

**SOUTH AFRICAN BUREAU
OF STANDARDS**

GENMIN LABORATORIES



Laboratory Test Reports

GENMIN LABORATORIES

MATERIALS ENGINEERING DEPARTMENT

TOXICITY INDEX TESTS ON ULTRA SEAL TYRE SEALANT

NOTE FOR THE RECORD NO: N90/89

PROJECT NO: ME89/72

15 SEPTEMBER 1989

BY

A H ROSE

Distribution

Mr D E N de Haas
Mr A Smit
Genmin Laboratories

Manager, Engineering Coal
Engineering Dept, Coal

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1.0 INTRODUCTION

A request was received for comment on the combustion characteristics of two samples of Ultra Seal tyre sealant. This product is a proprietary compound used for injection into tubeless tyres to seal small punctures and mechanical damage.

2.0 TESTING

Standard tests for ignitability and flame propagation are not designed to be used for thixotropic paste type materials. The most relevant test for this type of material was deemed to be the determination of toxicity index in accordance with the SABS TI test.

Both samples were submitted to the SABS for testing.

3.0 RESULTS

The attached SABS reports give values for the toxicity index of 3,1 and 2,2 for the Mining Grade and Universal Grade samples respectively.

The TI tests is not an absolute acceptance test and should not be used in this respect. It's prime use is to show that one material has a lower potential for the release of toxic fumes than another. However, values of the toxicity index below 5 are generally considered to be acceptable.

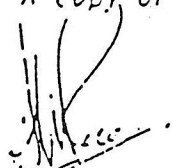
For comparison, toxicity indices for other materials have been quoted:

PVC cable sheathing	4,6
Low halogen PVC	3,2
FR PVC	4,1
Zerolox	0,7
Phenolic foam	9,8

It must be emphasised that considerable spread in the indexes determined by this method has been noted and that the method is intended essentially for comparative purposes. The values determined for Ultra Seal do indicate, however, that it is no more hazardous than many materials currently used underground. In the event of a fire, it is reasonable to claim that more irritation would be produced by the combustion products of the tyre rubber than the small amounts of Ultra Seal present.

NOTE:

Test reports issued by the SABS do not constitute approval of the product. A copy of the reverse side of the test report included for information.



A. N. ROSE Pr. Eng
HEAD: MATERIALS ENGINEERING DEPARTMENT



South African Bureau of Standards

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PRETORIA 0001

Republic of South Africa

☎ (012) 428 7911

ULTRA SEAL Special Report

— 11 —

1
Germin Administration Services
PO Box 10879
STRUBENVALE
1570

Our ref: 17/3/21/3

Enquiries:
~~XXXXXX~~ Tel. 428-6184

TEST REPORT

No. 653/81976/F3191

Date 1989-12-05

TOXICITY INDEX

1. DESCRIPTION OF SAMPLE

The sample submitted for test consisted of waterbase thixotropic sealing gel. Trade name ULTRA SEAL, Sample A: Commercial grade.

2. NATURE OF TEST

The test to determine the toxicity index of the sample submitted was conducted in accordance with SABS TI, Determination of Toxicity Index.

3. RESULTS

Toxicity Factors

Carbon dioxide	(CO ₂)	0,2
Carbon monoxide	(CO)	0,5
Formaldehyde	(HCHO)	-
Nitrogen oxides	(NO _x)	1,4
Hydrogen cyanide	(HCN)	0,1
Sulphur dioxide	(SO ₂)	-
Hydrogen sulphide	(H ₂ S)	-
Hydrogen chloride	(HCl)	-
Hydrogen fluoride	(HF)	-
Hydrogen bromide	(HBr)	-

("-" indicates that no traces of this gas could be detected)

Toxicity Index TI: 2,2

H. V. Dannenfeldt

HTH Dannenfeldt
HEAD: FIRE ENGINEERING
DIVISION
for DIRECTOR GENERAL

HTHD/CG



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ULTRA SEAL Special Report

— 12 —

1
Genmin Administration Services
PO Box 10879
STRUBENVALE
1570

Our ref. 19/3/21/3

Enquiries:
Extension: Tel. 428-6184

TEST REPORT

No. 653/81976/F3191

Date. 1989-11-22

TOXICITY INDEX

1. DESCRIPTION OF SAMPLE

The sample submitted for test consisted of waterbase thixotropic sealing gel. Trade name ULTRA SEAL, Sample B: Mining Grade.

2. NATURE OF TEST

The test to determine the toxicity index of the sample submitted was conducted in accordance with SABS TI, Determination of Toxicity Index.

