



ALS Testing Services (Thailand) Co.,Ltd.
34/13 Moo 15, Klong Song Sub-district,
Klong Luang District, Pathumthani 12120
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Page 1 of 2

TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3187-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 1 Cavity 1

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm2)	Results, (ug/cm2)
Silicone	< 20.0	Not Detected
Hydrocarbon	NA	0.018
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

1. The result related only to the tested sample(s) as indicated in this report.
2. The test report shall not be reproduced except in full, without written approval of ALS Testing Services (Thailand) Co., Ltd.

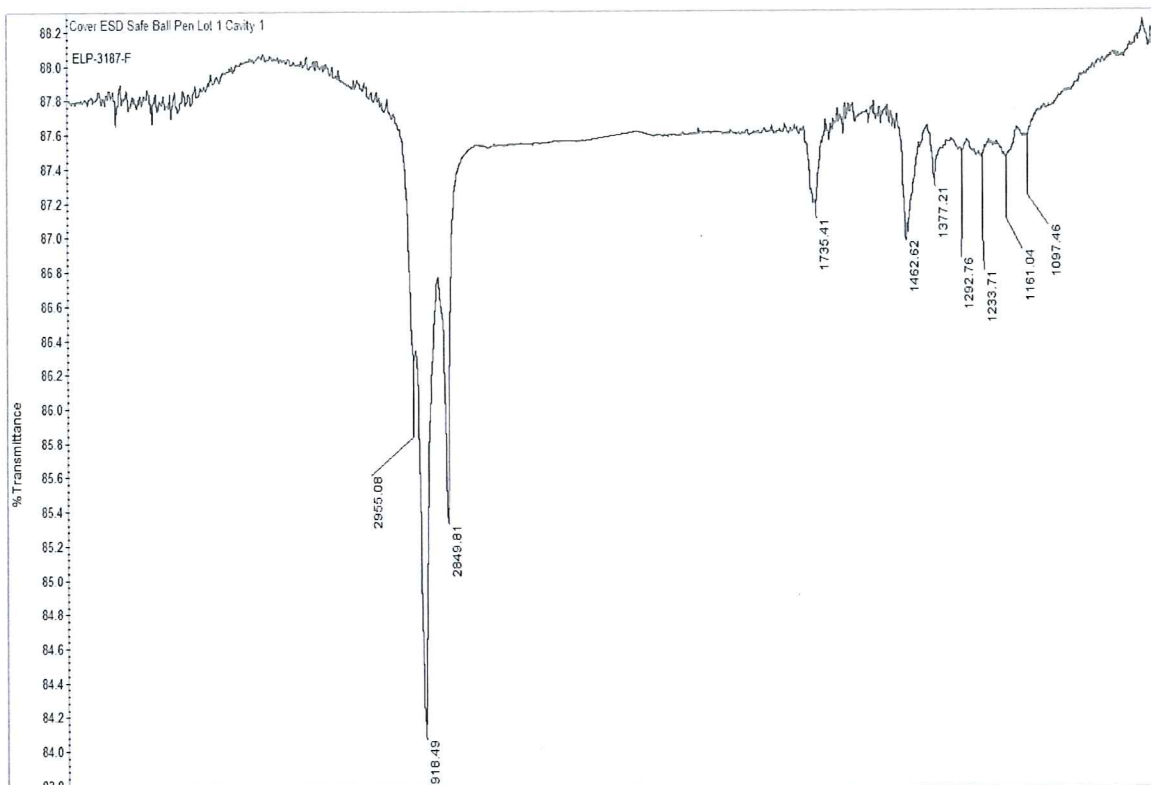
ALS Testing Services (Thailand) Co.,Ltd



(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature

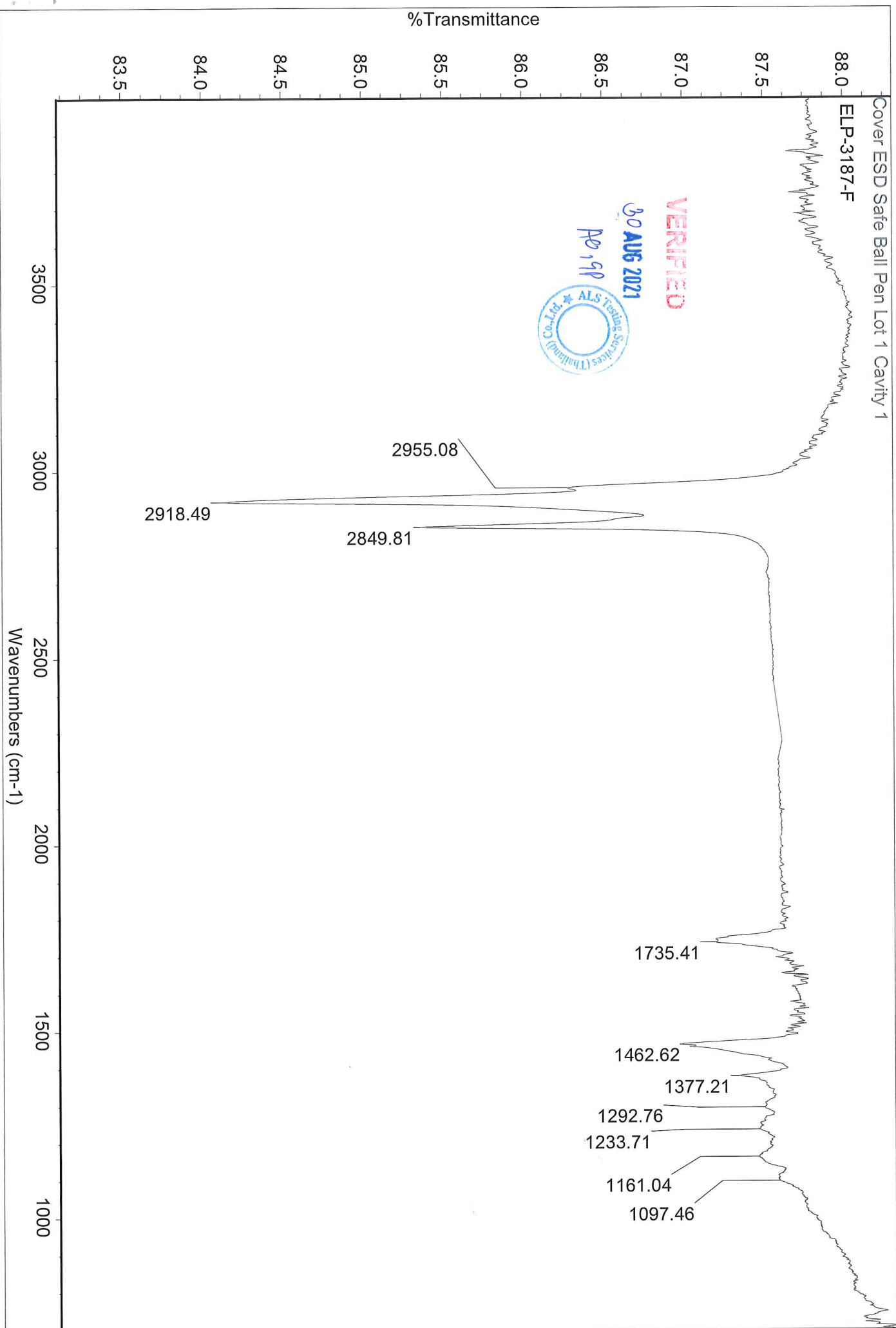


ALS Thailand (Pathumthani)



- END OF REPORT -







TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3188-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 1 Cavity 2

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

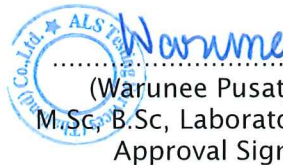
Organic Contamination	Specification Limits, (ug/cm ²)	Results, (ug/cm ²)
Silicone	< 20.0	0.0004
Hydrocarbon	NA	0.0195
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

