VOLKSWAGEN DO BRASIL S.A.
RESEARCH AND DEVELOPMENT
CENTRAL LAB REPORT

R1. Nr. 263 065

Date 09/29/95

P/N/KIT/MAT NR.

DESCRIPTION Friction Coeficient Analysis

SUPPLIER QTY..

PRESCRIPTION

BAUMUSTER YES NO X
BEA 458 00
MOD:
REQUESTED BY: Water Refrigerated Engines and Axle Manufacture
CODE CI- 08/29/95

I. Two oil samples were received from the requesting party, according to the references below, requesting to perform an analysis on the friction coefficient, trhough the OPTIMIL.SRV device.

1st sample: Fuse oil, with medium tolerance (LU-2) Material nr. 217 0038.6
2nd sample: the same oil as above, where an additive was incorporated, named "MILITEC"

II. In the comparative analysis of the samples received, we observed that the oil with MILITEC showed a less noisy behavior during testing, and had a stable course throughout; maximum friction coefficient was 0.18μ: on the other hand, the other oil without aditives had a much noisier behavior, and after 30 minutes of testing, there was a clear rupture of the lubricants film, with an increase in the friction coefficient (0.285μ).

In summary, it can be noted that in a comparative tryout, the material with the additive showed a superior behavior with respect to the material without it.

III. See attached sheet.

ATTACHMENTS: Graphs with Friction Coefficient and EIV

COMPOSITION: I-Objective and Sample Description II-Conclusion and/or result discussion III-Tryouts and results

Distributor:	Responsible Lab	Extension	CPI
Manufatura Manuf. Motores Refr. a Agua	Mat Non-metalics	3265	1233
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Labor. Comb. e Lubrif	M. Maniya		
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Tryout performed on OPTIMOL SRV device

1.1 Tryout conditions
Load: 5 minutes at 100 N and 55 minutes at 200 N
Amplitude: 1000 µm
Frequency: 50 Hz
Temperature: 50°C (122°F)
Tryout duration: 1 hour

1.2 Friction Coefficient µ

it is: Sample 1: oil with additive MILITEC: 0.18 µ (see graph)
Sample 2: oil without MILITEC: 0.28 µ (see graph)

2. Infra-red spectrum

it is: see graph

GRAPH

20AUG95

THIS FRICTION TEST WAS DONE BY VW BRAZIL. BOTTOM LINE IS MILITEC. TOP LINE IS THEIR BEST OIL. AS YOU CAN SEE THEY HAD A CATASTROPHIC FAILURE AS WELL AS GENERALLY HIGHER & RISING COEFFICIENT OF FRICTION. IT WAS A 60 MINUTE DURATION.