

## REASONED DOCUMENTS

### DETAIL OF COMMENTS RECEIVED ON DRAFT SPECIFICATION NO RDSO/2008/EL/SPEC/0067, REV-3 AND THEIR ACCEPTANCE /REJECTION WITH REASONS THEREOF

		Comments received from Firms			Reason for acceptance /non acceptance of comments
Clause no	Clause	M/s Kontakt Consortium India Pvt Ltd Chennai	M/s Roxtec	M/s Wallmax	
4.0(2)	<p><b>Standard No.</b> UL-1479 or EN 45545-3:2013 or I S:12458-1988 or with latest revision.</p> <p><b>Description:-</b> Fire Protection certificate from reputed International /NABL approved National laboratories as per standards to be followed.</p>	<p>Description:- Fire Protection certificate from International accredited Lab / NABL which are approved with test facility as per EN 45545 rolling stock standards The EPDM Modular sealing kits shall be confirm to fire safety requirements as per EN 45545 with HL3, R22 requirements.</p>	<p>Standard No. EN 45545-3:2013 with latest revision or UL-1479. Description: Fire Protection certificate from International accredited Lab / NABL which are approved with test facility as per EN 45545 rolling stock standards and UL 1479.</p> <p>The EPDM Modular sealing kits shall be confirm to fire safety requirements as per EN 45545 with HL3, R22 Requirements.</p> <p>As EN 45545 - 3 and UL 1479 covers majority of fire safety requirement hence IS:12458-1988 shall be deleted.</p>	<p>Request kindly include Fire Standard “IMO FTP Code Part III with Latest revision” This will provide level playing field to suppliers.</p> <p>ADD: In order to support Govt of India initiative of Make in India and Aatmnirbhar Bharat, Firms manufacturing the product in India will have preference in Technical clause as per the guidelines given by Ministry of Railways vide Letter no 2015/RS(G)/77 9/5 dtd 01/02/2018.</p> <p>All Firms need to provide the details of Country of Origin of</p>	<ul style="list-style-type: none"> <li>• All the existing standards including IMO FTP Code Part III has been retained to keep the specification generic in nature to encourage more vendors for registration.</li> <li>• “Make in India and Atm Nirbhar Bharat” is a commercial requirement &amp; as such may not be made part of product specification.</li> <li>• It is understood that cable sealing kit as mentioned by firm is the cable transit system with EPDM rubber module. The requirement fire protection of cable transit system is already stipulated in specification. As such, suggestion of firms have not been considered.</li> <li>• As per policy in vogue on IR, all the linkages to International Standards /Codes to be removed as far as possible &amp; references, if any, should ideally be made to the Indian standards/Codes. As such, no change in standards stipulated in the existing specification.</li> </ul>

				components used in Cable Transit System with percentage of local content used in Cable Transit System.	
4.3	Standard No. NF F 16-101/ NF F 16-102 Description: Low Smoke & Toxicity	Description: Low Smoke , Toxicity & Hazard Levels as per EN 45545 with HL3, R22 requirements. Smoke index shall not be > 15ppm and Toxic index shall not > 15 ppm.	EN 45545-3:2013 with latest revision. <b>Description:</b> Low Smoke, Toxicity & Hazard Levels as per EN 45545with HL3, R22 requirements.Smoke index shall be not be >15ppm and Toxic indexshall not > 15 ppm.		As per Standard No.NF F 16-101/ NF F 16-102 : The smoke & Toxicity level has been considered of class F1(<20ppm).The necessary changes in respective clause has been made accordingly.
5.1	Module shall be of adjustable/ multi diameter/ fixed type (in case of fixed type module, the module can adjust different type of cables according to their dia with the tolerance given in RDSO specification No. ELRS/Spec/ELC/0019 Rev'2' of Feb 2011 or latest, RDSO specification No. E-14/01 (part I & II & III) Rev. '2' of 1993 or latest and CLW specification No. CLW/ES/3/0458 and CLW/ES/3/0459 or latest) diameter along with central core /central plug so that it can be adjusted for Different cable diameters. Adjustable/multi diameter type module shall be of adding/peeling off technology so that the	EPDM Module shall be of Multi-diameter /peeling of technology type.	EPDM Module shall be of Multi-diameter / peeling of technology type (the module can adjust different type of cables according to their dia with the tolerance given in RDSO specification No. ELRS/Spec/ELC/0019 Rev'2' of Feb 2011 or latest, RDSO specification No. E-14/01 (part I & II & III) Rev. '2' of 1993 or latest and CLW specification No. CLW/ES/3/0458 and CLW/ES/3/0459 or latest) diameter along with central core /central plug so that it can be adjusted for different cable diameters. Multi-diameter / peeling of technology type module shall be of peeling off technology so that the same block can be used by peeling off the excess layers suitable to the cable outer diameter without any requirement of replacing the blocks. The modules consist of two halves for Each cable and each module is 30 mm & 60 mm long. One single module can seal a cable of several different diameters simply by peeling away layers. The range of modules shall be able to accommodate cables of all sizes greater than 2.5mm in diameter. The spare Multi-diameter / peeling of		1. Fixed type technology has been retained to encourage fresh vendors.

