

Blu-Tack[®] can stop transmission oil leaks

Charles Micallef B.Pharm (Hons), M.Sc (PAPH)

1. Ministry of Health, Merchants Street, Valletta VLT 1171, Malta.
2. SportMalta, Cottoner Avenue, Cospicua BML 9020, Malta.

Abstract- An internet search on the use of Blu-Tack[®], a flexible tacky polymer, as a possible transmission oil stop leak for defective or old gearboxes, showed that there was no evidence to support this hypothesis. Ten preliminary tests involved heating a piece of Blu-Tack attached to a stainless steel kettle for not less than 30 minutes at around 100°C each time. As the Blu-Tack retained the same rubbery and sticky properties it was then decided to investigate whether it can stop gearbox oil leaks on two cars: a relatively new car and an old one. A reasonable piece of Blu-Tack was worked into a long cylindrical strip and pressed firmly using the fingers onto the trouble area so as to form a flat strip approximately 1 cm wide thus covering completely the defective rubber seal or gasket. After ten months and more than 3,000 km of road testing, the putty remained intact and no oil smears were detected. On the much older car with cardboard gaskets, the same procedure was applied and Blu-Tack was again an effective, exterior stop leak. This study provides a platform for further scientific experiments on the use of Blu-Tack for stopping transmission fluid leaks. It is also recommended to investigation whether Blu-Tack can stop engine oil leaks.

Index Terms- Blu-Tack[®]; gasket; gearbox; polymer; rubber seal; stop leak; transmission fluid; transmission oil.

I. BACKGROUND INFORMATION ON BLU-TACK[®]

As a curious researcher, the author was fascinated with the reusable adhesive properties of Blu-Tack[®], a hydrocarbon polymer normally used to attach paper onto hard surfaces. It was a remarkable discovery when this tacky putty-like substance, whose chemical formula is kept secret, was invented (Wikipedia, 2016).

II. IDENTIFYING A MECHANICAL PROBLEM: TRANSMISSION OIL LEAK

Lately, another use for Blu-Tack was hypothesized and investigated; a use which has not been explored and documented – not even on YouTube. When a car was due for its second routine service and the mileage was only in the region of 5,000 km, transmission oil was already leaking very slowly from the manual gearbox. On average, excluding the time the vehicle was on the road, it was only leaking a drop of fluid every four weeks.

III. DRASTIC INTERVENTION SUGGESTED

When the source of the leak was inspected that is, between the extreme end of the engine and the transmission unit, there seemed to be a part which looked as having insufficient sealant.

The problem was discussed with the local agents for this car brand and their senior technician advised to book a repair job which would involve removing the gearbox and instil a new sealant, free of charge as the vehicle was still under warranty. However, as the leak was very slow, the idea of exposing a car to a drastic ‘surgery’ as the first line of treatment was not appealing.

IV. METHOD USED: LITERATURE SEARCH AND DOMESTIC EXPERIMENTATION USING BLU-TACK

The attention was turned onto Blu-Tack. Can this flexible material halt gearbox oil leaks? Although traditionally this comes in pale blue colour, the one used for this preliminary study was a white variant. A Google Scholar search using the keywords ‘Blu-Tack’, ‘transmission’, ‘gearbox’, ‘oil leak’ and ‘fluid leak’ was performed. However, no evidence to support the hypothesis could be found. As the chemical name for Blu-Tack is classified, this could not be used during literature searching.

A series of preliminary domestic tests were then conducted. A stainless steel kettle filled with water and carrying on it a piece of Blu-Tack was exposed to a temperature of around 100°C (boiling point of water) for over thirty minutes. After cooling, the putty was kneaded for 10 seconds and reheated through the same procedure for nine more times, always using the same piece of Blu-Tack. After it was subjected ten times to alternating temperatures and physical stress, it was found that it retained the same rubbery and sticky properties. Moreover, no particular odours were noted. Furthermore, as the kettle surface was highly polished, it indicated how well Blu-Tack can cling onto heated metal especially when it is not refined as are the lower parts of the aluminium composite gearbox.

