
H.6	The static secant stiffness, $k_{20\text{-}90}$, is calculated from $k_{20\text{-}90}$ = $70/(S_{90}-S_{20})$ KN/mm			H.6 The static secant stiffness, k_{20-90} , is calculated from $k_{20-90} = 70/(S_{90} - S_{20})$ KN/mm

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
APPENDIX -I	Nil	No Change	APPENDIX –I
(IRST-55- 2023 -2025)		proposed	(IRST-55- <mark>2025</mark>)
IMPACT ATTENUATION TEST			IMPACT ATTENUATION TEST
I.1 The impact attenuation of the pad is to be measured in a drop weight test rig of the type shown in Figure 2. The drop weight has a mass of between 10 kg and 50 kg. In order to set the calibration of the rig, the rail fastening should first be assembled with 6mm thick plain hard plastic rail pad(HDPE or EVA), with stiffness not less than 750MN/m. The mass and height of the drop weight should be adjusted so that a clear impulse signal is obtained in the strain gauge, within 2 milliseconds and 5 milliseconds, with the peak strain not exceeding 2/3 of the initial cracking strain of the sleeper. Once these parameters are established for a particular test rig, a new sleeper should be strain gauged and installed for regular testing. Prop-weight P			I.1 The impact attenuation of the pad is to be measured in a drop weight test rig of the type shown in Figure 2. The drop weight has a mass of between 10 kg and 50 kg. In order to set the calibration of the rig, the rail fastening should first be assembled with 6mm thick plain hard plastic rail pad(HDPE or EVA), with stiffness not less than 750MN/m. The mass and height of the drop weight should be adjusted so that a clear impulse signal is obtained in the strain gauge, within 2 milliseconds and 5 milliseconds, with the peak strain not exceeding 2/3 of the initial cracking strain of the sleeper. Once these parameters are established for a particular test rig, a new sleeper should be strain gauged and installed for regular testing. Drop-weight Rail, with representative rail faatening assembly, and test rail pad Representative sleeper bed of stone chippings
I.2 Test Facility:			aco total emphisis
I.2.1 For test of CGRSP 6.2mm thick or GRSP 6mm thick:			Figure
Standard rail fastening components corresponding to concrete sleeper to Drg. No. RDSO/T-2495 or RDSO/T-2496 are to be used.			Figure 2 I.2 Test Facility:
I.2.2 For test of CGRSP 10mm thick or GRSP 10 mm			I.2.1 For test of CGRSP 6.2mm thick or GRSP 6mm thick:
thick: Standard rail fastening components corresponding to concrete sleeper to Drg. No. RDSO/T-7008 or RDSO/T-8527 or			Standard rail fastening components corresponding to concrete sleeper to Drg. No. RDSO/T-2495 or RDSO/T-2496 are to be used.

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RDSO/T-8746 or any relevant sleepers are to be used.			2023(Revision- 01)
The corr of the crumy relevant electron and to be accu.			I.2.2 For test of CGRSP 10mm thick or GRSP 10
I.3The test is carried out as follows:			mm thick:
I.3.1 Place a Bed of stone/rubber mat below the sleeper for support. The support shall permit a vertical deflection in the range 0.1mm to 0.5mm during the test. I.3.2 With a hard plastic pad (stiffness greater than 750 MN/m) in place in the rail fastening assembly, drop the weight from the height established in the preparatory test, record the peak strain value. Repeat the test twice more. The average value of the three strains is recoded as $\xi_{\text{ref.}}$ I.3.3 Dismantle the rail fastening assembly, and reassemble it with the test pad in place. Drop the weight from the same height and record the peak strain value. Repeat the test twice more. The average of these three peak strains is recorded as $\xi_{\text{lest.}}$ I.4 The impact attenuation of the pad A is defined by $A = (1 - \xi_{\text{lest.}} / \xi_{\text{per}}) \times 100\%$ I.5 Two samples shall be tested and each individual value shall			Standard rail fastening components corresponding to concrete sleeper to Drg. No. RDSO/T-7008 or RDSO/T-8527 or RDSO/T-8746 or any relevant sleepers are to be used. I.3The test is carried out as follows: I.3.1 Place a Bed of stone/rubber mat below the sleeper for support. The support shall permit a vertical deflection in the range 0.1mm to 0.5mm during the test. I.3.2 With a hard plastic pad (stiffness greater than 750 MN/m) in place in the rail fastening assembly, drop the weight from the height established in the preparatory test, record the peak strain value. Repeat the test twice more. The average value of the three strains is recoded as $\xi_{\text{ref.}}$
meet the requirement of the specification.			I.3.3 Dismantle the rail fastening assembly, and re-assemble it with the test pad in place. Drop the weight from the same height and record the peak strain value. Repeat the test twice more. The average of these three peak strains is recorded as ξ_{test} . I.4 The impact attenuation of the pad A is defined by $A = (1 - \xi_{\text{test}} / \xi_{\text{ref}}) \times 100\%$ I.5 Two samples shall be tested and each individual value shall meet the requirement of the specification.
APPENDIX –J	Nil	No Change	APPENDIX –J
(IRST-55- 2023- 2025)		proposed	(IRST-55- <mark>2025</mark>)
ADHESION STRENGTH TEST			ADHESION STRENGTH TEST

