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SHAKAMBHARI ISPAT & POWER LTD.
(Formerly known as Ess Dee Aluminium Ltd.)

STANDARD OPERATING PROCEDURE

Title: SOP for Maintenance, Process & Record of Reagents, Solutions and Standards			Page No. 1 of 3
SOP No.	Version No.	Effective Date	Next review date
SIPL/QAS/032	00	07.07.2026	06.07.2028

1.0 PURPOSE

- 1.1 To define the procedure for the maintenance, preparation, standardization, storage and record-keeping of chemicals, reagents, solutions and reference standards used in laboratory testing.

2.0 SCOPE

- 2.1 This SOP applies to all chemicals, purchased reagents, standard operating solutions (Volumetric, Molar, Normal), indicator solutions and reference standards used in laboratory testing.

3.0 REFERENCE(S) & ATTACHMENTS

3.1 References

- 3.1.1 ISO 15378:2017

3.2 Attachments

- 3.2.1 NIL

4.0 RESPONSIBILITY

4.1 Warehouse Department Person

- 4.1.1 To prepare the SOP.
4.1.2 To prepare a list of the SOP in the Warehouse Department.

4.2 Production Head

- 4.2.1 To ensure the training of the SOP to all concerned department personnel involved in implementation of the SOP.
4.2.2 To ensure the implementation of the SOP after training.

4.3 Quality Assurance Person

- 4.3.1 To check the SOP.
4.3.2 To maintain the original copy of the SOP.
4.3.3 To issue the controlled copy of the SOP.
4.3.4 To maintain the issuance record of the SOP.
4.3.5 To retrieve the controlled copy of the SOP when it is superseded/obsolete and maintain its record.

4.4 QA Head

- 4.4.1 To approve the new or revised SOP.
4.4.2 To ensure the implementation of the defined system.

4.5 Plant Head

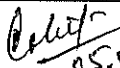
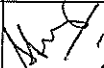
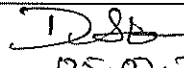
- 4.5.1 To approve the new or revised SOP.
4.5.2 To ensure the implementation of the defined system.

5.0 DISTRIBUTION

- 5.1 Quality Control
5.2 Production
5.3 Quality Assurance
5.4 Warehouse
5.5 Engineering Department

6.0 DEFINITION(S) & ABBREVIATION(S)

- 6.1 Definitions: Nil
6.2 Abbreviations: Nil

Prepared By:	Checked By:	Approved By:
 05.07.2026	 05.07.2026	 05.07.2026

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7.0 PROCEDURE

7.1 General Reagent Requirements

- 7.1.1 Grading: All chemicals used must be Analytical Reagent (AR) or Laboratory Reagent (LR) grade, or traceable to National Institute of Standards and Technology (NIST) where applicable.
- 7.1.2 Verification: Ensure containers are physically intact and labels are clear before opening.

7.2 Labelling Requirements

- 7.2.1 Each container must be securely labelled at the time of receipt and preparation.
- 7.2.2 Receipt Label: Date of receipt and date of first opening.
- 7.2.3 Preparation / Standardization Label:
 - 7.2.3.1 Name / Identity of the Reagent / Solution.
 - 7.2.3.2 Unique Solution ID.
 - 7.2.3.3 Date of Preparation.
 - 7.2.3.4 Normality / Molarity / Concentration.
 - 7.2.3.5 Standardization Factor (if applicable).
 - 7.2.3.6 Date of Expiry / Re-standardization due date.
- 7.2.4 Initials of the preparer.

7.3 Preparation & Standardization

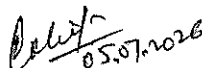
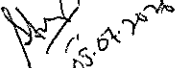
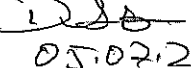
- 7.3.1 All preparations must follow the documented, validated methodology (e.g., pharmacopeial monographs).
- 7.3.2 Use calibrated analytical balances and volumetric glassware for measuring.
- 7.3.3 Standardization: Primary and secondary standard solutions must be standardized upon preparation. The standardization must be repeated periodically (re-standardized) or whenever the solution nears its assigned shelf life.

7.4 Storage Conditions

- 7.4.1 Store all reagents, solutions and standards according to the manufacturer safety data sheets (MSDS/SDS) and product specifications.
- 7.4.2 Light-Sensitive Solutions: Store in amber-coloured glass bottles.
- 7.4.3 Temperature: Monitor and record storage temperatures (e.g., room temperature, 2°C to 8°C for cold storage) daily.

7.5 Maintenance of Records & Logs

- 7.5.1 Reagent Receipt Log:
 - 7.5.1.1 Name of Manufacturer / Supplier.
 - 7.5.1.2 Batch / Lot Number.
 - 7.5.1.3 Date of Receipt.
 - 7.5.1.4 Quantity received and Expiry Date.
 - 7.5.1.5 Storage conditions upon arrival.
- 7.5.2 Solution Preparation & Standardization Log:

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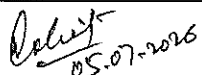
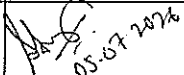
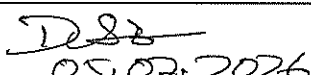
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- 7.5.2.1 Name / Concentration of the solution.
- 7.5.2.2 Lot number of the raw chemicals used.
- 7.5.2.3 Weights / Volumes used for preparation.
- 7.5.2.4 Calculations for Normality / Molarity / Factor.
- 7.5.2.5 Date of Preparation.
- 7.5.2.6 Name and Signature of the Analyst.
- 7.5.2.7 Name and Signature of the Reviewer.
- 7.5.3 Reference Standard / Impurity Log:
 - 7.5.3.1 Detailed tracking for high-value or highly controlled standards.
 - 7.5.3.2 Date of usage and amount consumed.
 - 7.5.3.3 Remaining balance in the container.
- 7.6 Expiry & Disposal**
 - 7.6.1 Purchased Reagents: Unless stated otherwise by the manufacturer, purchased solid reagents should generally not be kept for more than 5 years after opening, provided they remain uncontaminated. Liquid reagents/solutions usually expire 2 years from the date of opening.
 - 7.6.2 Lab-Prepared Solutions: Follow validated shelf lives. If any solution shows signs of precipitation, turbidity, discoloration or microbial growth, discard it immediately regardless of the expiration date.
 - 7.6.3 Disposal: Expired or contaminated standards and reagents must be disposed of according to the facility's Hazardous Waste Management SOP.
- 7.7 Responsibility**
 - 7.7.1 Analyst / Technician: Prepares solutions, performs standardization, and logs entries in the respective registers.
 - 7.7.2 QC Manager / Designee: Reviews and verifies all data, calculations and logs for accuracy.

8.0 REVISION HISTORY

Revision No.	00	Effective Date	07.07.2026	CC No.	NA
Details of revision: New SOP					

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 05.07.2026	 05.07.2026	 05.07.2026