

Document No.: MC/STR/W/03	Rev.-2	Date effective	Page 1 of 19
Document Title: Schedule of technical requirements for infrastructural, manufacturing & testing facilities and quality control for Wire and Flux for Submerged Arc welding as per IRS:M-39			

Reasoned document on Final Draft "Schedule of Technical Requirements for Infrastructural, Manufacturing & Testing Facilities and Quality Control for Wire and Flux for Submerged Arc Welding as per IRS: M-39/2020"

STR No. MC/STR/W/03 –~~Rev-1~~ Rev-2

भारत सरकार
Government of India
रेल मंत्रालय
Ministry of Railways



Schedule of Technical Requirements for Infrastructural, Manufacturing & Testing Facilities and Quality Control for Wire and Flux for Submerged Arc Welding as per IRS: M-39/2020

Issued by

धातु व रसायन निदेशालय

Metallurgical & Chemical Directorate

अनुसंधान अभिकल्प एवं मानक संगठन, मानक नगर, लखनऊ - 226 011

Research Designs & Standards Organisation

Manak Nagar, Lucknow – 226011

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Title has been made bilingual. Year of revision incorporated.

Schedule of Technical Requirements for Infrastructural, Manufacturing & Testing Facilities and Quality Control for Wire and Flux for Submerged Arc Welding as per IRS: M-39/2020

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Title has been added at the beginning before commencement of document details.

1.0 SCOPE

This schedule covers the technical requirements for manufacture of Wire and Flux for Submerged Arc Welding (SAW) as per IRS-M-39-0420.

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Year of revision incorporated.

1.1 The welding consumables for submerged arc welding have been grouped as below on the basis of infrastructure facilities, manufacturing process, quality control and application at users end.

Group VIII A	SAW Wire, Class W-1, W-2, W-3, W-4, W-5
Group VIII B	SAW Flux, Class F-1, F-2, F-3, F-4, F-5

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Retained as it is.

1.2 FRESH APPROVAL:

The firms seeking for approval at RDSO shall apply a minimum of following classes in each groups and will have to qualify all the items of applied group:

Group No.	Minimum Class applied
Group VIII A	(W-1)+(W-2.or W-3.or W-4.or W-5)
Group VII B	(F-1)+(F-2.or F-3.or F-4.or F-5)

1.2 Fresh Approval: The firms can apply any nos. of class in a group mentioned in STR in single application. Firm has to apply separately for each group. Testing charges shall be levied separately according to number of classes applied in each group

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Group criteria for Group VIII A and Group VIII B has been removed being business restrictive clauses to improve vendor base. Since, details of classes of Group VIII A and Group VIII B after removing group criteria has been already covered under clause 1.1. Therefore, the table under clause 1.2 above is deleted, and clause 1.2 is redefined.

- 1.3 The firm should have the experience of at least ~~three (3)~~ Two (2) years of manufacturing and supplying/ exporting the applied welding consumables to the industries manufacturing earth moving equipments, marine industries and thermal power plants (Enclose documentary evidences).

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Based on suggestions from Vigilance's cell Note CVO/RDSO/Confid/2020 dt. 20.03.2020 & 23.06.2020, experience criteria have been reduced from existing three years to two years for widening the vendor base. Accordingly, para has been reworded.

- 1.4 The firm should have annual turnover of minimum one (1) crore
- 1.5 The details of Manufacturing & testing facilities shall be submitted in format of Annexure to STR as per Annex-I.
- 1.6 The details about applied items and its test results as per Annex-III, IV & V.

For clauses 1.4, 1.5 & 1.6	
Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Retained as it is.

2.0 REQUIREMENTS FOR SAW WIRE (For Group VIIIA, Class W-1, W-2, W-3, W-4, W-5)

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	For better clarity, Group name is also added.

2.1 GENERAL

- 2.1.1 The firm should have well illuminated and ventilated covered shed with sufficient height and space for performing various manufacturing activities like Decoiling, Wire drawing, wet wire drawing, Pickling, Washing, Copper Coating, Finished drawing, Spooling, Packing etc.
- 2.1.2 Separate identified area for storage of raw materials and finished product and scraps.
- 2.1.3 Separate quality control laboratory for physical and chemical testing.
- 2.1.4 Humidity chamber for storage stability & corrosion test.