3. RESULTS

Toxicity Factors

Carbon dioxide	(CO ₂)	0,6
Carbon monoxide	(CO)	0,3
Formaldehyde	(HCHO)	-
Nitrogen oxides	(NO _x)	2,1
Hydrogen cyanide	(HCN)	0,1
Sulphur dioxide	(SO ₂)	-
Hydrogen sulphide	(H ₂ S)	-
Hydrogen chloride	(HCl)	-
Hydrogen fluoride	(HF)	-
Hydrogen bromide	(HBr)	-

("-" indicates that no traces of this gas could be detected)

Toxicity Index TI: 3,1

H. W. Dannenfeldt

H. W. Dannenfeldt
HEAD: FIRE ENGINEERING
DIVISION
for DIRECTOR GENERAL

HTHD/CG



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U v o r s e n d e n d e
 Date 17/14/77
 H A H o l l e r
 Extension 428-6317
 Datum Date 1989-07-03

SABS

Suid-Afrikaanse
 Buro vir Standaarde

South African
 Bureau of Standards

ULTRA SEAL Special Report

— 13 —

Ultra Marketing (Pty) Ltd
Attention: Mr S I Steer
 PO Box 39283
 BRAMLEY
 2018

Dear Sirs

ULTRA SEAL PUMPS

Further to your letter of 2 June 1989, we have examined and tested the Ultra type seal dosing pump, and we wish to comment as follows.

The aluminium alloy out of which this pump is manufactured contains less than 1% by mass of magnesium.

This pump is intended to inject into the pneumatic tyres of vehicles a measured amount of a chemical sealing substance. It is therefore not likely to be commonly used in a fiery mine, but will be used by trained personnel. In terms of SABS 012 of 1972 'Use of light alloys in fiery mines' we would therefore class this pump under the same category as shot-exploders and scientific equipment, and we can see no objection against its use in a fiery mine.

In terms of the proposed revision of SABS 012 we would similarly class this dosing pump as 'equipment that may be purchased until further notice'.

Yours faithfully

El C. Meyer

for DIRECTOR GENERAL



1.
Ultra Seal
PO Box 912-84
SILVERTON
0127

Your ref Letter
dd 14/11/89
Our ref 17/7/23

Enquiries DJ Lötter
Extension 6837

TEST REPORT

No 361/82080/F884A

Date 11/12/89

TYRE SEALANT

1. REQUEST

Test 2 samples of tyre sealant against the requirements of "Tyre sealant specification for pneumatic tyres", dd 21/07/82, by Dr Jaakko Tae, for the properties as given in Table 1.

2. SAMPLES

The samples were received in two plastic bottles marked as follows:

"Sample A Ultra Seal Mining Grade", and
"Sample B Ultra Seal Commercial Grade".

3. RESULTS

The results obtained are given in Table 1.

Table 1

Property	Results		Requirements of the specification
	Sample A	Sample B	
Heat stability at 60 °C: Separation, % (V/V)	Nil	Nil	3 max.
Cold stability at -18 °C	Pass	Pass	Not frozen
Corrosion:			Slight
a) Steel	Pass	Pass	discolouration
b) Aluminium	Pass	Pass	max.
Viscosity at 20 °C, Pa.s	60	50	44 to 100
pH-value	8,5	8,6	8,0 to 9,6

CM F. Lötter
Manager: Petroleum
for DIRECTOR GENERAL
11/12/89



1
Ultra Seal
PO Box 912-84
SILVERTON
0127
1613

Your ref Letter
dd 14/11/89
Our ref 17/7/23

Enquiries DJ Lötter
Extension 6837

TEST REPORT

No 361/82080/F884

Date 17/11/89

TYRE SEALANT

1. TEST REQUESTED

Flash point

2. SAMPLES

The samples were received in two plastic bottles marked as follows:

"Sample A Ultra Seal Mining Grade", and
"Sample B Ultra Seal Commercial Grade".

3. TEST METHOD

ASTM D92-85.

4. RESULTS

The results obtained are given in Table 1.

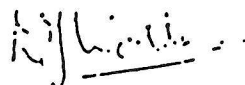
Sample No	Flash point, °C
A	> 96
B	> 84

5. REMARK

The samples boiled at the temperatures quoted above and therefore the test was discontinued at these temperatures.

NEW TELEPHONE & FAX NO
OF SABS PRETORIA

Effective date: 89-05-08
Fax No: 012 - 3441568
Switch board: 012 - 4287911
CM Fullarton: 012 - 4286836
DJ Lötter: 012 - 4286837


CM Fullarton
Manager: Petroleum
for DIRECTOR GENERAL

jah/djl



Ultra Marketing (Pty) Ltd
PO Box 912-84
SILVERTON
0127

Your ref DP

Our ref 17/40/3

Enquiries K Schaffner
~~XXXXXXXX~~ 428-6067

TEST REPORT

No 321/85179/G224

Date: 1990-02-19

SMOKE TOXICITY INDEX

1. DESCRIPTION OF SAMPLE

Two samples marked Ultraseal A and B respectively.