	<p>same block can be used by peeling off the excess layers / adding on layers suitable to the cable outer diameter without any requirement of replacing the blocks. The modules consist of two halves for each cable, and each module is 30 mm &amp; 60 mm long. One single module can seal a cable of several different diameter simply by peeling away layers. The range of modules shall be able to accommodate cables of all sizes greater than 2.5mm in diameter. The spare adjustable/multi diameter/peeling off technology type modules may be supplied with read just table and reusable plug/wrap/ Core for sealing the cables for spares cables. The range of modules shall accommodate cables of all sizes greater than 2.5 mm diameter. Their sizes could be different but the length is always 30/60 mm.</p>		<p>technology type modules may be supplied with reusable plug/wrap/ Core for sealing the cables for spares cables. The range of modules shall accommodate cables of all sizes greater than 2.5 mm diameter. Their sizes could be different but the length is always 30/60 mm.</p> <p>2, EPDM Module with intumescent material which expands in case of fire shall be used for Sealing of PMA Conduit / plastic pipes. EPDM Module with intumescent material shall confirming to IP 66 acc. to IEC 60529, HL3 for R22/R23 acc. to EN 45545-2 and minimum E30 acc. to EN 45545-3. so All the Plastic Pipe/ PMA type conduit transit entry shall be sealed with Plastic Pipe Sealing Modules (PPS Modules)/ fire barriers EPDM Module with intumescent material to prevent fire propagation through cable insulation/ Plastic Conduit.</p> <p>3. EMC Module:- Along with Standard Multi-diameter / peelable Module, EMC Module shall be used to get the Protection from EMC/EMI disturbances. The EMC Module having 360 degree continuous circumferential contact to cable shield thus providing protection against the EMI / EMC. The EMC Module kits shall withstand the Attenuation level minimum 40 dB. EMC tested as per std.VG 95373</p>		<p>2.May be accepted. However, the fire level protection class shall be same as under Clause 12(iv).</p> <p>3. The EMI/EMC module is meant for armoured cables.As such, not considered for inclusion.</p>
5.1.1	<p>The adjustable /Multidiameter/ fixed type modules will be of Low Smoke Index, Halogen free cross-linkable rubber compound based on Ethylene Propylene</p>	<p>The module will be of Low Smoke index Halogen free cross-linkable rubber compound based on Ethylene Propylene Diene Monomer</p>	<p>The Multi-diameter / peeling of technology type module will be of Low Smoke index Halogen free cross linkable rubber compound based on Ethylene Propylene Diene Monomer (EPDM). Total Halogen Content of EPDM Module shall not &gt; 1500 ppm as</p>		<p>As per Standard No.NF F 16-101/ NF F 16-102 : The smoke &amp; Toxicity level has been considered of class F1(&lt;20ppm).The necessary changes in respective clause has been made</p>