For clauses 2.1, 2.1.1, 2.1.2, 2.1.3 & 2.1.4	
Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Retained as it is.

2.2 MINIMUM PRODUCTION FACILITIES

The firm should have the following facilities:

- 2.2.1 Wire drawing and Copper coating facilities consisting of Decoiler, Wire drawing set, Pickling bath, Washing bath, Coppering bath, Rinsing bath, Finish drawing and Coiling arrangement
- 2.2.2 Butt welding machine of suitable capacity for joining wires.
- 2.2.3 Automatic Spooling machine for winding of wire.
- 2.2.4 Weighing facilities.
- 2.2.5 Packing facilities as per clause 4.4 of IRS-M-39-01 20.

For clauses 2.2, 2.2.1, 2.2.2, 2.2.3, 2.2.4 & 2.2.5	
Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Retained as it is.

2.3 TESTING FACILITIES

2.3.1 GENERAL

- 2.3.1.1 The firm should have duly calibrated micrometer with least count 0.01mm for measurement of diameter of wire.
- 2.3.1.2 The firm should have arrangement for measurement of copper coating thickness of wire by colorimeter/wet analysis method.
- 2.3.1.3 The firm should have SAW (Submerged Arc Welding) machine of capacity minimum 500 Ampere and nozzle of various sizes for carrying out performance test of wire.

For clauses 2.3, 2.3.1, 2.3.1.1, 2.3.1.2 & 2.3.1.3	
Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Retained as it is.

~~2.3.2 MECHANICAL TESTING OF WIRE~~

- ~~2.3.2.1 The firm should have one duly calibrated universal testing machine of capacity 5 MT min. for carrying out UTS of finished wire.~~

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	This requirement has been deleted. Tensile strength of finished wire has not been specified in IRS:M-39/2020.

2.3.3 **2.3.2 CHEMICAL TESTING**

2.3.3.1 **2.3.2.1** The firm should have chemical testing laboratory consisting of Carbon-Sulphur determination apparatus, Chemical balance, Hot plate, Muffle furnace (800°C), Electric oven, Barometer, Hygrometer, Platinum crucible, Glass-wares and Chemicals.

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is. Clause has been renumbered due to deletion of clause 2.3.2.

3.0 **REQUIREMENTS FOR SUBMERGED ARC WELDING FLUX (For Group VIII B, Class F-1, F-2, F-3, F-4 & F-5)**

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	For better clarity, Group name is also added.

3.1 **GENERAL**

3.1.1 The firm manufacturing agglomerated flux should have well illuminated and ventilated covered shed with sufficient height and space for various manufacturing activities consisting of weighing of flux ingredients, Dry mixing, Wet mixing, Agglomerating, Sieving of final product, Weighing of final flux product and Packing.

~~The firm manufacturing fused flux should have well illuminated and ventilated covered shed with sufficient height and space for various manufacturing activities consisting of melting in a furnace, quenching, drying, crushing of lump flux, sieving of final product, weighing and packing.~~

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Vendor approval of fused flux is not done. Requirement of fused flux is not applicable. Accordingly, para related to fused flux is not relevant. Hence, irrelevant portion deleted.

3.1.2 The firm should have separate identified area for storage of raw material, finished product and scrap.

3.1.3 The firm should have separate welding room for performance test and test weld preparations.

3.1.4 The firm should have separate laboratory for physical and chemical testing of raw material and weld metal.

3.1.5 The firm should have mechanical testing laboratory for carrying out mechanical test of weld metal.

For clauses 3.1.2, 3.1.3, 3.1.4 & 3.1.5	
Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Retained as it is.