Draft IRS Specification for Rail pad for placing b rails, Serial No. T- 55-2023 (Revision- 01)		Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
The adhesion strength test between layers 'A' Composite GRSP shall be done with specimen of width cut from the Composite Grooved Rubber Sole P	20±1mm			The adhesion strength test between layers 'A' & 'B' of Composite GRSP shall be done with specimen of 20±1mm width cut from the Composite Grooved Rubber Sole Plate.
A layer is to be separated for a distance sufficient to e separated ends to be held in the grips of the tens machine.				A layer is to be separated for a distance sufficient to enable the separated ends to be held in the grips of the tensile testing machine.
Sometimes, the layers are not distinctly visible separation is not possible due to strong adhesion be layers 'A' & 'B' to enable gripping of the sampl machine, in that case, the sample shall be treated a the adhesion strength test and the same should be re 'no separation' without giving any observed value required to separated the layers.	etween the es in the as passing eported as			Sometimes, the layers are not distinctly visible and this separation is not possible due to strong adhesion between the layers 'A' & 'B' to enable gripping of the samples in the machine, in that case, the sample shall be treated as passing the adhesion strength test and the same should be
But, when the layers are distinctly visible and sep possible, the maximum load for 20mm width shall be at which separation occurs.				reported as 'no separation' without giving any observed value of load required to separated the layers.
Two numbers of samples shall be tested per lot individual value shall meet the requirement of the spec				But, when the layers are distinctly visible and separation is possible, the maximum load for 20mm width shall be reported at which separation occurs.
				Two numbers of samples shall be tested per lot and each individual value shall meet the requirement of the specification.
(Proposed New Test)		1.M/s Bony Polymers pvt.Ltd.:	The vertical load	(Proposed New Test)
	NDIX –'K'	The application of vertical load (? = V)	and Lateral load	APPENDIX –'K'
	-55-2025)	and Lateral load (?=L) in a dynamic	have already	(IRST-55-2025)
INCLINED REPEATED LOAD TEST (DURABILIT	Y TEST)	process that is not clear from the	been given in this	INCLINED REPEATED LOAD TEST
K1. For conducting durability test, following star	ndard rail	picture. Force application directions are more clearly needed by separate	appendix.	(DURABILITY TEST)
fastening assembly are to be used:	Drawing to make the correct fixture.		K1. For conducting durability test, following standard rail fastening assembly are to be	
SN Components PSC sleeper RT- Wider sleepe	-			used:
8746	Olem			SN Components PSC sleeper RT-2496
	0kg -8751			Wider PSC sleeper RT-8746 1. Rail 60kg 60kg
2. 3.14/11/14 1(1-5/50 1(1-5/50	0101			I. Mall bury bury

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)				Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
	Liner					2. GFN/HVN Liner RT-3706 RT-8751
3.	Rubber Pad	RT-6618	RT-8747			3. Rubber Pad RT-6618 RT-8747
4.	ERC	RT-5919	RT-5919			4. ERC RT-5919 RT-5919
K2.	Scale of loading	ng:				K2. Scale of loading:
	fillion cycle at frequentatio = 0.62)	ncy of 300 cycles/	/minute			0.5 Million cycle at frequency of 300 cycles/minute (L/V ratio = 0.62)
K3 1	Lateral load (V)) = 9.375t max ^m to = 5.81t max ^m to				Vertical load (V) = 9.375t maxm to 0.5t minm Lateral load (V) = 5.81t maxm to 0.3t minm
K3. 1	completion of the	ne accelerated dur	•			K3. Following tests shall be carried out initially and after completion of the accelerated durability test.
	ii) Secant stif					
	iii) Impact Atte					i) Load deflection
	iv) Thickness					ii) Secant stiffness
						iii) Impact Attenuation
K4. T	he change in values	of Load deflection	n, Secant stiffness			iv) Thickness
á	and impact attenuation	on measured after	r 0.5 million cycles			
t	test should be within	10% of the values	s measured at the			K4. The change in values of Load deflection,
ŀ	beginning of the test.	Reduction in the	thickness shall not			Secant stiffness and impact attenuation
ŀ	be more than 0.1mm	l.				measured after 0.5 million cycles test should
						be within 10% of the values measured at the
K5. T	There should be no	significant tears	or holes in the pad			beginning of the test. Reduction in the
	after completion of th	•				thickness shall not be more than 0.1mm.
Key	•		7	I		unickness shall not be more than 0. milli.
	Sleeper, half sleeper	r or block	.			K5. There should be no significant tears or holes
	Short length of rail of		5——			_
	section	•	2 1			in the pad after completion of the test.
	Fastening asser	mbly with	3			Key
	appropriate pad	•	a 6			Sleeper, half sleeper or block
	Loading mechanism	which allows		_		2. Short length of rail of the required section
	free rotation of rail u					3. Fastening assembly with appropriate pad
5.	Free pivot either ab	oove or below				4. Loading mechanism which allows free
	the actuator with mi	inimum length				rotation of rail under load
	of strut from pivot to					5. Free pivot either above or below the actuator
	Layer of crushable o					with minimum length of strut from pivot to rail
	material on rigid					of 0.4m
	gypsum board)					6. Layer of crushable or conformable material

