



## REPORT

CUSTOMER'S REF NO.:  
ALS THAILAND REF NO.: ATT/ELP/14/4395-G  
OUR REF NO.: ATS/ELT/0278/15  
DATE: 01 April 2015  
COMPANY: NMB-Minebea Thai Ltd.  
1 Moo 7, Phaholyothin Road, Km.51 Tambon Chiang Rak Noi,  
Amphur Bang Pa in Ayutthaya Province 13180, Thailand

DATE SAMPLE RECEIVED: 19 March 2015  
DATE ANALYZED: 25 March 2015  
DATE TEST COMPLETED: 30 March 2015

SAMPLE DESCRIPTION: One lot of sample was received with references:  
Description: MBA Lightning Bug3D (ww#32) date code 4325  
Serial no.: 1YNZY, 1YL14 Lot QA: LN2A520007  
Model: Lightning Bug 3D  
Surface Area: Hub: 9.25 cm<sup>2</sup> , Base: 115.49 cm<sup>2</sup>

### METHOD/PROCEDURE:

Analysis	Procedure No	Sample Size	Extraction Medium	Extraction Vol (ml)
GCMS Extractable	D0000180658 Rev.K	1 piece	n-Hexane (HPLC grade)	Motor Hub 10 mL, Motor Base 60 mL

### RESULTS :

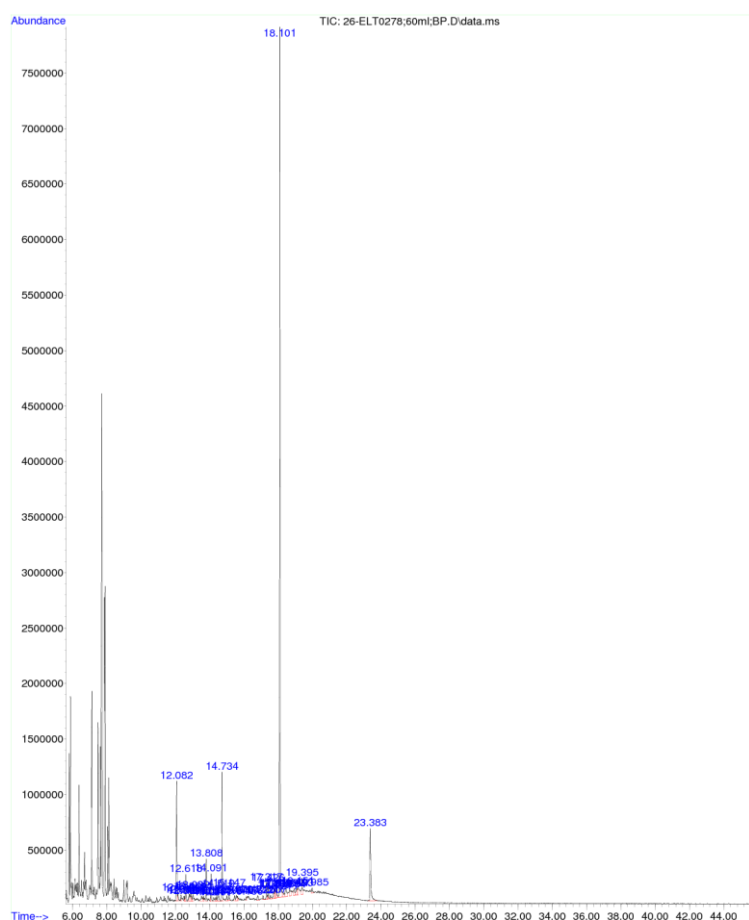
The Specification is based on Seagate's Doc 20800010-160 Rev.BE for Spindle Motor / Motor Base Assembly (2.5")

