

ASIATIC PETROLEUM CORP.

DIVISION OF

SHELL LABORATORIES

Asiatic Petroleum Corporation



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One Rockefeller Plaza, New York, N.Y. 10020

Our Ref. SPC/1

Your Ref.

Date May 26, 1977

Mr. R. Aguirre
Ultra Seal International Inc.
1100 North Wilcox Ave.
Los Angeles, CA 90038

Dear Mr. Aguirre:

In accordance with your request for a copy of
the Kon Shell lab test report on Ultra Seal, I am arrang-
ing to obtain a copy from Masterflex Rubber Corp. and will
forward it to your attention early next week.

Sincerely,

ASIATIC PETROLEUM CORPORATION

By:

A handwritten signature in dark ink, reading "D. R. Bailey". The signature is written in a cursive, flowing style.

D. R. Bailey
Project Manager - Ultra Seal
Special Products Administration

DRB/jd

Proj. No. 840.37.032

TECHNICAL SERVICE REPORT

DTTR.0012.75

EVALUATION OF TYRE SEALANT ULTRA-SEAL

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(Code 712.70)

Elastomers

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EVALUATION OF TYRE SEALANT ULTRA-SEAL

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DISTRIBUTION LIST

1. INTRODUCTION

Tyre sealants have been developed in order to seal punctures automatically from within the tyre. After removal of the valve core, the sealant is injected into the tyre through the valve stem when the tyre is in deflated condition.

The two main types available on the market can be characterised as follows:

(i) Based on rubber (latex or liquid rubber)

Packed in aerosol can, under high pressure gas (5 atm) and applied after the tyre has been punctured, simultaneously inflating the tyre. The material solidifies.

(ii) Based on water

Packed in a "squeeze" plastic bottle (no pressure) and injected into the tyre preferably before a puncture occurs. The sealant stays liquid.

In this report an evaluation is presented on "Ultra-seal", a tyre sealant based on water, manufactured by Ultra-seal International, Los Angeles, USA.

2. ULTRA-SEAL

2.1 Description

The "water" based tyre seal "Ultra-seal" consists of very fine fibres distributed throughout a water based adhesive. In total more than 30 ingredients are contained in the product.

2.2 Mode of operation and sealing

"Ultra-seal" should preferably be applied to a new, uninflated tyre, by pouring through the valve stem. The sealant then coats the inside of the tyre with damp, shredded fibres and an internal atmospheric mist. As soon as a puncture occurs, the compound will flow into the hole and form a "plug" when the liquid is dried by outside air. This plug will permanently (= tyre life) seal off the puncture under all climatic conditions, resulting in absolutely safe driving as regards small punctures ($\frac{1}{8}$ " for passenger and $\frac{1}{4}$ " for truck tyres) caused by nails, sharp stones, glass etc.

2.3 Performance properties

Three Michelin ZX155x15 tubeless radial tyres having a textile casing and two steel breaker layers were mounted onto wheels. Then each tyre was filled with one pint of "ultra-seal" and subsequently pressurised to 2.0 atm. The tyres were rotated several times. Then the wheels with tyres were mounted on a car and each tyre was punctured by a nail of 6 mm ϕ and immediately driven over a distance of 110 km at different speeds. At intervals the tyre pressure was measured:

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<u>Distance km</u>	<u>Tyre pressure, atm.</u>
0	2.0
2	2.1
5	2.1
10	2.1
20	2.2
30	2.15
40	2.15
50	2.1
75	2.1
100	2.15
110	2.1

The tyres were then stored and, at regular intervals, driven over different distances during the period from December 1974 till June 1975 inclusive. During more than six months no loss of pressure occurred.

3. CONCLUSIONS

The tyre sealant, "Ultra-seal" is an effective tyre sealant when a small hole is caused in passenger car tyres during operation.

Although not actually tested by us, it is our opinion that "Ultra-seal" will work as effectively for truck tyres. This opinion is based on the fact that in our evaluation of passenger car tyres we made punctures of a size equal to that advised by the manufacturer as being the maximum (6 mm) allowable for truck tyres.

Note: A comparison of the main characteristics of "Ultra-seal" and a general rubber latex type of sealant is appended

JMR/MS

EVALUATION OF TYRE SEALANT ULTRA-SEAL

SUMMARY AND CONCLUSIONS

The performance properties of "Ultra-seal" as a tyre sealant have been tested on passenger car tubeless radial tyres. These tyres were punctured with a 6 mm ϕ nail and subsequently treated with "Ultra-seal". Over a period of more than six months, the tyres were tested for leakages. As no loss of tyre pressure occurred during this period, it is concluded that "ultra-seal" performs very satisfactorily as a tyre sealant.

Delft, November 1975

APPENDIXCHARACTERISTICS "ULTRA-SEAL" VERSUS RUBBER LATEX SEALANT

	<u>"ULTRA-SEAL"</u>	<u>RUBBER LATEX</u>
<u>Base</u>	Fibres in water-based adhesive	Rubber latex and a liquid gas
<u>Packaging</u>	Plastic squeeze bottle (no pressure)	Aerosol can (pressure 5 atm.)
<u>Storage</u>	1 year	over 1 year
<u>Usage</u>	Before (in new tyre) or after puncture	After puncture
<u>Inflation of tyre</u>	To be done separately	Automatically from pressure in can
<u>Condition inside tyre</u>	Stays liquid	Solidifies
<u>Tyre unbalance</u>	No	Possible
<u>Chemical reaction</u>	No	Yes , rubber-coagulates from foam, vulcanises
<u>Flammable</u>	No	Yes
<u>Permanent seal</u>	Yes (= tread life)	No
<u>Freeze stable</u>	Yes	Yes
<u>Sealing rim leaks</u>	Yes	No
<u>Types of tyres</u>	All	Car, truck tyres only
<u>Tubed/tubeless</u>		
car, truck, motorcycle bicycle		