

Government of India

Ministry of Railways

Schedule of Technical Requirement (STR)

For

Secondary cells - Low Maintenance & Valve Regulated

Signal Directorate

Research Designs & Standards Organisation

Manak Nagar, Lucknow - 226011

August 30, 2010

Scope:

The Schedule of Technical Requirement No. SIQ 0113 covers the norms for Machinery & Plants required for production, testing equipment for quality assurance and infrastructure for manufacturing of Secondary cells - Low maintenance (LMLA) and Valve Regulated (VRLA) for Railway Signaling & Telecom applications. Vendor shall also comply other relevant laws of the country and quality norms issued by RDSO time to time.

Secondary cells - Low Maintenance & Valve Regulated

List of specifications for various types of Secondary cells-

S.No	Description	Specification No.
1	Secondary cell – Low Maintenance Lead Acid	IRS:S 88/2004
2	Secondary cell – Valve Regulated Lead Acid	IRS:S 93/96 A

Secondary cells - Low Maintenance & Valve Regulated

S.No	Description
I	Essential machinery and plants required for production-
1	Hot air oven
2	Polarity testing machine
3	Heat sealing machine
4	Air pressure testing machine
5	Grid casting machine
6	Water bath
7	Battery component casting mould
8	Automatic Paste mixing machine
9	Plate cutting and lug cleaning machine
10	Group assembly equipment
11	Oxy-acetylene torch
12	Distilled water plant
13	Container and cover manufacturing plant
14	Plate/Jar formation plant
15	Jigs for plate assembly
16	Separator test unit
17	Lead oxide manufacturing mill
18	Automatic paste mixing plant
19	Automatic plate pasting machine.
20	Humidity and temperature controlled curing chambers
21	Inter-cell welding machine *
22	Short circuit testing machine *
23	Shear testing machine *
24	Spine trimming machine *
25	Grid cutting machine *
26	Vibrator *
27	Pitch treatment plant *
28	Separator manufacturing plant *
29	Bitumen compound sealing plant *
30	Pressure die casting machine *
31	Automatic acid filling machine **
32	Acid chilling plant **
33	Heat-sealing plant with controlled temperature, pressure and time duration **
34	Stack box manufacturing facility **

* Applicable for LMLA cells only.

** Applicable for VRLA cells only

Secondary cells - Low Maintenance & Valve Regulated

S.No	Description
II	Essential testing equipment required for Quality Assurance-
1	Test bench consisting of Ammeter & Voltmeter as per the requirement
2	Electronic Balance
3	App. Density apparatus
4	Standard sieves
5	Analytic balance
6	Conductivity meter
7	Manometer
8	Life tester
9	Breaking strength tester
10	Micrometer
11	Gauge
12	Try square, scale
13	Digital Vernier Caliper
14	Pitch gauge
15	Battery charger / discharger
16	Data Recorder
17	Multimeter
18	Thermometer
19	H.V. tester
20	Hour meter
21	Separator Testing machine
22	Safety valve testing arrangement **
23	Automatic air pressure testing arrangement **
24	Automatic absorption spectrometer **

** Applicable for VRLA cells only

Note:

- I. Outsourced firms shall have ISO approval and its QAP shall be duly verified by DI/QA/S&T.
- II. All the essential testing equipment must be calibrated once in a year by Government / Reputed agency. In house calibration wherever feasible, may be done with specific permission of DI/QA/S&T.

III. Copy Holders:

ED/QA DSIG/PS DSIG/EI ADE/SIG/PS