



Laboratory Report

Prepared For

Vm³ Purifier Pty Ltd

Report No. J 130628b

June 2013

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PROJECT Vm³ Purefier – Moisture Capacity Trials

REPORT No. J 130628b

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INTRODUCTION

BELL Laboratories received two samples each of Vm³ Purefier and Gadget Saver, on 28th June 2013.

Vm³ Purefier is a powder, pale brown in colour. Gadget Saver is a translucent silica-based dessicant, with grain sizes ranging from approximately 1mm - 3mm.

At the request of Vm³ Purifier Pty Ltd, the samples were tested to determine their capacity to retain liquid phase water.

METHODOLOGY

10g subsamples of Vm³ and 25g samples of Gadget Saver were weighed into Erlenmeyer flasks. Deionised water was added stepwise to each subsample. After each addition the sample was agitated and observed for five minutes.

With the addition of water, the morphology of Vm³ changes from a powder to a granular form which clumps together with increasing additions of water. The clumps become less grainy and more gel like with further additions of water. Eventually the clumps fuse into a single amorphous mass.

Initially the grains of Gadget Saver adsorb the water exothermically while retaining their granular form. With increasing additions, the grains begin to aggregate. When the adsorption capacity of the silica is reached, free water is observed within the interstitial spaces of the aggregated grains.

The end point of each test was determined to be the point at which either:

1. the material fused into a single amorphous mass (Vm³ Purefier), or
2. liquid water was observed to persist between grains of silica gel (Gadget Saver)

TEST SUMMARY

Test	Samples Tested	Date Tested	Temperature
Test 1	Vm ³ - A, Vm ³ - B, Gadget Saver	1/7/2013	22°C
Test 2	Vm ³ - A, Vm ³ - B, Gadget Saver	1/7/2013	22°C

TEST RESULTS

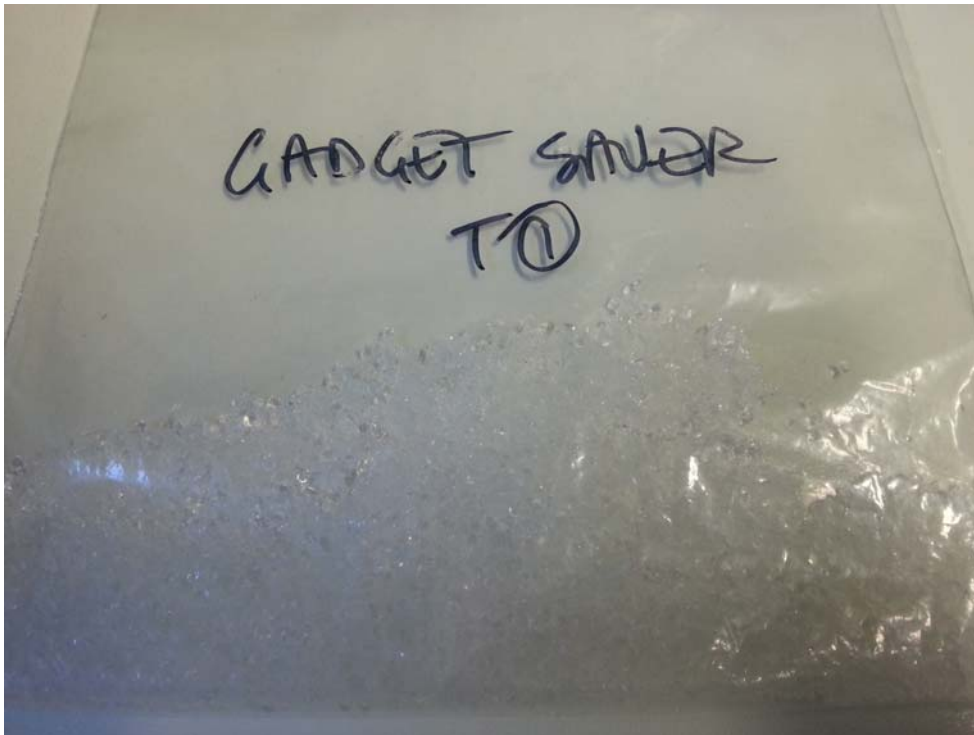
Sample Tested	Test 1	Test 2	Average
Vm ³ - Formula A	1490%	1480%	1485%
Vm ³ - Formula B	1410%	1420%	1415%
Gadget Saver	46%	44%	45%

PHOTOGRAPHS

Vm³ at end point.



Gadget Saver at end point.



TEST METHODS

Unless otherwise stated, the following tests were performed in accordance with requirements of the methods indicated. All sampling and analysis was performed by BELL Laboratories unless otherwise specified.

Parameter	Instrument/Detector
Sample mass	Electronic balance (2 figure)

QUALITY ASSURANCE

BELL Laboratories operates to Australian Standard 17025 – General Requirements for the Competence of Testing and Calibration Laboratories. Australian Standard 17025 requires that a laboratory have a quality system similar to ISO 9002. More importantly it also requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Assurance Manager.

A formal Quality Control program is in place at BELL Laboratories to monitor analyses performed in the laboratory and sampling conducted in the field. The program is designed to check where appropriate; the sampling reproducibility, analytical method, accuracy, precision and the performance of the analyst. The Laboratory Manager is responsible for the administration and maintenance of this program.

DEFINITIONS

The following symbols and abbreviations may be used in this test report:

<	Less than
NA	Not applicable
NS	Not specified
STP	Standard Temperature & Pressure (25°C, 101.325 kPa)
NEPM	National Environment Protection Measure
RH	Relative humidity
CO	Carbon monoxide
HCHO	Formaldehyde
BP	Barometric pressure
mg/m ³	Milligrams per cubic metre
ppm	Parts per million