3.1.6 Machining facilities preferably at same location for preparation of test pieces from weld assembly.

- i) Lathe Machine for preparation of All Weld tensile test pieces.
- ii) Shaping Machine – for shaping of test pieces, edge preparations on plates & back gouging of welds.
- iii) V-notch cutter with gauge for cutting of V notch on impact test pieces.
- iv) Power Hacksaw

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	<p>As per RDSO Vendor Registration Guidelines No. QO-D-8.1-6 Ver 3.2 (latest version applicable) Clause 4.3.3.2 & 4.3.3.3, outsourcing of activities to any sister concern shall be permitted, subject to compliance of requirements of specification/STR/M&P/ ISO etc. by the sister concern.</p> <p>Firm can be permitted to have facilities spread in more than one place provided they are under the same ownership with same name.</p> <p>In view of above provisions of apex documents, conditions for requirement of machining facilities at same location have been redefined and clause 3.1.6 has been reworded as above.</p>

3.2 MINIMUM MANUFACTURING FACILITIES

3.2.1 Requirement for Agglomerated Flux

The firm should have following machines/equipment:

3.2.1.1 Sieve (B.S. Mesh size 10 or equivalent) for coarse screening of raw material.

3.2.1.2 Dry mixer, capacity 100 Kg. minimum, (generally electrically operated).

3.2.1.3 Wet mixer, capacity 100 Kg. minimum, (generally electrically operated).

3.2.1.4 Drying Oven, 200°C, electrically operated of suitable capacity.

3.2.1.5 Agglomerating Furnace, 600°C of suitable capacity with automatic temperature control.

3.2.1.6 Sieving set of B.S. mesh size 10, 40, 100 mesh or equivalent for sieving of finished product.

For clauses 3.2.1, 3.2.1.1, 3.2.1.2, 3.2.1.3, 3.2.1.4, 3.2.1.5 & 3.2.1.6	
Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Retained as it is.

3.2.1.7 Packing arrangement as per clause 5.6.2 or alternatively as per Clause 5.6.3 of Amendment 2 of 2005 to IRS- M- 39 –01 20.

Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Para has been reworded due to revision of IRS M-39/2020,

3.2.2 Requirement for fused Flux

The firm should have following machines/equipment

3.2.2.1 Sieve (B.S. Mesh size 10) for coarse screening of raw material.

3.2.2.2 Dry mixer, capacity 100 Kg. minimum, (generally electrically operated).

3.2.2.3 Oil fired/Gas fired/Electric melting furnace, 1500°C min. of adequate capacity, for melting of charged dry mix.

3.2.2.4 Quenching System consisting of Quenching Tanks with arrangement of continuous flow of water for effective quenching of melted flux.

3.2.2.5 Crushing Arrangement, Gyratory/Jaw crusher to crush the lumps to the required grain size.

3.2.2.6 Drying oven, 200°C, of suitable capacity for drying of crushed flux.

3.2.2.7 Sieving set of B.S. mesh size 10, 40, 100 mesh or equivalent for sieving of finished product.

3.2.2.8 Packing arrangement as per clause 5.6.2 or alternatively as per Clause 5.6.3 to IRS – M- 39 – 20.

For Clauses 3.2.2, 3.2.2.1, 3.2.2.2, 3.2.2.3, 3.2.2.4, 3.2.2.5, 3.2.2.6, 3.2.2.7 & 3.2.2.8	
Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Vendor approval of fused flux is not done. Requirement of fused flux is not applicable. Above clause 3.2.2 along with its sub clauses deleted.

3.3 TESTING FACILITIES

3.3.1 GENERAL

3.3.1.1 The firm should have facilities for determination of grain size distribution of flux, measurement of tap density and moisture content of flux.

3.3.1.2 The firm should have facilities for determination of Basicity Index of flux by XRF method or by Chemical Analysis method.

3.3.1.3 The firm should have SAW machine of capacity 1000 Amp. for performance test and welding of test weld samples.

For clauses 3.3.1.1, 3.3.1.2 & 3.3.1.3	
Stake holders comments, if any	No comments from stake holder is received
RDSO's views	Retained as it is.

3.3.1.4 Radiographic (X-Rays or Gama Rays) test facility from in-house/outsourced agency (Applicable for firms applying for radiographic Quality welding consumables)

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Outsourcing of radiographic test facility has been permitted by this office.

~~3.3.1.5 Metallurgical Microscope~~

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Deleted. Metallurgical Microscope is normally used for analysis of Microstructure. Micro structure requirement for any class are not specified in IRS:M-39/2020. Hence, this requirement has been deleted.