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
7. Angle α=32°			on rigid support (e.g. gypsum board) 7. Angle α=32°
(Proposed New Test) APPENDIX -'L' (IRST-55-2025) DETERMINATION OF RESILIENCE BY VERTICAL REBOUND	Nil	No Change proposed	(Proposed New Test) APPENDIX -'L' (IRST-55-2025) DETERMINATION OF RESILIENCE BY VERTICAL REBOUND
L1. Number of test samples: Three pads shall be considered for rubber property- Resilience by Vertical Rebound. L2. Test temperature:			L1. Number of test samples: Three pads shall be considered for rubber property- Resilience by Vertical Rebound. L2. Test temperature:

	and the second s		RDSO's Remarks	placing be	S Specification for neath rails, Serial 2023(Revision- 01)			
opaque shield mark. If on the	may be placed below	samples for pass or fail purpose one ay be placed below desired resilience abound, the top of the plunger is seen, be considered as pass.			L5. Report: Report average % resilience recorded for 4th 5th, & 6th impacts each sample. Note: For screening of samples for pass or fair purpose one opaque shield may be placed below desired resilience mark. If on the rebound, the top of the plunger is seen, the sample shall be considered as pass.			
		APPENDIX-'N-M' (IRST-55- 20232025)	Nil	No Change proposed	33.11.	AF	PPENDIX-'N-M' 55- 2023 2025)	
Drawing No.	Type of Rail pad	Maximum				WEIGHT OF DIFF PAD		
1 RDSO/T-3703	2 6mm GRSP	weight of Rail Pad (g) 3 161			Drawing No.	Type of Rail pad	Maximum weight of Rail Pad (g)	
RDSO/T-3711 RDSO/T-6618 RDSO/T-8327 RDSO/T-8528	6mm GRSP 6.2mm CGRSP 6.2mm CGRSP 10mm CGRSP	174 167 154 445			1 RDSO/T- 3703	6mm GRSP	3 161	
RDSO/T-8747 Note: Only the we'de checked as mention	10mm CGRSP ights of above mentione	425 ed Rail Pads shall			RDSO/T- 3711 RDSO/T- 6618	6.2mm CGRSP	174	
DO CHOCKET GO MONICO	nod in para 11.0.0.				RDSO/T- 8327 RDSO/T- 8528	6.2mm CGRSP 10mm CGRSP	154 445	
					RDSO/T- 8747	10mm CGRSP	425	
						he weights of above se checked as men		
		APPENDIX-'O' 'N'	Nil	No Change		API	PENDIX-' <mark>O'</mark> 'N'	

Draft IF	•		for Rail p T- 55- <mark>202</mark> 3	3 (Revi			Comments of Stake holders	RDSO's Remarks			RS Speceneath records 2023(Records)	ails, Sevision	erial No - 01)	o. T- 5	5-
((IRST-55- 2023 2025) DOUBLE SAMPLING PLAN General Inspection Level-II (Refer: Table I & 3A of IS 2500 Part I – 2000)							proposed	(Refe	Ge	JBLE SA neral Ins e I & 3A	MPLIN pection	NG PLA Level-	N II	000)
Lot size	Sam ple size code lette r	Samp le	Sampl e size	Cu mul ativ e sa mpl e	Accept quality Percent defective Accept ance No. (a)	level ent			Lot size	Sample size cod e lette r	eSample	Sample size	Cumula tive sample	quality Per defe	epted ty level rcent ctives- 2.5 ejection No. (r)
281- 500	Н	First Seco nd	32 32	32 64	1 4	3 5			281-	Н	First	32	32	nce No. (a)	3
501- 1200	J	First Seco nd	50 50	50 100	6	5 7			500 501- 1200	J	Second First Second	32 50 50	64 50 100	4 2 6	5 5 7
1201- 3200	K	First Seco nd	80 80	80 160	3 9	6 10			1201- 3200 3201-	K	First Second First	80 80 125	80 160 125	3 9 5	6 10 9
3201- 10000	L	First Seco nd	125 125	125 250	5 12	9 13			10000		Second		250	1 2	13
	(Part I) rejection (ii) pieces is shall be to or mo rejected (iii) number second s (iv) exceed rejected	e may be 2000 for numbers In the sequal to accepted one than 1. If the fa (a), but lessample slif the the rejection of the cut of the cut of the sample cut of the cut of the sample cut of the cut of the sample cut of the cut of th	e made to sample s. first sample of the accept. If numb rejection in the accepts than the country of the country of the number of the country of the number	o table e size, ole if the eptance er of fainumber es exceede rejectionsider e failed phoer (r) failed p	e less that acceptant e number (a diled pieces (r), the lot eds the acceptant eds the lot eds the lot eds are first and	IS-2500 ace and of failed), the lot is equal shall be expertence or (r), the equal or shall be the total			may I)-20 rejection (ii) In the piece num (iii) If the num (r), the the rejectional forms (iii) If the the rejectional (iii) If the the rejectional (iii) If the rejectional (iii) If the rejectional (iii) If the rejectional (iiii) In the rejectional (iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	be ma 1000 for tion number first es is en tot shat es is ber (r), e faile ber (a) he secumunt rejection teted. T	ner lot size de to tal resample umbers. It sample qual to te to the lot sequal to the lot sequence th	e if the ne accepted. o or mhall be sexcees than to ple should piece ber (r)	a., acce e number eptance If num nore the rejecte eds the he rejected be ces equal to failed p	S-250 eptance of a number of an red. acception number of all or ellot ship eces are separated.	O (Part e and failed per (a), f failed ejection phance number dered. exceed nall be are the

