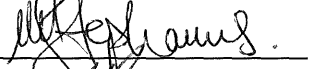
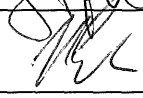
**ESKOM**

**KOEBERG NUCLEAR POWER STATION**

**DESIGN ENGINEERING**

Specification Title

# *25% AMMONIA SOLUTION*

| | | |
|---|---|---|
| **PREPARED BY:** |  | **X BOOI** |
| **REVIEWED BY:** |  | **AMA STEPHANUS** |
| **REVIEWED BY:** |  | **N VAN EEDEN (SME)** |
| **APPROVED BY:** |  | **N RYLAND** |
| **DATE:** | 2014-06-24 | |
| **DATA CAPTURED:** |  | **C TULLEY** |

## KOEBERG NUCLEAR POWER STATION

## NUCLEAR ENGINEERING

| | **APPROVED:** JT AUSTIN | **DATE:** 2007-07-19 |
|---|---|---|
| **REVISION** | **PREPARED BY** | **REVIEWED BY** |
| 0 | JR MELLOR | CHEMISTRY |
| 3 | JR MELLOR | DC EVANS |
| 4 | X BOOI | AM STEPHANUS/ N VAN EEDEN |
| | | |

## RECORD OF REVISIONS

| Rev | Date | Description of Revision | Prep. | Rev. | Appr. |
|---|---|---|---|---|---|
| 0 | 1987-01-28 | Original | JRM | SPM/NGR | JHED |
| 3 | 2007-07-17 | Revised the Iron content to read: Not more than 0.02ppm as Fe.<br>Revised sodium content to read: Not more than 1ppm as Na. | JRM | NFS/DCE | JTA |
| 4 | 2014-05-26 | Catalogue specification changed to a generic specification. | XB | AMS/NvE | NR |
| | | | | | |

**ESKOM**

**KOEBERG NUCLEAR POWER STATION**

**PROCUREMENT SPECIFICATION**

**PRODUCT:** 25% AMMONIA SOLUTION

**TECHNICAL DESCRIPTION:** 25% AMMONIUM HYDROXIDE SOLUTION (CHEMICAL FORMULA: $NH_4OH$, CAS No. 1336-21-6) AS DETAILED IN THE ESKOM (KOEBERG) PURCHASE ORDER, TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

| | | |
|---|---|---|
| Chemical composition (weight %) | : | Ammonia ($NH_3$) content >25% |
| Specific gravity | : | 0.806 – 0.91 at 15.6°C (60°F) |
| Appearance | : | Colourless liquid with a suffocating odour, free from suspended matter or sediment |
| Residue after ignition (max.) | : | 0.002 weight % (20 ppm) |
| Reducing substances | : | < 8 ppm (m/m) as O |

Impurity limits:

| Chemical Impurity | Maximum concentration of impurities | |
|---|---|---|
| | Weight % | ppm |
| Carbon dioxide ($CO_2$) | 0.002 | 20 |
| Chloride ($Cl^-$) | 0.00005 | 0.5 |
| Fluoride ($F^-$) | 0.0002 | 0.5 |
| Sulphate ($SO_4^-$) | 0.0001 | 1 |
| Copper (Cu) | 0.0002 | 2 |
| Iron (Fe) | 0.00003 | 0.3 |
| Lead (Pb) | 0.00001 | 0.1 |
| Sodium (Na) | 0.0001 | 1 |
| Phosphate ($PO_4$) | 0.0002 | 2 |
| Arsenic (As) | 0.0005 | 5 |

Reference Document:

EPRI TR 1022558: Information Regarding Procurement Specifications for Nuclear Power Plant Bulk Chemicals, February 2011

## CLASSIFICATION:

| | | |
|---|---|---|
| CLASSIFICATION No. | : | 0029/99Q |
| SAFETY | : | NSF |
| SEISMIC | : | NC |
| QUALITY | : | Q3 |
| ENVIRONMENTAL | : | NEV |

## PACKAGING:

The product shall be packed in 200 litre plastic drums.

## IDENTIFICATION OF PRODUCT:

Each chemical container shall be clearly labelled with the following information:

- Name of contents.
- Concentration of contents.
- Name of manufacturer.
- Batch/lot number.
- Pictogram -triangular (black border with yellow centre) - depicting health hazard of the contents.
- Eskom's SAP number (if applicable).
- Eskom's order number.

Marking notices and signs shall be in accordance with OHSA, Act 85 of 1993, requirements, and shall be weatherproof.

## CERTIFICATION:

The Manufacturer/Supplier to complete an Eskom (Koeberg) CERTIFICATE OF CONFORMANCE (C.O.C) certifying that the product supplied meets the requirements of this specification. A Material Safety Data Sheet (MSDS) to be provided with each delivery.

A CERTIFICATE OF ANALYSIS (C.O.A) must be included with each batch.

## QUALITY ASSURANCE

Procurement Quality requirements shall be specified in the enquiry, contract or order documentation.

*Full details of all deviations from this Specification must be submitted to ESKOM (KOEBERG) in writing for clearance prior to manufacture/despatch of the product.*