3.3.2 MECHANICAL TESTING

3.3.2.1 The firm should have Universal Testing Machine of capacity 20MT min. with necessary attachment for measuring Yield Load and Breaking Load and carrying out Bend Test. The machine should be calibrated by a recognized agency and the firm should have valid calibration certificate.

3.3.2.2 The firm should have duly calibrated Impact Testing Machine capacity 30 kgfm (Charpy 'V' notch type test piece) with testing facilities at room temperature, 0°C, -20°C and -46°C depending upon the requirement of the product offered.

For clauses 3.3.2.1 & 3.3.2.2	
Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is.

3.3.3 CHEMICAL TESTING

3.3.3.1 The firm should have chemical testing laboratory for chemical analysis of raw materials and weld metal.

3.3.3.2 The chemical laboratory should consist of Carbon-Sulphur determination apparatus, chemical balance, hot plate, muffle furnace (800°C), electric oven, barometer, hygrometer, platinum crucible, glass wares and chemicals.

Note: Use of Spectrometer or any other modern facilities for determination of element present is permissible.

For clauses 3.3.3.1, 3.3.3.2 & Note	
Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is.

4.0 QUALITY CONTROL REQUIREMENTS

4.1 There should exist a system to ensure traceability of the product from raw material stage to finished product stage.

~~**4.2** Quality Assurance Plan (QAP) of the product to be submitted as per Guidelines by vendor in duplicate shall cover the following details-~~

GUIDE LINES FOR QUALITY ASSURANCE PLAN (QAP)

1.	Firm's Name
2.	Firm's address (i) — Head office (ii) — Works/Factory (iii) — Phone/Fax
3.	Applied FOR TYPE OF CONSUMABLES :
4	Quality Policy
5.	Valid ISO 9001 2000 Certificate for applied item

6.	Organisation Chart showing Key personnel (Name, Designation, Qualification, Experience, responsibilities)
7.	Q.A. Organisation Chart (Name, Designation, Qualification, Experience, responsibilities)
8.	Process Flow Chart /Description of Manufacturing Process It shall have various stages of manufacturing of Finished Product. Brief Description of manufacturing of applied items.
9.	Format of Inspection Plan of Raw Material, In process, Finished product, packing material

Format of Sr.9

S. No.	Item	Sample Size	Frequency	Parameters for Inspection	Specification	Acceptance Test Criteria/Value	Traceability
10.	Laid Down Procedure regarding identification of accepted/rejected material						
11.	Laid down procedure regarding disposal of rejected Material at every stages from raw materials to Finished Product.						
12.	Corrective & Preventive Action after rejection of material.						
13.	Storage Plan for raw material & Finished Product						
14.	List of Sub vendor & items supplied by them						
15.	Criteria for selection of vendor						
16.	List of relevant IRS/IS/AWS/RDSO etc. available						
17.	Laid Down Procedure for Handling customer complaint						
18.	Detailed Policy of calibration of equipment/gauges & records.						
19.	In House Testing facilities available for calibration with the firm						
S. No.	Name of Master	Make	Range	Frequency of calibration	Traceability to National Standard		
20.	Personnel Trained for In House Calibration						
S. No.	Name	Qualification			Experience		
21.	Calibration Plan of the items identified for specified calibration in STR/Specification.						
S. No.	Measuring Equipments	Ref. Para of STR/Specn.	Range/Accuracy	Frequency	In-House/ Out Source	Name of Agency	
22.	Calibration Plan for other measuring equipment						
S. No.	Measuring Equipments		Range/Accuracy	Frequency	In-House/ Out Source	Name of Agency	
23.	Process Capability Calculation						
24.	Signature of quality Control Incharge on each Page No. of QAP (X of Y)						

4.2 QUALITY ASSURANCE PLAN (QAP):

The Firm shall have an “internal quality assurance system” with proper documentation to sustain quality of products being manufactured. Firm will also prepare quality assurance plan as per RDSO ISO document no-QM-RF-8.1-3 (latest version) - Guidelines for preparing QAP during registration. This document is available on RDSO website under vendor interface.