Di	raft IRS Specification rails, Serial No.				Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)				
	samples.										
	IEME OF TESTI EPTANCE TESTS FC Property		(IRST-55-2	·	1.Ameenji Industries: 2.M/s Shri Radha Polymers: This test is already mentioned in the Specification .SI.No. 14 3.M/s ROYAL FASTENERS NE:	The comments of the firm are acceptable and Annexure has been modified.	SCHEME OF ACCEPTANCE/ RAIL PADS	TESTIN)23 2025) PRE-	
Ň		samples to be tested	value for acceptan ce/ rejection	sampl es to be drawn	Clause 16 regarding Breaking load test on Nylon Cord Reinforced GRSP is a repetition of Sl. No. 14 and can be omitted.	been medilied.	Property	No of samples to be tested	Criteria value for accepta nce/	No. of samp les to	
2	Hardness shore 'A' Tensile strength (Kg/	5 cm2) 5	Individual	5	4. Patil Rail Infrastructure Pvt.Ltd.:				rejection	be draw	
	(a) Before ageing b) After ageing at 100+ 1°C for 96 + 0/-2 hours	5	maividuai	5 —	Addition of Flex Property -2-Individual-2		Hardness shore 'A' Tensile strength	5 (Kg/cm2)	Individu al	5 5	
	(c) Retention after ageing (%),		-	-			(a) Before	5	Individu	5	
3	Elongation at break ((a) Before ageing (b) After ageing at 100 + 1°C for 96+ 0/-2 hours	<u>%)</u> 5	Individual	5			ageing b) After ageing at 100+ 1°C for 96 + 0/-2 hours		al		
	(c) Retention after ageing (%)	-	-	-			(c) Retention after ageing	-	-	-	
4	Modulus (relaxed) at (a) Before ageing (kg/cm2)	100% elongat 3	ion Individual	3			Elongation at bre	eak (%)			
	b) Change after ageing at100 + 1oC for 96+ 0/-2 hours						(a) Before ageing (b) After	5	Individu al	5	
5	Compression set subjected to 50% compression at	3	Individual	3			ageing at 100 + 1oC for 96+ 0/-2 hours (c) Retention	_			
6	100+ 1oC for 24+ 0/-2 hours Tension set	3	Individual	3			after ageing (%)				
	subjected to 50% stretch at 100 +	-					Modulus (relaxed) (a) Before	d) at 100% e	longation	3	
	1oC for 24 + 0/-2 hours						ageing (kg/cm2)	, J	al		

C	raft IRS Specification				Comments of Stake holders	RDSO's	Final Draft IRS S	-		
	rails, Serial No	. T- 55- <mark>2023</mark>	(Revision- 01))		Remarks	placing benea	ath rails, 3(Revisi		- 55-
7	Load -	2	Individual	2			b) Change	O(ITCVISI		
	Compression test						after ageing			
8	Electrical resistance			<u> </u>			at100 + 1oC			
	On normal Rail Pad	⊣	Individual	2			for 96+ 0/-2 hours			
	On Rail Pad after immersion in						Compression	3	Individu	3
	distilled water for						set subjected	3	al	
	48 hours						to 50%			
9	Secant stiffness	2	ndividual	2			compression at			
	Test						100+ 1oC			
10		2	Individual	2			for 24+ 0/-2 hours			
11	Test Dimensional check	8	Individual	8			Tension set	3	Individu	3
12		2	Individual	2			subjected to	Ü	al	
12	Adilesion rest	_	Individual				50% stretch at			
13		2	Individual	2			100 + 1oC			
	the Nylon						for 24 + 0/-2			
1.1	Cord and Rubber	5	Individual	5			hours Load -	2	Individu	2
15	Breaking load Weight Test	8	Individual	8			Compression	2	al	
16	· · · · · · · · · · · · · · · · · · ·		Individual	5			test		<u> </u>	
	on Nylon cord									
	Reinforced GRSP						Flactois al manista de	44		
							Electrical resistan	ce test		
Not	e:_						On named Dail	2	المرابات المرابات	2
1.	In case of acceptance	tests for dir	mensional che	ck number			On normal Rail	2	Individual	2
	of samples to be tested	d shall be as	per Clause 11	.2.			lad			
2.	In case of acceptant	ce tests for	weight test	number of						
	samples to be tested s	hall be as pe	er Clause 11.3.	3.						
3.	The tests shall be con-	ducted as pe	er relevant test	method of			On Rail Pad			
	the property as given i						after immersion in distilled			
4.	Specimen for tests t	before and	after ageing	are to be			water for 48			
	prepared from the sam						hours			
	Samples shall be sigi			ntative and						
	the inspecting officer d									
	All samples shall be									
	bear marking as per re			-						
	Electrical resistance t			on same			Secant	2	Individual	2
	pads before and after i						stiffness Test			
	Total no. of samples p	er lot require	ed for physical	tests shall						
	be:	la aa aa '								
	25 nos. of finished pad		-	100						
(11)	3 Nos. for load-compre	ession test of	. Size 200mm	x 130mm.						