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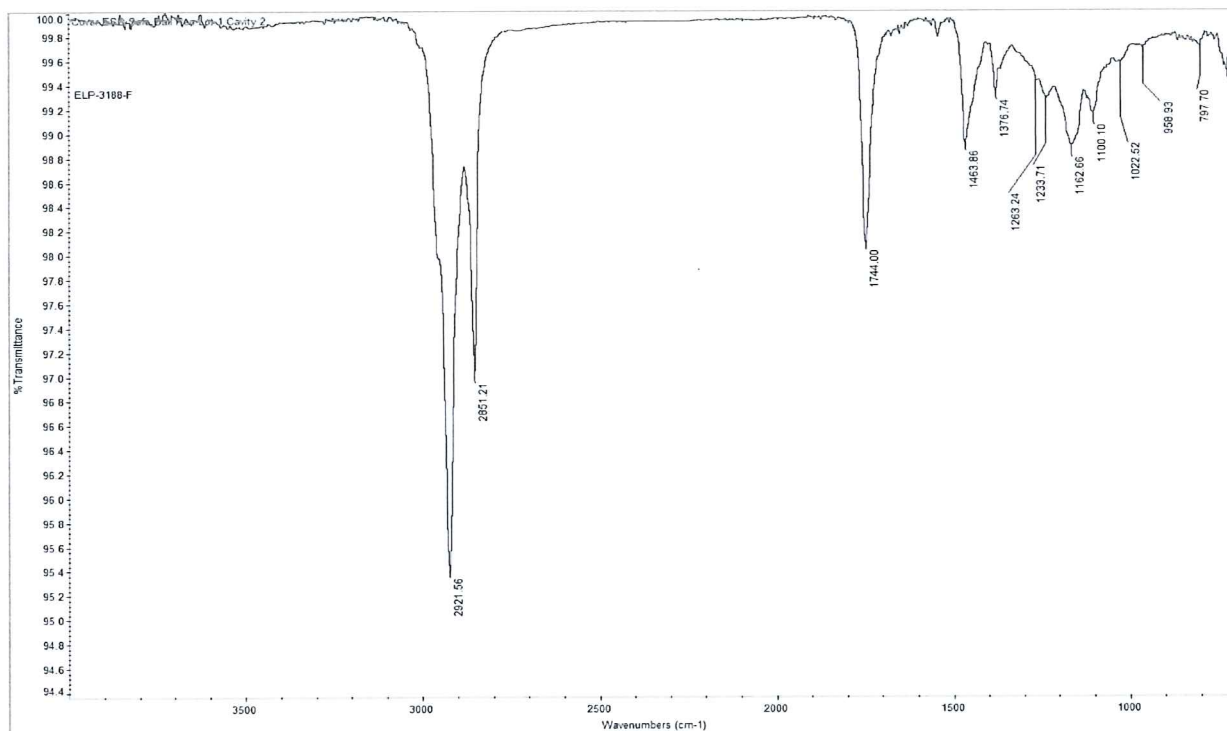