	Diene Monomer (EPDM).	(EPDM). Total Halogen Content of EPDM Module shall not > 1500 ppm as per EN/IEC 61249-2-21 / SS-EN ISO 16994. Smoke index shall not be > 15ppm and Toxic index shall not > 15 ppm.	per EN/IEC 61249-2-21 / SS-EN ISO 16994. Smoke index shall not be > 15ppm and Toxic index shall not > 15 ppm.		accordingly.
5.1.2	The arrangement should be such that it ensures perfect sealing, regardless of the outside diameter of the cable without causing undue stress to the cables. Modules shall be adjustable/Multidiameter/peeling of technology type module that can be adjusted for different cable diameters. The range of diameters of each adjustable /Multidiameter/peeling of technology type module shall be wide enough to accommodate cables of different sizes.		The arrangement should be such that it ensures perfect sealing, regardless of the outside diameter of the cable without causing undue stress to the cables. Modules shall be adjustable/Multidiameter/peeling of technology type module that can be adjusted for different cable diameters. The range of diameters of each adjustable /Multidiameter/peeling of technology type module shall be wide enough to accommodate cables of different sizes.		Fixed type technology has been retained to encourage fresh vendors.
5.1.3.2	Di-Electric Strength: $\geq 20 \text{ kV/mm}$	Di-Electric Strength: $\geq 14 \text{ kV/mm}$ Minimum as per IEC 60243-1/ ASTM D 149	Di electric Strength $\geq 14 \text{ kV/mm}$ Minimum as per IEC 60243-1/ ASTM D 149		Di electric Strength $\geq 20 \text{ kV/mm}$ has been stipulated in line with 3-phase loco Cable specification ( $\geq 22 \text{ kV/mm}$ ). As such, suggestion is not accepted.
5.1.3.5	Normal operating Temperature range: $-40^{\circ}\text{C}$ to $+90^{\circ}\text{C}$	$-40^{\circ}\text{C}$ to $+80^{\circ}\text{C}$	Normal Operating Temperature Range $-40^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ .		Reason for proposed change has not been mentioned. As such, not accepted.
5.1.4	The material (EPDM rubber) of the adjustable /Multidiameter/peeling of technology type module with central plug/wrap/core shall ensure Protection against Dust, Water, humidity & penetrating solid objects as per IP 55/67 (IEC 60529). It should be able		The material (EPDM rubber) of the Multi diameter/peeling of technology type module with central plug/wrap/core shall ensure Protection against Dust, Water, humidity & penetrating solid objects as per IP 55/67 (IEC 60529). It should be able to withstand Vibration & Shock (as per IEC 61373) and temperature variations in the cable. The material of the multi diameter/ peeling of		Fixed type technology has been retained to encourage fresh vendors.

	to withstand Vibration & Shock (as per IEC 61373) and temperature variations in the cable. The material of the adjustable /Multidiameter/ fixed type/peeling of technology type module shall also not be destroyed/affected by noise, rodents and flammable oils. The modules should be protected against Rodent. A certificate by any NABL approved / International laboratory to be submitted by manufacturers in this aspect.		technology type module shall also not be destroyed/ affected by noise, rodents and flammable oils. The modules should be protected against Rodent. A certificate by any NABL approved / International laboratory to be submitted by manufacturers in this aspect.		
6	Frame (Metallic / Non metallic)	Component's manufacturers shall be confirming to Welding Standard - EN 15085 Class 2 for Rolling Stock On Board.	All kits / Frames / Sleeves & other component's manufacturers shall be confirming to welding Standard - EN15085 for Railway Vehicle / Rolling Stock.		Welding requirement is left to manufacturers & be decided as per frame material. No change in existing clause.
6.0(i)	SRBGF with min UP-1 Grade as per standard IS : 10192- 1982	nil		Add: SMC1 & SMC2 Grade with relevant standard.	The stipulated requirement is minimum requirement. OEMs are free to offer superior grade material. No change in existing clause.
6.0(iv)	Aluminium Grade HA96063 as per EN 1676 & 1706 & EN-10025-2 or equivalent material as per Indian Standard			Add: Aluminium Grade EN AW-6082 with relevant standard.	As per existing stipulations of specification, OEMs are free to offer equivalent grade material. No change in existing clause.
6.0(ii)	Frame Material: Mild Steel, Grade Fe 410 as per Standard EN 10204:2004 or equivalent material as per Indian standard.	nil	1. Frame / Sleeve: -Mild Steel, Grade ST 52/ S355J2 as per Standard EN 10149-2:2013 / EN 10025-2. 2. Clamp and asseccories:-Mild Steel , Grade Fe 410 as per Standard IS 2062:2011. Material to be added for improvement and increasing the life of assets.		As per existing stipulations of specification, OEMs are free to offer equivalent grade material. No change in existing clause.
6.0(v)	Stainless Steel as per AISI	Stainless Steel As per	Stanless Sleel As per AISI 316 / AISI		The stipulated requirement is