raft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)		RDSO's Remarks	Final Draft IRS Specification for Rail pad fo placing beneath rails, Serial No. T- 55-2023(Revision- 01)					
			Impact Attenuation Test	2	Individual	2		
			Dimensional check	8	Individual			
			Adhesion Test	2	Individual			
			Adhesion between the Nylon Cord and Rubber	2	Individu al	2		
			Breaking load test on Nylon cord Reinforced GRSP	5	Individu al	5		
			Weight Test	8	Individu al	;		
			Thermogravi metric Analysis (TGA)	1	Individu al	•		
			Durability Test)	1	Individu al			
			Vertica I Rebou nd	3	Individu al	;		
			Ozone test	1	Individu al	•		
			Abrasion Test	1	Individu al	•		

Draft IRS Specification for Rail pad for placing beneath	Comments of Stake holders	RDSO's	Final Draft IRS Specification for Rail pad for
rails, Serial No. T- 55-2023 (Revision- 01)		Remarks	placing beneath rails, Serial No. T- 55- 2023(Revision- 01)
			check number of samples to be tested shall be as per Clause 11.2. In case of acceptance tests for weight test number of samples to be tested shall be as per Clause 11.3.3. The tests shall be conducted as per relevant test method of the property as given in the specification. Specimen for tests before and after ageing are to be prepared from the same pads. Samples shall be signed by the firm's representative and the inspecting officer drawing the samples. All samples shall be free from surface defects and shall bear marking as per requirement of relevant drawing. Electrical resistance tests are to be conducted on same pads before and after immersion in water. Total no. of samples per lot required for physical tests shall be: i) 25 nos. of finished pads as per relevant drawing. ii) 3 Nos. for load-compression test of. Size 200mm x 130mm.
APPENDIX-' <u>L' 'P'</u> (IRST-55- 2023 2025)	Nil	No Change proposed	APPENDIX-' <u>L</u> -' 'P' (IRST-55- 2023 2025)
Letter of offer from the firm		proposed	Letter of offer from the firm
To, (Address of inspecting agency)			To, (Address of inspecting agency)
Sub: Call Letter for inspection of to drg. No. RDSO/T-			Sub: Call Letter for inspection of to drg. No. RDSO/T-
Ref:Railway/Railway Board P.O. No for to Drg. No-			Ref:Railway/Railway Board P.O. No- for
RDSO/T- * * *			to Drg. No- RDSO/T-
Theas per following details are offered for inspection in			Theas per following details are offered for
terms of the above referred purchase order. These have been internally checked and found satisfactory as per drawing No.			inspection in terms of the above referred purchase order. These have been internally

Dra	ft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
	/Tand relevant IRS specification (copy of test enclosed).			checked and found satisfactory as per drawing No. RDSO/Tand relevant IRS specification (copy of test report enclosed).
1. 2. 3. 4. 5. 6. 7. 8. 9.	Installment No. Quantity on order a) Against original order b) Against extension Quantity previously inspected and passed Quantity now offered for inspection a) Against original order b) Against extension Batch Nos. Rate Per			1. Installment No. 2. Quantity on order a) Against original order b) Against extension 3. Quantity previously inspected and passed 4. Quantity now offered for inspection a) Against original order b) Against extension 5. Batch Nos. 12. Rate Per
	APPENDIX-'M Q' (IRST-55- 2023 2025) STORAGE OF RAIL PAD	Nil	No Change proposed	APPENDIX-'M Q' (IRST-55- 2023 2025) STORAGE OF RAIL PAD
deterio deterio combir heat,	subbers whether under storage or in use continue to brate and ultimately may become unserviceable. The bration may be the result of one particular factor or a nation of factors viz. the action of oxygen, ozone, light, humidity etc. The deleterious effects of these factors however, be minimised by adopting appropriate conditions			The rubbers whether under storage or in use continue to deteriorate and ultimately may become unserviceable. The deterioration may be the result of one particular factor or a combination of factors viz. the action of oxygen, ozone, light, heat, humidity etc. The deleterious effects of

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
of storing and duration of storage. This guide line proves suitable conditions for the storage of rubbers in all forms.			these factors may, however, be minimised by adopting appropriate conditions of storing and duration of storage. This guide line proves
(i) The rubber components should be stored in a cool place as far as practicable, preferably below 30 deg.C.			suitable conditions for the storage of rubbers in all forms.
(ii) They should be kept away from direct sunlight preferably in a dark place. Direct sunlight causes much faster degradation of the rubber components.			(ii) The rubber components should be stored in a cool place as far as practicable, preferably below 30 deg.C.
(iii) The humidity of the storage condition should not be such that condensation of moisture takes place on the surface of the components.			(ii) They should be kept away from direct sunlight preferably in a dark place. Direct sunlight causes much faster degradation of the rubber components.
(iv) In the vicinity of these components, any loose electrical connections should be avoided, as these cause production of ozone, which adversely affects rubber.			(iii) The humidity of the storage condition should not be such that condensation of moisture takes place on the surface of the
(v) They should be stored away from contact with materials containing copper and manganese, which act as poisoning agents and resulting in their faster degradation.			components. (iv) In the vicinity of these components, any loose electrical connections should be
(vi) Under no circumstances rubber components should be stressed during storage. The portion under stress undergoes deformation with permanent set and loading o			avoided, as these cause production of ozone, which adversely affects rubber.
degradation. They should be stacked in such a way so that any super imposed stresses are substantially avoided.			(v) They should be stored away from contact with materials containing copper and manganese, which act as poisoning agents
(vii) Any contact with grease or oil should be avoided as these cause swelling, softening and deterioration of rubbers.			and resulting in their faster degradation. (vi) Under no circumstances rubber components
(viii) French chalk or soapstone or mica should liberally be applied on the surface of rubber components.			should be stressed during storage. The portion under stress undergoes deformation with permanent set and loading o
(ix) Great care is to be exercised so that the material is used in the order of their receipt in the stores i.e. 'first-come-first issue basis'. The rubbers whether under storage or in use			degradation. They should be stacked in such a way so that any super imposed stresses are substantially avoided.
continue to deteriorate. The only difference is that under service condition, deterioration is much faster. Every moment of storing is at the cost of useful life and prolonged storage of the material may render it			(vii) Any contact with grease or oil should be avoided as these cause swelling, softening and deterioration of rubbers.

Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023 (Revision- 01)	Comments of Stake holders	RDSO's Remarks	Final Draft IRS Specification for Rail pad for placing beneath rails, Serial No. T- 55-2023(Revision- 01)
unserviceable due to progressive deterioration.			(viii) French chalk or soapstone or mica should liberally be applied on the surface of rubber components. (ix) Great care is to be exercised so that the
			material is used in the order of their receipt in the stores i.e. 'first-come-first issue basis'. The rubbers whether under storage or in use continue to deteriorate. The only difference is that under service condition, deterioration is much faster. Every moment of storing is at the cost of useful life and prolonged storage of the material may render it unserviceable due to progressive deterioration.
APPENDIX-' P' ' R '	APPENDIX- 'R'	No change is	APPENDIX-'P' 'R'
(IRST-55- 2023 2025)		proposed in this	(IRST-55- 2023 2025)
· · · · · · · · · · · · · · · · · · ·	1.M/s Shah Elastomer:	Annexure	, ,
TESTING OF SAMPLES FROM THE LOTS ALREADY	2. M/s Shiva Industries:		TESTING OF SAMPLES FROM THE LOTS
PASSED BY INSPECTING OFFICIAL/AGENCY AT THE	Over the years BIS specifications are		ALREADY PASSED BY INSPECTING
VENDOR PREMISES / CONSIGNEE END/FIELD AND	incorporated in various IRS		OFFICIAL/AGENCY AT THE VENDOR
DEFECT CLASSIFICATION	specification and testing methodology is adopted from the same. BIS		PREMISES / CONSIGNEE END/FIELD AND DEFECT CLASSIFICATION
P.1-R.1 Procedure for Picking up samples from the lot already	specification is a standard		
passed by inspecting official/agency in the vendor premises or	specification having various provisions		P.1 R.1 Procedure for Picking up samples from
from consignee end/field shall be as follows:	which should not be ignored or over-		the lot already passed by inspecting
P.1.1R.1.1Representative(s) of RDSO, Zonal Railway, Railway	ride as these are followed in several		official/agency in the vendor premises or from
Board or Railway investigating agency shall pick up samples jointly with the field unit's representative, in case the sample is	products similar to rail pads. The time		consignee end/field shall be as follows: P.1.1R.1.1Representative(s) of RDSO, Zonal
picked up from the field units/consignee end, and with the firm's	frame and percentage variation acceptable on different parameters		Railway, Railway Board or Railway investigating
representative in case the sample is picked up at the firm's	mentioned in Appendix-R are vague		agency shall pick up samples jointly with the field
premises (after the LOT has been passed by the inspecting	and derived from nowhere having no		unit's representative, in case the sample is picked
agency, but before dispatch).	basis. Whereas in BIS specification		up from the field units/consignee end, and with
In case, the firm does not cooperate in joint picking up of	the time frame for testing is correctly		the firm's representative in case the sample is
samples in firm premises, then a report is to be put up by	mentioned for variable and constant		picked up at the firm's premises (after the LOT
Inspecting Railway Official to the Directorate head controlling	parameters and followed since many		has been passed by the inspecting agency, but
the item at RDSO for penal action on the firm.	years. So we suggest that the		before dispatch).
	provisions of BIS should not over-ride		In case, the firm does not cooperate in joint
P.1.2 R.1.2 Two sample sets (20nos. pads in each set) shall be	with provisions of Appendix-R and		picking up of samples in firm premises, then a
picked up & sealed. 'FIRST' sample is for testing and	Appendix-R should be modified		report is to be put up by Inspecting Railway