(Warunee Pusatjapong)
M.Sc-B.Sc, Laboratory Manager
Approval Signature



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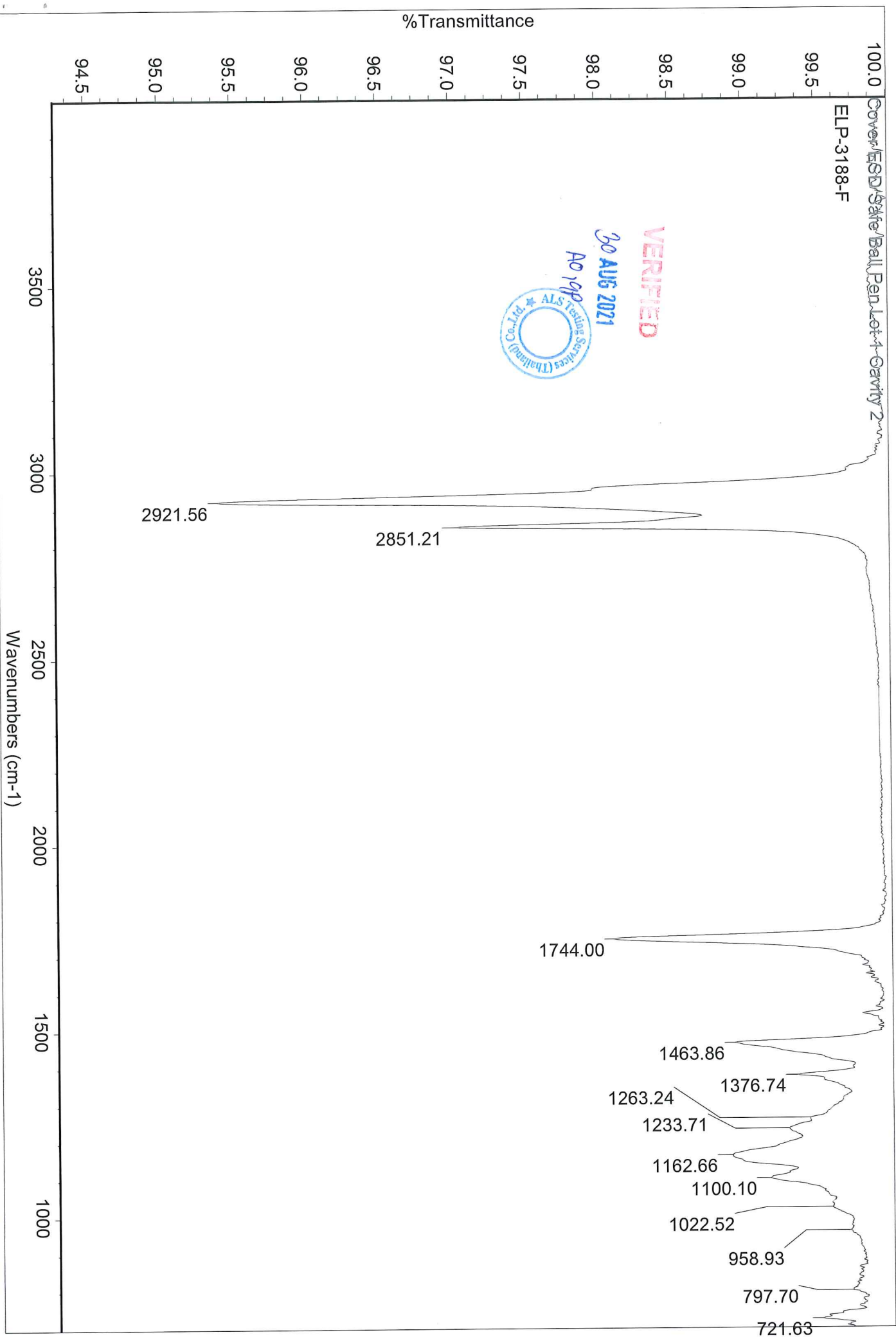
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TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3189-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 1 Cavity 3

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm2)	Results, (ug/cm2)
Silicone	< 20.0	Not Detected
Hydrocarbon	NA	0.0163
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