The next step involved testing it on the vehicle. Any traces of oil and dirt from the suspected part that was leaking - where the engine component met the transmission unit - were thoroughly wiped off. A reasonable piece of Blu-Tack was worked into a long cylindrical strip and pressed firmly using the fingers onto the trouble area so as to form a flat strip approximately 1cm wide thus covering completely the defective rubber seal as illustrated in the photo (Figure 1).

V. RESULTS

Ten months passed since when the putty strap was applied and more than 3,000km of road testing were covered. The putty remained intact and no oil smears were found. This was further confirmed by gently wiping the Blu-Tack strap with a piece of clean, absorbent paper.

Concurrently, another test on a much older car with a mileage history exceeding 100,000 km was carried out. The

source of the leak was again the gearbox. However, the rate or volume of fluid loss was more substantial - one transmission oil drop per week - and this car's gaskets were made of cardboard. The same procedure was applied: wiped thoroughly clean, applied 1cm wide strip of Blu-Tack and left ten months pass by. The result was that Blu-Tack was again an effective, exterior stop leak.

VI. DISCUSSION AND CONCLUSION

The advantages of using Blu-Tack for sealing transmission fluid leaks are several. It is inexpensive, widely available and very easy to use (no tools are required). No hazardous records were reported with the normal use of Blu-Tack (Bostik Limited, 2013). According to this experiment, it also remained stable under mechanical running temperatures. Moreover, being only applied externally, it did not affect the car's warranty and unlike certain chemical stop leaks it posed no risks of any internal clogging and deterioration. A drawback with Blu-Tack is that it is sensitive to pressure and this would limit its use as a universal stop leak.

Although this is a small observational study, it provides a starting platform for further scientific experiments on the use of Blu-Tack as a possible transmission oil stop leak. One should also take this experiment to extreme conditions by exposing the gearbox to overheating temperatures exceeding 120°C. Further investigation on whether this synthetic rubbery compound can stop engine oil leaks is also recommended.

CONFLICTS OF INTEREST

The author has no competing interests to declare. The study was not industry-funded; a registered brand name was used throughout the text because its chemical formula is not freely known.

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AUTHORS

First Author – Charles Micallef B.Pharm (Hons), M.Sc (PAPH), Ministry of Health, Merchants Street, Valletta VLT 1171, Malta.
2. SportMalta, Cottoner Avenue, Cospicua BML 9020, Malta.

Email: carmel.micallef@gov.mt , miccha@onvol.net .

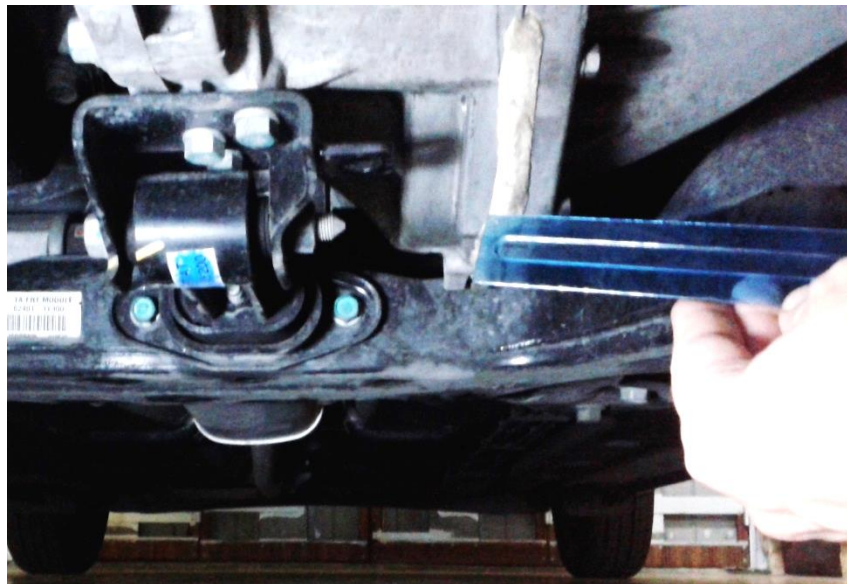


Figure 1: A strip of white Blu-Tack[®], 1 cm wide, attached onto a manual gearbox to stop transmission oil leak.