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Guide lines for preparation of QUALITY ASSURANCE PLAN (QAP) is now kept inline as per QM-RF-8.1-3 as recommended in RDSO's Vendor Registration Guideline. Hence, the existing format for QAP in above tabular format in existing para-4.2 has been deleted. Accordingly, existing para 4.2 has been redefined as above.

4.3 i) All the technical personnel responsible for supervision and handling of products and quality control activities should have Degree in Mechanical Engineering/ Metallurgical Engineering with a minimum of three (3) years experience and should be working in the firm as regular employees.

ii) Artisan staff like machinist, welder and fitter should have ITI qualification in respective trade and time to time they should have been imparted training from recognized institution in the respective trades (Enclose training documents)

iii) All employees should be on regular role.

For existing Clauses 4.3 (i), (ii) & (iii)	
Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is.

4.4 The vendor shall have acquired ISO Certification ISO : 9001 : ~~2000~~ 2015 ~~version~~ in respect of all the products applied for and the same shall be covered in the certification.

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is. Year is revised to 2015 due to revision in ISO certification.

4.5 ~~There should exist a quality manual of the firm indicating the extent of control over production and testing.~~

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Deleted. This has been covered in standard format of QAP No. QM-RF-8.1-3. Manufacturer complying the quality management system as per ISO 9001 are only allowed to register for approval. Existing para 4.5 of STR is automatically covered in ISO 9001 certification as well as in standard QAP format. Hence, existing clause 4.5 has been deleted.

4.6 **4.5** The firm should ensure that proper analysis is being done on monthly basis to study the rejection at various internal stages and it is documented.

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is. Existing clause has been renumbered due to deletion of clauses 4.5.

4.7 **4.6** The firm should ensure that all the relevant specifications, IS standards are available with the firm.

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is. Existing clause has been renumbered due to deletion of clause 4.5.

4.8 **4.7** The firm should ensure that proper record of complaints received from users (Railways) is being maintained and corrective action is taken in the format mentioned in RDSO ISO document No. QM-RF-8.1.3 (latest version).

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is. Format as prescribed in RDSO ISO document No. QM-RF-8.1-3 has been mentioned. Accordingly, Para has been reworded. Existing clause has been renumbered due to deletion of clause 4.5.

4.9 **4.8** Quality control measuring equipment/instrument like UTM, Impact testing machine, Vernier calipers /Screw gauge, Tong tester, Weight boxes etc. shall be periodically calibrated.

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Retained as it is. Existing clause has been renumbered due to deletion of clauses 4.5.

4.10 **4.9** Minimum Qty. specified for up-gradation from ~~Pt-II to Pt-I~~ RDSO vendors for developmental order to approved vendors status as per Annex –II.

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	As per RDSO's vendor registration guidelines, vendors are initially approved in developmental category. On fulfillment of laid down criteria's, Vendors are upgraded in approved category. Hence, the existing terminology of this para i.e. Part-II & Part-I has been removed. Clause has been renumbered due to deletion of clause 4.5.

ANNEXURE TO STR

S. No.	STR para no.	Requirement of M&P/T&P as per STR		Details of the M&P/T&P available with the firm						
		Name of M&P/T&P	Range / Capacity of M&P/T&P	Name of M&P/T&P	Model	Make	Machine no.	Year of Built	Range/ Capacity	Proof of ownership

UNDERTAKING OF THE FIRM

"I hereby give an undertaking that if at any time after approval is accorded, some machinery is found deficient without intimation to RDSO, and then it will be presumed that machinery was not there since beginning and firm's approval will be withdrawn immediately."

Date:

Place:

Signature

Name in capitals & Designation

Stamp of the firm

Note :

1. Details of M & P should be furnished by vendor in complete as per format given above and also furnish the details of the ownership.
2. It should be mandatory to inform the RDSO through FAX/E-mail (followed by confirmation copy through courier/speed post) as soon as any machinery is removed from the firm's premises (even for repair etc.). RDSO should be informed again, when is brought back and made operational.