2. TEST REQUESTED

To determine the toxicity index.

3. RESULTS

Sample	Toxic gas factor				Toxicity index
	Carbon dioxide	Carbon monoxide	Nitrogen oxides	Hydrogen cyanide	
Ultraseal A	0,2	0,4	0,4	0,1	1,1
Ultraseal B	0,2	0,5	0,5	0,1	1,3

The gases that were tested for were: Carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, hydrogen cyanide, hydrogen sulphide, sulphur dioxide and ammonia.

Toxicity index values:

0-3 = low toxicity materials
3-5 = intermediate toxicity materials
above 5 = high toxicity materials.

M.J. Venter
MANAGER: PHYSICAL CHEMISTRY
for DIRECTOR GENERAL



South African Bureau of Standards

1 Dr Lategan Road, Greenkloof

Private Bag X191

PRETORIA 0001

ULTRA SEAL Special Report

— 17 —

Ultra Seal
PO Box 27629
SUNNYSIDE
0132

Our ref: 17/7/23

Enquiries DJ Lötter
(012) 428-6837

TEST REPORT

No. 361/82157/G125

Date 12-03-90

This report relates only to the specific sample(s) tested as identified herein. It does not imply SABS approval of the quality and/or performance of the item(s) in question and the test results do not apply to any similar item that has not been tested. (Refer also to the complete conditions printed on the back of official test reports.)

ULTRA SEAL

1. TEST REQUESTED

Density at 20° C

2. SAMPLE

The sample was received in a plastic container marked "Ultra Seal".

3. TEST METHOD

IP 190/86.

4. RESULTS

Density at 20° C = 1,0715 g/ml

CM Fullarton
Manager: Petroleum
for DIRECTOR GENERAL



Ultra Seal
PO Box 27629
SUNNYSIDE
0132

Our ref: 17/7/23

Enquiries DJ Lötter
(012) 428-6837

TEST REPORT

No. 361/82157/G125A

Date 27-03-90

This report relates only to the specific sample(s) tested as identified herein. It does not imply SABS approval of the quality and/or performance of the item(s) in question and the test results do not apply to any similar item that has not been tested. (Refer also to the complete conditions printed on the back of official test reports.)

TYRE SEALANT

1. REQUEST

Establish with a laboratory test if the components of a sample of Ultra Seal will separate under a relative centrifugal force equivalent to the centrifugal force which will be experienced on a tyre with an outside diameter of 1072 mm, of a vehicle travelling at a speed of 250 km/h for 30 minutes.

2. SAMPLE

The sample was received in a plastic container marked "Ultra Seal Com Grade".

3. TEST METHOD

Two by 100 ml centrifuge tubes, each containing 50 ml of sample, were rotated in a centrifuge at 1865 ± 20 rpm for 30 minutes. This rpm for our centrifuge (SABS No 9830) is equivalent to the relative centrifugal force of the tyre as requested in 1 above.


4. RESULTS

4.1. Appearance of sample before test:

A gel containing small rubber pieces and a small amount of particles, white in appearance. The rubber pieces and white particles were evenly spread in the sample.

4.2. Appearance of sample after test:

A gel containing small rubber pieces and a small amount of particles, white in appearance. Most of the rubber pieces and white particles were centrifuged to the bottom of the centrifuge tubes, with some gel in between. The volume at the bottom of the tube where most of these particles could be seen is estimated to be 7 % (V/V).


CM Fullerton
Manager: Petroleum

The acceptance of an item for test and the issue of a test report are subject to the SABS Council's CONDITIONS OF TEST*, from which the following have been extracted:

1. If published or reproduced by the client, a test report shall be reproduced in full, i.e. the reproduction shall contain the printed as well as the typed parts of the report, nothing excepted. In special circumstances an abridged form of the report or certain parts only of the report may be published or reproduced, provided that the abridged form or partial version of the report is approved in writing by the Director General of the SABS before publication or issue.
2. A test report relates only to an item submitted to the actual test. It furnishes or implies no guarantee whatsoever, in respect of a similar item that has not been tested.
3. The performance of a test and the issue of a test report does not imply approval by the SABS of the quality and/or performance of the item that has been tested. It does not authorize the use of a standardization mark.

NB. An unlawful statement to the effect that an item has been approved by the SABS or that it complies with any of its specifications constitutes a punishable offence in terms of Section 15(8) of the Standards Act.

4. While every endeavour will be made to ensure that a test is representative and accurately performed, and that a report is accurate in the quoted results and conclusions drawn from the test, the SABS or its officers shall in no way be liable for any error made in carrying out the test or for any erroneous statement, whether in fact or in opinion, contained in a report issued pursuant to a test.

*Obtainable upon request from the Director General, SABS, Private Bag X191, Pretoria, 0001.