Motor Oil Contamination	Maximum Allowable Amount (ng/cm <sup>2</sup> )	Results (ng/cm <sup>2</sup> )
Motor Oil - Base	0.6	0.14
Motor Oil - Hub	10	Not Detected
Motor Hub	Maximum Allowable Amount (ng/part)	Results (ng/part)
Repeated Hydrocarbon (C20-C40 Alkanes)	NA	Not Detected
	Maximum Allowable Amount (ng/cm <sup>2</sup> )	Results (ng/cm <sup>2</sup> )
Total Organic Compound (TOC)	50	14.97
Compounds with RT ≤ DOP	NA	14.97
Compounds with RT > DOP	NA	0.00
Motor Base	Maximum Allowable Amount (ng/part)	Results (ng/part)
Repeated Hydrocarbon (C20-C40 Alkanes)	NA	Not Detected
	Maximum Allowable Amount (ng/cm <sup>2</sup> )	Results (ng/cm <sup>2</sup> )
Total Organic Compound (TOC)	50	19.58
Compounds with RT ≤ DOP	NA	11.62
Compounds with RT > DOP	NA	7.96



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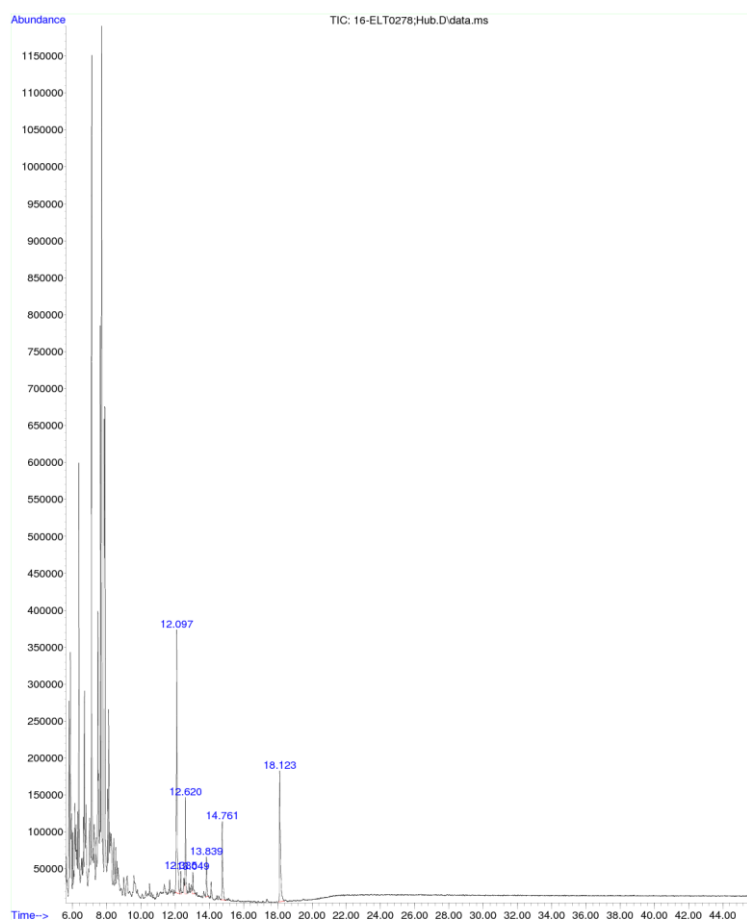
File :C:\msdchem\1\data\01msfile\GCMS S\ELT0269,73,74,77,78\26-ELT  
... 0278;60ml;BP.D  
Operator : YL-ALS(S)  
Instrument : ATS-EL-0920  
Acquired : 25 Mar 2015 7:55 using AcqMethod SEAGATE-MOTOR.M  
Sample Name: ELT0278;NMB;60ml;BP  
Misc Info :





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File : C:\msdchem\1\data\01msfile\GCMS S\ELT0269,73,74,77,78\16-ELT  
... 0278;Hub.D  
Operator : YL-ALS(S)  
Instrument : ATS-EL-0920  
Acquired : 25 Mar 2015 00:08 using AcqMethod SEAGATE-MOTOR.M  
Sample Name: ELT0278;NMB;10ml;Hub  
Misc Info :



Note: This report was performed test by ALS Singapore.  
Remark: Minimum Detection Limit is 0.954 ng/part.  
Minimum RHC Detection Limit of Base is 0.008ng/cm2  
Minimum RHC Detection Limit of Hub is 0.103ng/cm2

ALS Testing Services  
(Thailand) Co.,Ltd.

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Warunee Maneesuwan  
M.Sc, B.Sc, Laboratory Manager