Date:

Place:

Signature

Name in capitals & Designation

Stamp of the firm

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Word E-mail has been added as another mode of communication.

Annex- II

Minimum essential quantity of SAW Wire & Flux to be supplied to be on ~~part-II~~ RDSO Vendor for developmental order list for consideration for up gradation in ~~part-I~~ Approved Vendor*

Sr. No.	Group of SAW Wire & Flux	Minimum Quantity to be supplied of each class to Zonal Railways, Production units & wagon Builders only
1	Group-VIIIA	3,000Kg
2	Group-VIIIB	5,000Kg

NOTE: A Vendor shall be considered eligible for upgradation to “Approved Vendors” status on completing successful supply of a minimum quantity as mentioned above as a ‘list of RDSO vendors for developmental order’ along with the fulfillment of all other conditions as laid down in RDSO Vendor Registration Guidelines (Apex document) with latest amendment (Document No. QO-D-8.1-11). Vendor registration guidelines are on RDSO website www.rdsso.indianrailways.gov.in.

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	As per RDSO's vendor registration guidelines, vendors are initially approved in developmental category. On fulfillment of laid down criteria's, Vendors are upgraded in approved category. Hence, words Part-II & Part-I has been removed due to above change RDSO's vendor registration guidelines. Hence, Title of Annex-II has been reworded as above. A brief note, has been also added for other requirements for upgradation in addition to supply of minimum essential quantity.

Annex-III

**GOVERNMENT OF INDIA – MINISTRY OF RAILWAYS
RESEARCH DESIGNS & STANDARDS ORGANISATION
MANAK NAGAR, Lucknow -226 011**

Questionnaire Form in connection with assessment of indigenous SAW Wire & Fluxes for Submerged Arc Welding for use on Indian Railways
(Please fill up one form for each brand)

1.	Name and address of the manufacturer			
	Head Office			
	Works/Factory			
	PHONE/FAX/ <u>E-mail</u>			
2.	Particulars of the brand offered for Assessment (Please enclose technical leaflet):			
2.1	Name of brand			
2.2	Classes/Grades as per IRS M-39/01- <u>20</u> for which required to be assessed			
2.3	Code No. as per BIS Specn. No. & Year			
2.4	AWS Specification & Code			
2.5	Current conditions			
	(i) Sizes manufactured, current conditions with corresponding grade of flux			
	(ii) current conditions with corresponding grade of wire			
	Diameter of wire (mm)	Voltage (<u>Volts</u>)	Current range (Amp)	Travel speed
2.6	Type of wire/Flux			
3.	Whether offered for initial assessment or periodic check			
4.	Whether the offered brand is being checked at periodic intervals for production control. If yes, please indicate test results for minimum two sizes of wire/ properties of flux & weld metal test results made with to sizes of corresponding grade of wire.			

5.	Whether the brand has been approved by NTH/BIS/ LLOYDS Shipping or other approving Agency, If yes, submit a copy of approval Certificate :	
6.	Whether the brand offered is in regular production? If yes, please indicate average annual production :	
7.	Price per Kg (for information only)	Size Rs.....
8.	Special characteristics/ recommendation for the brand, if any :	

Note :

- ~~1. All the items are to be filled properly. Please write N.A. if not applicable. Form will be rejected without any further reference.~~
 - ~~2. In case of customer complaint or failure to adhere to delivery schedule causing inconvenience to consignee, appropriate action will be taken against the firm as per extant DOP, RDSO's decision in this regard shall be final.~~
 - ~~3. All dispute subject to Lucknow jurisdiction.~~
- It is certified that QAP approved by RDSO is being followed and recipe and process have not been changed.

Encl :

- Tech. Leaflet
 - BTC in standard format for wire/flux (properties of flux & weld deposit in combination with respective grade of wire)
- Signature of competent authority with designation and seal

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	As per RDSO vendor registration guidelines, vendors need to give undertaking, duly notarized, in prescribed format in QO-F-8.1-7 (latest version). Declarations as indicated in Note of Annexure-III are now covered in RDSO's vendor registration guidelines'. Acceptance/rejection of application and any penal action are dealt as per RDSO's vendor registration guidelines'. Hence, declarations as mentioned in note of annexure-III are now deleted.
	Existing item sl no. 2.1 to 2.4, 3.5 has been renumbered as 2.2 to 2.6 due to allotment of number to Name of Brand.
	Due to revision of specification no. IRS:M-39/2020, the year of revision has been modified at item no. 2.2. (existing item no. is 2.1)
	Unit of voltage i.e Volts now mentioned in item no. 2.5.

