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**ESKOM**  
**KOEBERG NUCLEAR POWER STATION**  
**SPECIFICATIONS ENGINEERING**

Specification Title

**LITHIUM HYDROXIDE ( $\text{Li}^+ \text{OH}^-$ )**

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DATE: 08/11/02

DATA CAPTURED: AS Maker AS MAKER



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## 1.0 SCOPE

### 1.1 General

- 1.1.1 Items covered by this specification are for application in the ESKOM Koeberg Nuclear Power Station Units 1 and 2 of South Africa.
- 1.1.2 Certain technical requirements and administrative details are contained in the Bills of Material.
- 1.1.3 If any conflicts arise between this specification and other referenced documents, the Contractor/Vendor/Supplier shall not proceed, but shall request clarification, in writing, from the approved ESKOM buyer.

### 1.2 Scope of Supply

- 1.2.1 This specification defines the characteristics of lithium hydroxide monohydrate ( $\text{Li}^7\text{OH}\cdot\text{H}_2\text{O}$  – enriched lithium) used for the chemical treatment (pH Control) of primary coolant.

## 2.0 REFERENCES

### 2.1 Mandatory References

N/A

### 2.2 Useful References

- 2.2.1 Westinghouse Corporate Standards, PD Specification 52203BA Rev C.
- 2.2.2 EDF specification:  

Specification Chimiques des produits de conditionnement des circuits des centrales nucleaires (D.5001/BTE/RC931010/Ind.1)

## 3.0 INTERFACES

N/A

## 4.0 ENVIRONMENTAL CONDITIONS

N/A

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## **5.0 SERVICE CONDITIONS**

### **5.1 Ambient Conditions when stored:**

Temperature (Min to Max) -2°C to 35°C

## **6.0 OVERALL DESIGN REQUIREMENTS**

6.1 See Appendix 1.

## **7.0 VERIFICATIONS AND TESTS**

- 7.1 The supplier shall submit to ESKOM a chemical analysis report in accordance with this specification, at each delivery.
- 7.2 This analysis report shall demonstrate that the chemical characteristics meet each and every requirement of this specification.
- 7.3 If the analysis report should show that there are deviations from the requirements of this specification, the chemical shall only be accepted subject to ESKOM's written approval.
- 7.4 ESKOM reserves the right to have check analysis carried out by the analysing laboratory of its choice in order to verify the chemical's quality.
- 7.5 If the check analysis report should show that the chemical does not present the required characteristics, ESKOM reserves the right to refuse the batch which has been received.

## **8.0 QUALITY ASSURANCE**

- 8.1 All conditions and requirements required by this specification shall comply with the ESKOM Quality Assurance standard provided with the tender enquiry or purchase order.
- 8.2 The safety classification and quality level provided in accordance with this specification is given in the tender enquiry or purchase order.
- 8.3 A Quality Assurance Data Package (QADP) shall consist of a guaranteed vendors chemical analysis demonstrating compliance with this specification. This analysis shall identify the batch or lot number of the chemical.

## **9.0 DOCUMENTATION**

- 9.1 The supplier shall provide storage instructions to ensure the shelf life of the product.

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## **10.0 MARKING AND IDENTIFICATION**

- 10.1 All Lithium Hydroxide packaging containers shall be marked with a symbol that identifies the lot or batch number.
- 10.2 Each Lithium Hydroxide package container shall be clearly labelled with the following information.
  - 10.2.1 Name of contents,
  - 10.2.2 Concentration of contents,
  - 10.2.3 Name of Manufacturer,
  - 10.2.4 Batch/Lot number(s),
  - 10.2.5 Eskom's SAP number.

## **11.0 PACKAGING AND SHIPMENT**

- 11.1 The material shall be supplied in polyethylene lined containers securely closed to prevent loss or contamination of the contents.
- 11.2 Handling precautions shall be predominantly marked on the containers.
- 11.3 The material is caustic and contact with eyes and skin shall be avoided.

## APPENDIX 1

**Lithium enriched in Li<sup>7</sup>**  
**Lithium hydroxide monohydrate**  
**(LiOH . H<sub>2</sub>O)**

**LiOH: 48 to 58% by weight**

**Water: 42 to 52% by weight**

**Li<sup>7</sup>/ Li<sub>total</sub> ≥ 99.9% (%atomic)**

Elements	Specification in %	Specification in mg/kg
Chloride	<0,050	<500
Fluoride	<0,050	<500
Sulphate	<0,050	<500
Sodium	<0,050	<500
(Lead and Mercury)	<0,001	<10

- Aspect: white powder