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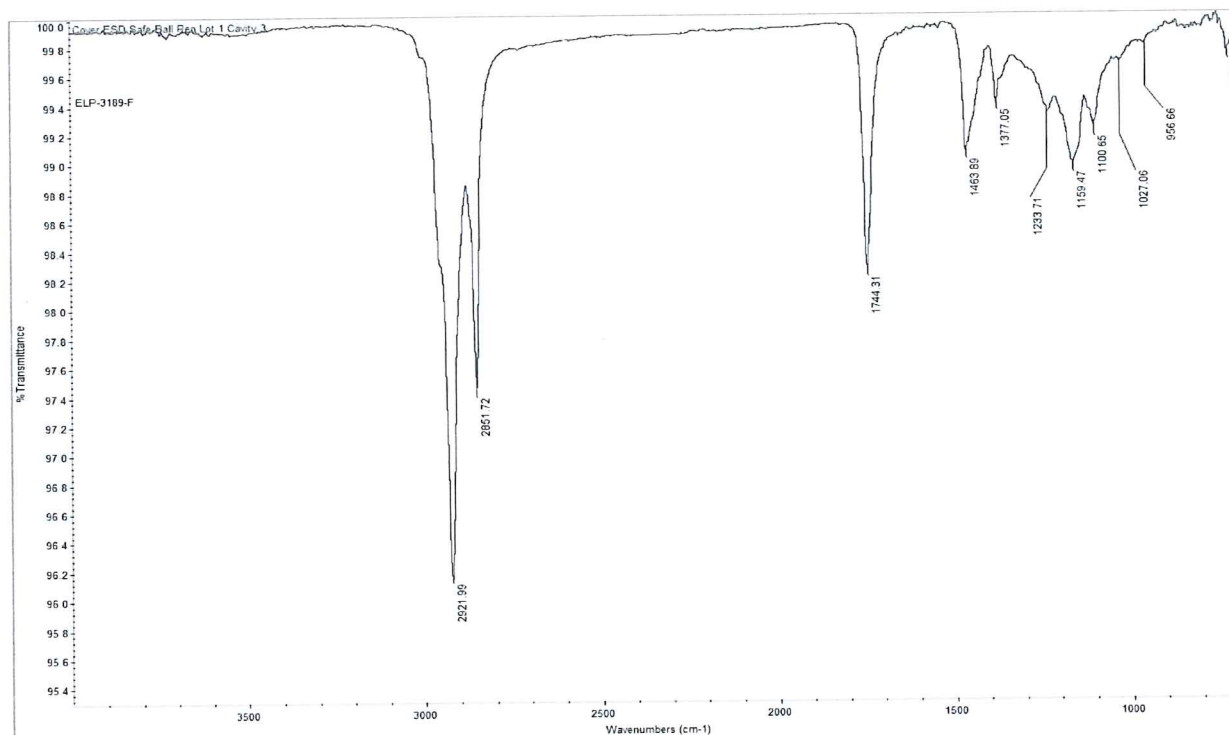
(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature



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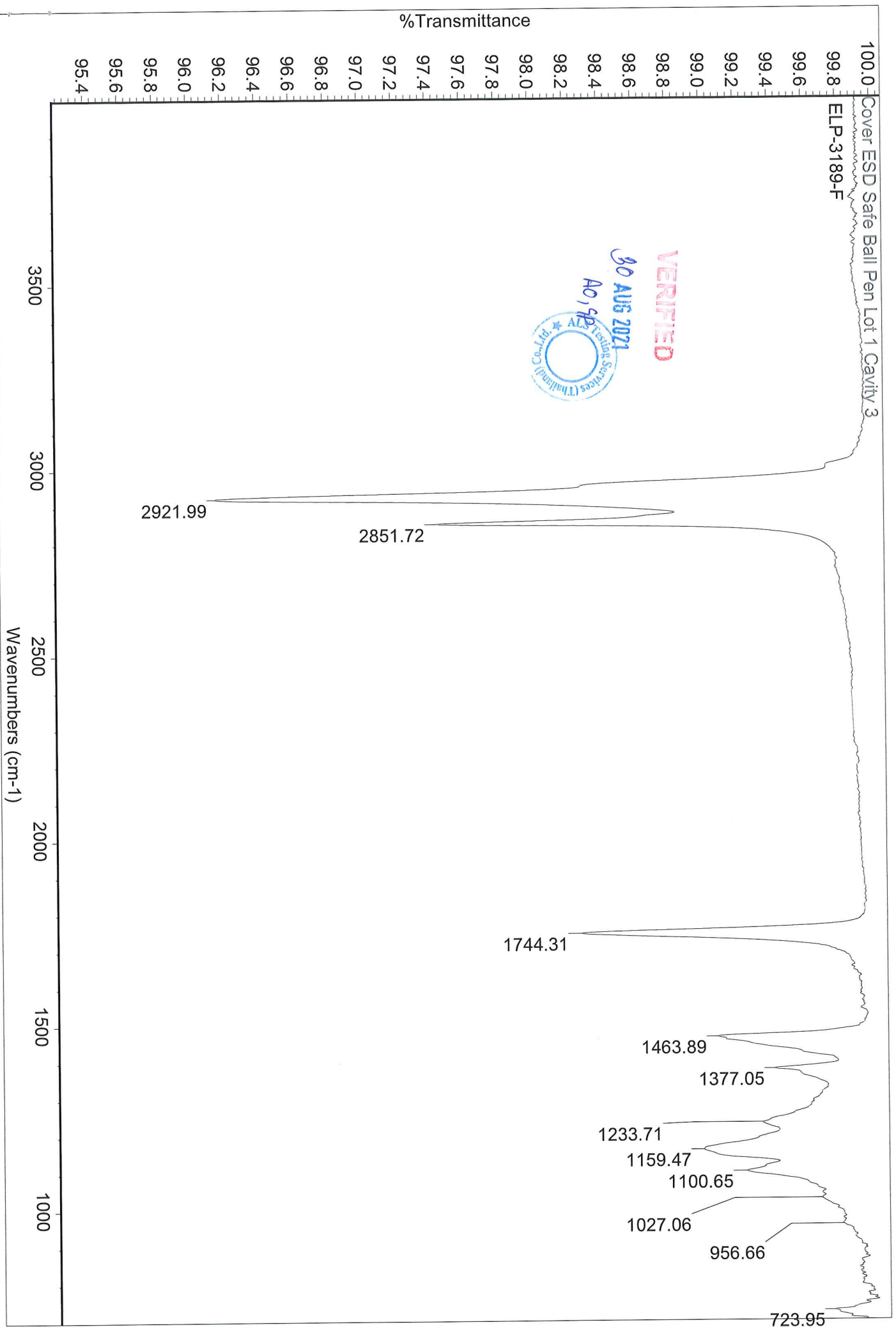
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TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3190-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 1 Cavity 4