Annex-IV

BTC STANDARD FORMAT FOR Test Results For SAW Wire

Test No.....

Dt :

1. Sample Details:

Sample Code No./ Brand	IRS Grade of Wire	Batch No.	Date of manufacture	Size (mm)	Packaging as per IRS : M-39-01 <u>20</u>	Quality of wire & Wire spool (as per IRS M 39-01 <u>20</u>)	
						Wire	Wire spool

2. Chemical Composition of wire:

Elements%	C	Mn	Si	S	P	Ni	Cr	Mo	Cu	Any other element
Bare Wire										
Specified value as per IRSM - 39/01 <u>20</u>										

3. Cast & Helix:

4. %Copper in coating (by weight):

5. Storage stability test:

6. Any other test (Pl. specify)

Note: Please fill up all the boxes. Write N.A. if not applicable

Signature of QC Incharge/Chemist

Stake holders comments if any	No comment from stake holder is received.
RDSO's views	Year of revision incorporated.

Annex-V

BTC STANDARD FORMAT FOR Test Results For SAW Flux

Test No.....

Dt :

1. Sample Details:

Sample Code No./ Brand	IRS Grade of Flux	Batch No.	Date of manufacture	Type of Flux	Packaging (as per IRS:M-39-04 20)	Grade, Brand & Size of Wire Used in combination	Weld Parameters*		
							Voltage	Current	Travel speed

2. Chemical Composition of weld metal:

Elements%	C	Mn	Si	S	P	Ni	Cr	Mo	Cu	Any other element
As obtained										
Specified value as per IRSM -39/04 20										

3. Mechanical Properties:

(a) Multirun All weld:

Properties	Radiography/ Ultrasonic (IIW Blue/ <u>ASTM E390</u> / RDSO procedure No. MC-4)	UTS N/m m ²	YS N/mm ²	%age El. on 5d G.L.	%age R.A.	Charpy impact value (Joule)		
						Ind. Values (min.3 values)	Av.	Temp °C
As obtained								
Specified value as per IRSM -39/04 20								

(b) Two run weld:

Properties	Radiography/ Ultrasonic (IIW Blue/ <u>ASTM E390</u> / RDSO procedure No. MC-4)	Transverse Tensile strength N/mm ²	Bend Test at 90° using 3T mandrel	Charpy impact value (Joule)		
				Ind. Values (min.3 values)	Av.	Temp °C
As obtained						
Specified value as per IRSM -39/04 20						

- | | |
|---|---------------------|
| 4. Grain size: | 5. Basicity Index: |
| 6. Tap density: | 7. Moisture content |
| 8. Hydrogen in Weld Metalml/100 gm <u>Corrosion Resistance Test for Wire-flux combination, W-5 & F-5 only</u> | |
| 9. Any other test (Pl. specify) | |

*Note: Please fill up all the boxes. Write N.A. if not applicable.
Please indicate the name of RDSO approved wire used.

Signature of QC Incharge/Chemist

For Annexure-V	
Stake holders comments if any	No comment from stake holder is received.
RDSO's views	<p>Year of revision of IRS M-39 has been incorporated.</p> <p>Corrosion resistance test of wire-flux combination (W-5 & F-5) is also specified in IRS: M-39. This parameter was not included in Annexure-V (BTC format for SAW Flux). Now this parameter is also included with other parameters in BTC format.</p> <p>Hydrogen in weld metal has not been specified for any wire-flux combination in IRS:M-39. Hence, this parameter has been deleted from Annexure-V (BTC format for SAW Flux).</p> <p>In the radiographic test, alternative method i.e. ASTM E390 is now also mentioned along with IIW Blue Std. as per IRS: M-39.</p>

Reasoned Document