	316 or above.	AISI 316 / AISI 304 L	304 L or above. AISI 304 L shall be added as it is also more suitable for welding & corrosion free.		minimum requirement. OEMs are free to offer superior grade material. No change in existing clause.																
8.0	Lubricants/Gel are to be used in all installations to assure the proper sealing performance of the rubber modules and facilitate maintenance	nil	Lubricant /Gel are to be used in all installation to assure the proper sealing performance of the rubber modules & facilitate maintenance. <b>It should not have the property of adhesiveness.</b>		The requirement of adhesiveness as proposed by firm has been considered & clause has been modified accordingly.																
11.1.1, 11.1.2 & 11.2.2	adjustable /Multi diameter/fixed type peeling of technology type modules.		Multi diameter/peeling of technology type modules. Adjustable/ Fixed Type module shall be Deleted as the Multi-diameter / peelable module having more advantages as mentioned above.		Fixed type technology has been retained to encourage fresh vendors.																
12(iv)	<p>Fire protection test on cable transit system shall confirm to any one of the minimum requirement specified below.</p> <table border="1"> <thead> <tr> <th>SN</th> <th>Standards</th> <th>Minimum requirement</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>EN45545-3:2013 or (latest)</td> <td>E-30,I-15</td> </tr> <tr> <td>2</td> <td>IS:12458:1988 or (latest)</td> <td>30 minutes</td> </tr> <tr> <td>3</td> <td>UL 1479</td> <td>F-30,T-15</td> </tr> </tbody> </table>	SN	Standards	Minimum requirement	1	EN45545-3:2013 or (latest)	E-30,I-15	2	IS:12458:1988 or (latest)	30 minutes	3	UL 1479	F-30,T-15	<p>Fire Protection test on Cable Transit System shall confirm to EN 45545-3 requirement Certified with single side installation. No back to back installation for HL3 Certified along with E-30 &amp; I-15</p>	<p>Fire Protection test on Cable Transit System shall confirm to any one of the minimum requirement specified below. Cable Transit System shall be tested / certified with single side installation. No back to back installation will be accepted.</p> <table border="1"> <tbody> <tr> <td>EN45545-3-2013 or latest</td> <td>E-30,I-15</td> </tr> <tr> <td>UL 1479</td> <td>F-30,T-15</td> </tr> </tbody> </table>	EN45545-3-2013 or latest	E-30,I-15	UL 1479	F-30,T-15		The IMO standard has been retained. As such, no change in existing stipulations of specification.
SN	Standards	Minimum requirement																			
1	EN45545-3:2013 or (latest)	E-30,I-15																			
2	IS:12458:1988 or (latest)	30 minutes																			
3	UL 1479	F-30,T-15																			
EN45545-3-2013 or latest	E-30,I-15																				
UL 1479	F-30,T-15																				
12(v)	Low Smoke & Toxicity index test as per NF F 16-101 / NF F 16-102 complying with F3 Class.	Low Smoke & Toxicity Index & Hazard Level test HL3 as per EN45545. Test Certificates from International accredited Lab /NABL, which are approved with test facility/Scope of Work, shall be accepted.	Low Smoke & Toxicity index & Hazard Levels test HL3 as per EN 45545. Test Certificates from International accredited Lab/ NABL which are approved with test facility shall be accepted.		As per Standard No. NF F 16-101/ NF F 16-102 : The smoke & Toxicity level has been considered of class F1(<20ppm) instead of F3 class as mentioned in existing specification.																

13.0	Provision in the Electric Locomotives				Following text has been added: All other latest drawings issued by PUs/Railways from time to time can also be used.
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