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm ²)	Results, (ug/cm ²)
Silicone	< 20.0	0.0004
Hydrocarbon	NA	0.0021
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

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(Warunee Pusatjapong)

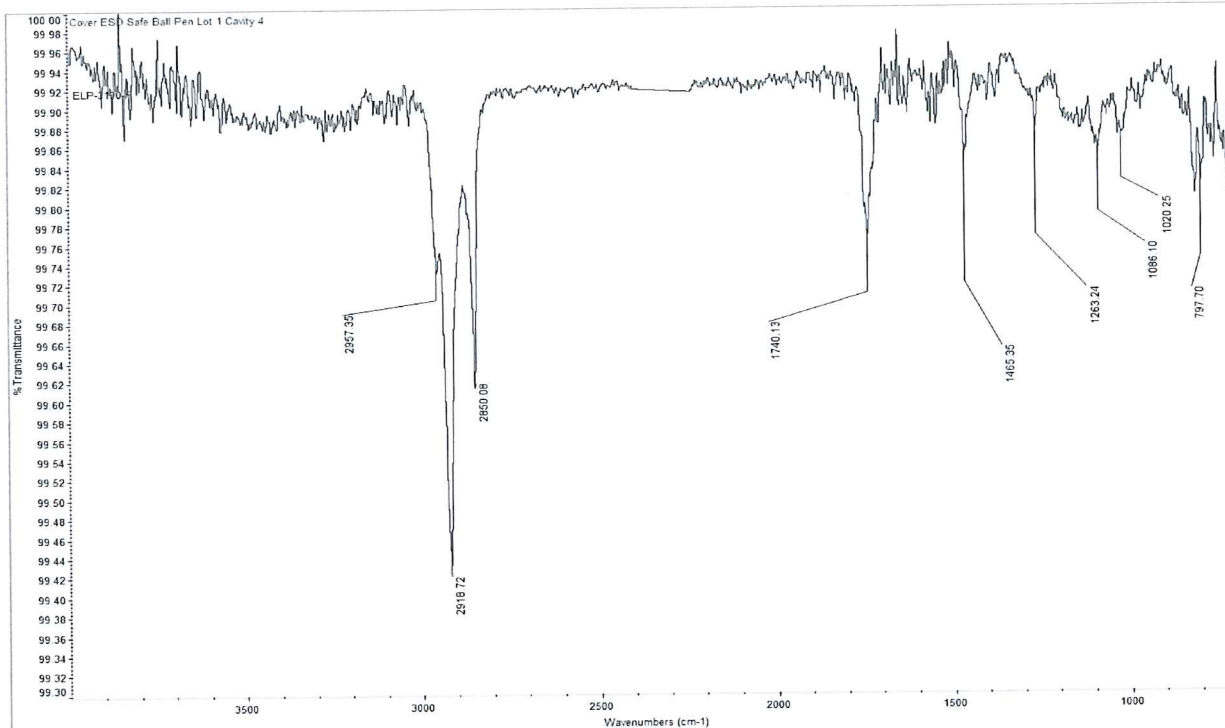
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Approval Signature