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'SECOND' sample shall be 'Standby' sample.	accordingly.		Official to the Directorate head controlling the
The 'Standby' sample shall be kept in safe custody and sent to			item at RDSO for penal action on the firm.
'STANDBY SAMPLE STORE' at RDSO. Testing of 'Standby	For Para R.1.1		
sample' and action thereafter shall be governed by the extant	1.M/s Shah Elastomers:		P.1.2 R.1.2 Two sample sets (20nos. pads in
provisions of ISO Apex documents.	2. M/s Shiva Industries:		each set) shall be picked up & sealed. 'FIRST'
P.2 R.2 Defect classification of samples tested from the lot	The lot of rail pads is supplied only		sample is for testing and 'SECOND' sample shall
already passed by inspecting official/agency in the vendor	after it is being passed and inspected		be 'Standby' sample.
premises or from consignee end/field shall be as follows:	by the inspecting agency. We suggest		The 'Standby' sample shall be kept in safe
P.2.1R.2.1 For samples tested within 3 months of manufacture,	that picking		custody and sent to 'STANDBY SAMPLE
any variation from specified acceptance values would be treated as a defect.	of samples should not be done vaguely and should be done only if		STORE' at RDSO. Testing of 'Standby sample' and action thereafter shall be governed by the
P.2.2R.2.2 For samples tested beyond 3 months but within 4	there is a written complaint from field		extant provisions of ISO Apex documents.
months of manufacture, variation beyond 2% of specified	unit or consignee end or if failure is		P.2 R.2 Defect classification of samples tested
acceptance values of all physical parameters (except Ash	reported from the field like in the case		from the lot already passed by inspecting
content, specific gravity and Electrical Resistance) would be	of other railway items. If there is a		official/agency in the vendor premises or from
treated as defect.	need to super check the activities of		consignee end/field shall be as follows:
P.2.3 R.2.3 For samples tested beyond 4 months but within 8	inspecting agency, it can be done		P.2.1R.2.1 For samples tested within 3 months of
months of manufacture, variation beyond 6 % of specified	during the time of inspection and not		manufacture, any variation from specified
acceptance values of all physical parameters (except Ash	by picking inspected and passed		acceptance values would be treated as a defect.
content, specific gravity and Electrical Resistance) would be	samples from consignee end or field		P.2.2R.2.2 For samples tested beyond 3 months
treated as defect.	units.		but within 4 months of manufacture, variation
P.2.4R.2.4 For samples tested beyond 8 months but within 12			beyond 2% of specified acceptance values of all
months of manufacture, variation beyond 10 % of specified			physical parameters (except Ash content, specific
acceptance values of all physical parameters (except Ash			gravity and Electrical Resistance) would be
content, specific gravity and Electrical Resistance) would be			treated as defect.
treated as defect.			P.2.3 R.2.3 For samples tested beyond 4 months
P.2.5 R.2.5 In case of Ash content, specific gravity and			but within 8 months of manufacture, variation
Electrical Resistance, no variation is permitted and any			beyond 6 % of specified acceptance values of all
variation from specified acceptance values would be treated a			physical parameters (except Ash content, specific
defect irrespective of age of samples at the time of testing.			gravity and Electrical Resistance) would be
P.2.6 R.2.6 In case of hardness, value less than minimum			treated as defect.
specified value will be considered as a defect irrespective of			P.2.4R.2.4 For samples tested beyond 8 months but within 12 months of manufacture, variation
age of samples at the time of testing. P.3R.3 Action to be taken based on the test results shall be as			beyond 10 % of specified acceptance values of all
follows:			physical parameters (except Ash content, specific
P.3.1R.3.1 Defect in one physical parameter will not be			gravity and Electrical Resistance) would be
considered as failure of the lot/set and no action shall be taken.			treated as defect.
However, for defect in Ash content or Specific Gravity or			P.2.5 R.2.5 In case of Ash content, specific
Electrical Resistance alone will be considered as failure of the			gravity and Electrical Resistance, no variation is
lot/set and the lot shall be rejected and financial recovery shall			permitted and any variation from specified
be made.			acceptance values would be treated a defect

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P.3.2R.3.2 Defects in two physical parameters, it will be			irrespective of age of samples at the time of
considered as failure of the lot/set and the lot shall be rejected			testing.
and financial recovery shall be made.			P.2.6 R.2.6 In case of hardness, value less than
P.3.3R.3.3 If there is defect in more than two physical			minimum specified value will be considered as a
parameters, the lots shall be rejected, financial recovery shall			defect irrespective of age of samples at the time
be done and further Penal action shall also be taken against the			of testing.
firm by RDSO.			P.3R.3 Action to be taken based on the test
P.3.4 R.3.4 In case of rejection of lot at consignee end/ field			results shall be as follows:
the material rejection advice/rejection memo should be sent by			P.3.1R.3.1 Defect in one physical parameter will
the consignee (or the authority carrying out inspection) to all			not be considered as failure of the lot/set and no
concerned i.e. firm/supplier, purchaser, pre-inspecting agency,			action shall be taken. However, for defect in Ash
paying authority as per contract etc. without fail.			content or Specific Gravity or Electrical
P.3.5 R.3.5 Financial Recovery- In case payment has been			Resistance alone will be considered as failure of
made to the firm for material, the concerned paying authority as			the lot/set and the lot shall be rejected and
per contract should note the rejection advice details in the			financial recovery shall be made.
recovery register for effecting recovery of payments made, as			P.3.2R.3.2 Defects in two physical parameters, it
the case may be.			will be considered as failure of the lot/set and the
P.3.6 R.3.6 If the firm desires to have joint inspection, joint			lot shall be rejected and financial recovery shall
inspection of rejected material (only for parameters in which			be made.
defect was found) will be held with previous inspecting agency			P.3.3R.3.3 If there is defect in more than two
and the firm. In case of failure of either of the two parties to			physical parameters, the lots shall be rejected,
associate with joint inspection, the inspection should be done			financial recovery shall be done and further Penal
by the consignee (or the authority carrying out inspection in the			action shall also be taken against the firm by
first instance) with the party comes for joint inspection.			RDSO.
Irrespective of whether a party attends joint inspection or not,			P.3.4 R.3.4 In case of rejection of lot at
modality of joint inspection etc. will have to be completed within			consignee end/ field the material rejection
21days of communication of rejection advice to the supplier.			advice/rejection memo should be sent by the
P.3.7 R.3.7 After joint inspection, if the sample is passed in			consignee (or the authority carrying out
the parameters in which defect was found previously, then the			inspection) to all concerned i.e. firm/supplier,
lot shall be passed and no financial recovery or penal action			purchaser, pre-inspecting agency, paying
shall be taken.			authority as per contract etc. without fail.
P.3.8R.3.8 After joint inspection, if the sample still fails even in			P.3.5 R.3.5 Financial Recovery- In case
any one of the parameters in which defect was found			payment has been made to the firm for material,
previously, then the lot shall be shall continue to be treated as			the concerned paying authority as per contract
rejected and financial recovery and penal action shall be taken			should note the rejection advice details in the
as the case may be.			recovery register for effecting recovery of
P.3.9 R.3.9 Test results of joint inspection shall be			payments made, as the case may be.
communicated by the consignee (or the authority carrying out			P.3.6 R.3.6 If the firm desires to have joint
inspection) to all concerned i.e. paying authority as per			inspection, joint inspection of rejected material
contract, firm/supplier, purchaser, pre-inspecting agency with			(only for parameters in which defect was found)
necessary instructions regarding acceptance/rejection of lot,			will be held with previous inspecting agency and

