

# PRODUCT PROFILE

## AMMONIUM HYDROXIDE MANUFACTURING PROCESS

The manufacturing process of ammonium hydroxide is performed in a closed system combining high purity water with anhydrous ammonia. Hill Brothers' in-house procedure for strength quality control is to use a specific gravity hydrometer for density measurement as a safe and reliable measurement for anhydrous ammonia content of our manufactured ammonium hydroxide. There are no transient factors that would affect density, other than temperature which is easily compensated for.

The manufacturing and quality control (QC) process is as follows:

- After manufacturing of the desired quantity of ammonium hydroxide a 500 ml sample is retrieved for immediate density testing. A specific gravity hydrometer is immersed into the sample, the reading is recorded. A thermometer is then immersed for temperature recording.
- The observed specific gravity of the material with the corresponding temperature are reviewed in the Control/Manufacturing Manual to identify the ammonia content. From this data, the quantity of D.I. water or anhydrous ammonia required (if any) to achieve the target strength can be determined.
- The same sampling procedure is followed before each container loading session and, in the case of bulk shipments, during the loading procedure, the purpose being to verify consistency and strength.
- With all bulk shipments, a 250 ml sample is retained from the last sample retrieved. In addition, all QC measurements are recorded with the customer name and transportation carrier in the QC tracking manual.

Quality Control is a most important aspect of our manufacturing process; a “*Certificate of In house Analysis*” or “*Certificate of Conformance*” will accompany bulk shipments detailing ammonia strength, and product clarity. Periodically, a representative sample of Hill Brothers ammonium hydroxide will undergo rigorous lab analysis to confirm conformance to the Product Specification Profile for minimum impurities levels.

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The information on this Product Profile is based on data obtained by our own research and is considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data, the results to be obtained from the use thereof, or that any such use will not infringe any patent. This information is furnished upon the condition the person receiving it shall make his own tests to determine the suitability thereof for his particular purpose. For latest product specifications, contact our nearest sales office.

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