



<b>DOCUMET TITLE:</b>	<b>SURVIVAL TYRE LIQUID SEALANT</b>
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<b>AUTHOR</b>	<b>JACQUES LOCHNER</b>

MECHANOLOGY (PTY) LTD  
 Reg. No: 2000/030600/07  
 Vat No: 4060 179 258  
 VIRLEO HOUSE  
 54 De Havilland Crescent  
 Persequor Technopark  
 PERSEQUOR  
 0020

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**1. General.**

Testing and evaluation of **Survival Liquid Tyre Sealant** from **Survival Tyre Safety (Pty) Ltd** for the military, security, passenger vehicles and Earthmoving Machines.

Testing was done on various military, security vehicles and Earthmoving Machines and the testing was conducted in various conditions.

**2. Vehicles.**

Vehicles that were utilized were:

1. The South African Ratel MK3 90mm armoured vehicle.
2. Mechanology Ratel MK 4 90mm vehicles armoured vehicle.
3. The South African RG12 / Nyala armoured vehicle.
4. The South African Eland MK7 90mm armoured vehicle.
5. Landover soft skin vehicle.
6. Bell B20 Articulated Dump Truck (ADT)

**3. Test aspects**

Test aspects included the following:

- a. Tyre and rim type and size including handling and loss of pressure.
- b. Puncture of tyre with spikes including handling and loss of pressure.
- c. Shooting tyre with 9mm pistol including handling and loss of pressure.
- d. Shooting at tyre with 7.62 assault rifle including handling and loss of pressure.

**4. Tyre and Rim Size.**

Usage of normal rims and split rims

Vehicles were tested to determine if normal solid rims, as well as vehicles that utilise split rims could be used with the **Survival Liquid Tyre Sealant**.

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The following size and type of tyres as well as type and size of rim were used in the tests:

- |      |                 |   |
|------|-----------------|---|
| i.   | Ratel MK3 90mm: | Split Rim with 14.00 x 20 tyre were used.                     |
| ii.  | Eland MK7 90mm: | Split Rim with Dunlop 12.00 X16 tyre were used.               |
| iii. | RG12/Nyala:     | Split Rim with Dunlop 12.50 X20 tyre were used.               |
| iv.  | Landover:       | Solid rim with Continental 235/85R 16C tyre were used.        |
| v.   | Bell B20 ADT    | Solid rim with lock ring with Michelin 23.5R25 tyre were used |

Vehicles I to v tyres were inflated with **Survival Liquid Tyre Sealant**. Vehicles tyre pressure was taken and the vehicles were then left for 14 days and then operated for 8 hours under normal operational conditions.

Vehicle handling was evaluated during the road test to determine if **Survival Liquid Tyre Sealant** had any effect on the handling of the vehicle.

On return the vehicles tyre pressure was checked and compared with tyre pressure at the start of the test.

**Result:**

Vehicle tyre pressure was the same and no leaks were found on both solid and spilt rim configurations.

Vehicle tyres that were inflated with **Survival Liquid Tyre Sealant** had no effect on the handling of the vehicle on-road or off-road test.

Final result in using **Survival Liquid Tyre Sealant** on solid and split rim configurations was that it could be used on solid and split rims and that it had no effect on the handling of the vehicle.

**5. Puncture of tyre with spikes including handling and loss of pressure.**

Vehicle tyres were inflated with **Survival Liquid Tyre Sealant** and the pressure was taken. 15cm spikes were welded on to a solid piece of metal and the vehicles tyres were driven over it.

Tyres were punctured and **Survival Liquid Tyre Sealant** sealed the punctures. Small amounts of **Survival Liquid Tyre Sealant** came out of punctured tyres but sealed immediately.

Vehicles i-v were operated for 8 hours after having the tyres punctured to determine if the punctures had any effect on the handling of the vehicle.

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**Result:**

Vehicle tyre pressure was taken after the road test and it was found that the tyre pressure was the same, with no measurable loss in tyre pressure

Vehicle handling was not affected during the 40 km road test after the tyres were punctured with spikes.

Final result in using **Survival Liquid Tyre Sealant** and puncturing tyres with 15cm spikes was that the loss in tyre pressure was not measurable and had no effect on the handling of the vehicle.

**6. Shooting tyre with 9mm pistol including handling and loss of pressure.**

Vehicles l to v tyres were inflated with **Survival Liquid Tyre Sealant** and the pressure was taken. Vehicle tyres were shot at with a 9mm pistol. 2 shots were fired at the tyre.

**Survival Liquid Tyre Sealant** sealed the punctured holes and again only a small amount of **Survival Liquid Tyre Sealant** came out of puncture holes, but sealed immediately.

Vehicles were driven for 40 km after being punctured to determine if punctures had any effect on handling of the vehicle.

**Result:**

Vehicle tyre pressure was taken after the road test and found that the tyre pressure was almost the same with almost no loss in tyre pressure

Vehicle handling was not affected during the 40 km road test after the tyres were punctured with spikes.

Final result in using **Survival Liquid Tyre Sealant** and tyre puncturing by shooting with a 9mm pistol was that the loss in tyre pressure was almost zero and had no effect in the handling of the vehicle.

**7. Shooting at tyre with 7.62 assault rifle including handling and loss of pressure.**

Vehicle i to v tyres were inflated with **Survival Liquid Tyre Sealant** and the pressure was taken. Vehicles tyres were then shot at with a 7.62mm sniper rifle on both the thread area and side wall. 1 Shot was fired at the tyre.

**Survival Liquid Tyre Sealant** sealed the puncture hole and an amount of **Survival Liquid Tyre Sealant** was visible (more than the test with spikes and 9mm bullet) out of puncture holes, but sealed almost immediately.

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An important fact was that after the vehicles tyres were shot at with a 7.62mm bullet it was noted that the vehicle needed to be driven to seal the puncture holes.

Vehicles were driven for 40 km after being punctured to determine if the punctures had any effect on handling of the vehicles.

**Result:**

Vehicle tyre pressure was taken after the road test and it was found that the tyre pressure reduced, but not significantly.

Vehicle handling was not affected during the 40 km road test after the tyres were punctured with spikes.

Final result in using **Survival Liquid Tyre Sealant** and tyre puncturing by shooting with a 7.62mm rifle was that the loss in tyre pressure was more than with a 9mm pistol but not significantly so as to effect the handling of the vehicle.

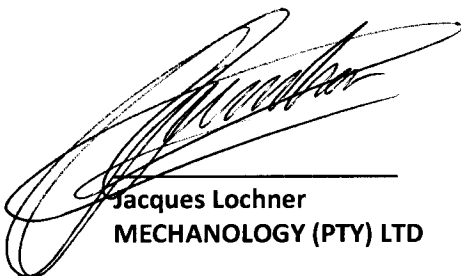
**8. Final findings and Recommendations**

Vehicles were tested on-road and off-road. Loss in tyre pressure was almost zero and did not affect the handling of the vehicles.

This product can be utilized in military, security and passenger vehicles and Earthmoving Machines.

Where military and security vehicles are in contact situations and need to retreat and drive a distance, this product will be better suited than using run flat inserts. Where terrain is extremely rough it may cause the run flat insert to detach from the rim, whereas **Survival Liquid Tyre Sealant** seals the tyre and can be utilized on-road or off-road.

**Mechanology can in future advise clients to use Survival Liquid Tyre Sealant in their vehicles.**



Jacques Lochner  
MECHANOLGY (PTY) LTD