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financial recovery and penal action. P.3.10 R.3.10 In case, if both the parties don't turn up for joint inspection then no joint inspection can be done and action for rejection of lot, financial recovery and penal action shall continue, as the case may be. P.3.11 R.3.11 The supplier/firm may be permitted to collect the rejected lot/goods only after the firm has made the payments already made by Railway (if any) to the firm or equivalent amount has been recovered for this purpose. P.3.12 Penal action, if any, shall be taken as per the extant provisions of ISO Apex documents. P.3.13R.3.13 In case of rejection of a lot is done, based on samples collected at vendor premises, no further joint inspection of rejected material will be done and action for rejection of lot, financial recovery or penal action shall be taken, as the case may be. *****			the firm. In case of failure of either of the two parties to associate with joint inspection, the inspection should be done by the consignee (or the authority carrying out inspection in the first instance) with the party comes for joint inspection. Irrespective of whether a party attends joint inspection or not, modality of joint inspection etc. will have to be completed within 21days of communication of rejection advice to the supplier. P.3.7 R.3.7 After joint inspection, if the sample is passed in the parameters in which defect was found previously, then the lot shall be passed and no financial recovery or penal action shall be taken. P.3.8R.3.8 After joint inspection, if the sample still fails even in any one of the parameters in which defect was found previously, then the lot shall be shall continue to be treated as rejected and financial recovery and penal action shall be taken as the case may be. P.3.9 R.3.9 Test results of joint inspection shall be communicated by the consignee (or the authority carrying out inspection) to all concerned i.e. paying authority as per contract, firm/supplier, purchaser, pre-inspecting agency with necessary instructions regarding acceptance/rejection of lot, financial recovery and penal action. P.3.10 R.3.10 In case, if both the parties don't turn up for joint inspection then no joint inspection can be done and action for rejection of lot, financial recovery and penal action. P.3.11 R.3.11 The supplier/firm may be permitted to collect the rejected lot/goods only after the firm has made the payments already made by Railway (if any) to the firm or equivalent amount has been recovered for this purpose. P.3.12 R.3.12 Penal action, if any, shall be taken as per the extant provisions of ISO Apex documents.

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			done, based on samples collected at vendor premises, no further joint inspection of rejected material will be done and action for rejection of lot, financial recovery or penal action shall be taken, as the case may be.

Further, Comments of following firms are as under:

- M/s Shri Radha Polymers: In continuation to the above, a meeting of all the concerned stake holders i e Vendors Representatives, Track Design and M&C Officials be called before finalizing the specifications and STR so that a proper discussion can be held taking into consideration all aspects and views from all the concerned people. We hope all the above comments will be considered positively, and a meeting as requested above be called for the same.
- M/s Royal Fasteners NE: We reiterate our commitment to quality and compliance and propose a joint meeting with RDSO, vendors, and the Railway Board to deliberate these technical aspects collaboratively before finalizing the draft. We hope our suggestions will be considered constructively.
- M/s Shiva Industries: In connection to the above, a meeting of all the concerned stake holders i.e Vendors Representatives, Track Design and M&C Officials be called before finalizing the specification and STR.So that a proper discussion can be held taking into consideration all aspects and views from all the concerned people. We hope all the above comments will be considered positively and a meeting as requested above the called for same.
- M/s V K Enterprises: We therefore request you the following: a) Kindly furnish us the test results of study conducted by RDSO for finalizing these test results. b) Kindly call a meeting all the stakeholders including officials from Track Design Directorate, M&C Directorate, QA-Civil department and all the vendors, so as to ensure smooth implementation of this specification after clearing their doubts.

M/s Shah Elastomer: We would also be glad to attend a meeting called by you with all stakeholders, ROSD, etc, for a joint discussion regarding this specification

M/s Royal Elastomers: The proposed vacuum sealed packing is excessive. Regular corrugated box packing with higher ply rating is sufficient. Tumout sets are variable size of pads, so it cannot be clubbed together.

M/s Royal Elastomers: The Breaking Lead Test under Clause 16 duplicates an earlier clause and may be removed.

M/s Royal Elastomers: Lastly, we request you to organize a joint meeting with RDSO, Vendors, and Railway Board, before finalizing the draft.