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100.00 Cover ESD Safe Ball Pen Lot 1 Cavity 4

FLP-3190-F

VERIFIED

36 AUG 2021

AO 14P



2957.35

2850.08

2918.72

1740.13

1465.35

1263.24

1086.10

1020.25

797.70

% Transmittance

99.30

99.35

99.40

99.45

99.50

99.55

99.60

99.65

99.70

99.75

99.80

99.85

99.90

99.95

3500

3000

2500

2000

1500

1000

Wavenumbers (cm⁻¹)



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CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3191-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 2 Cavity 1

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm2)	Results, (ug/cm2)
Silicone	< 20.0	0.0003
Hydrocarbon	NA	0.0057
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

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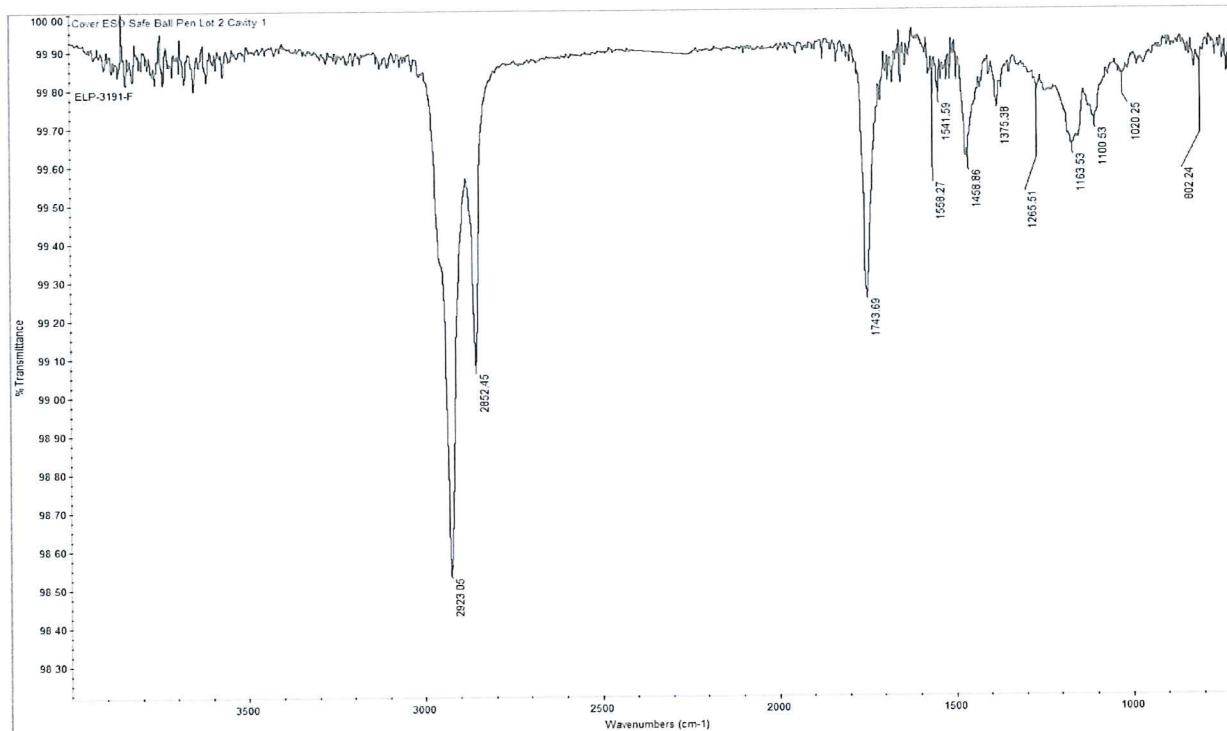

.....
(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature



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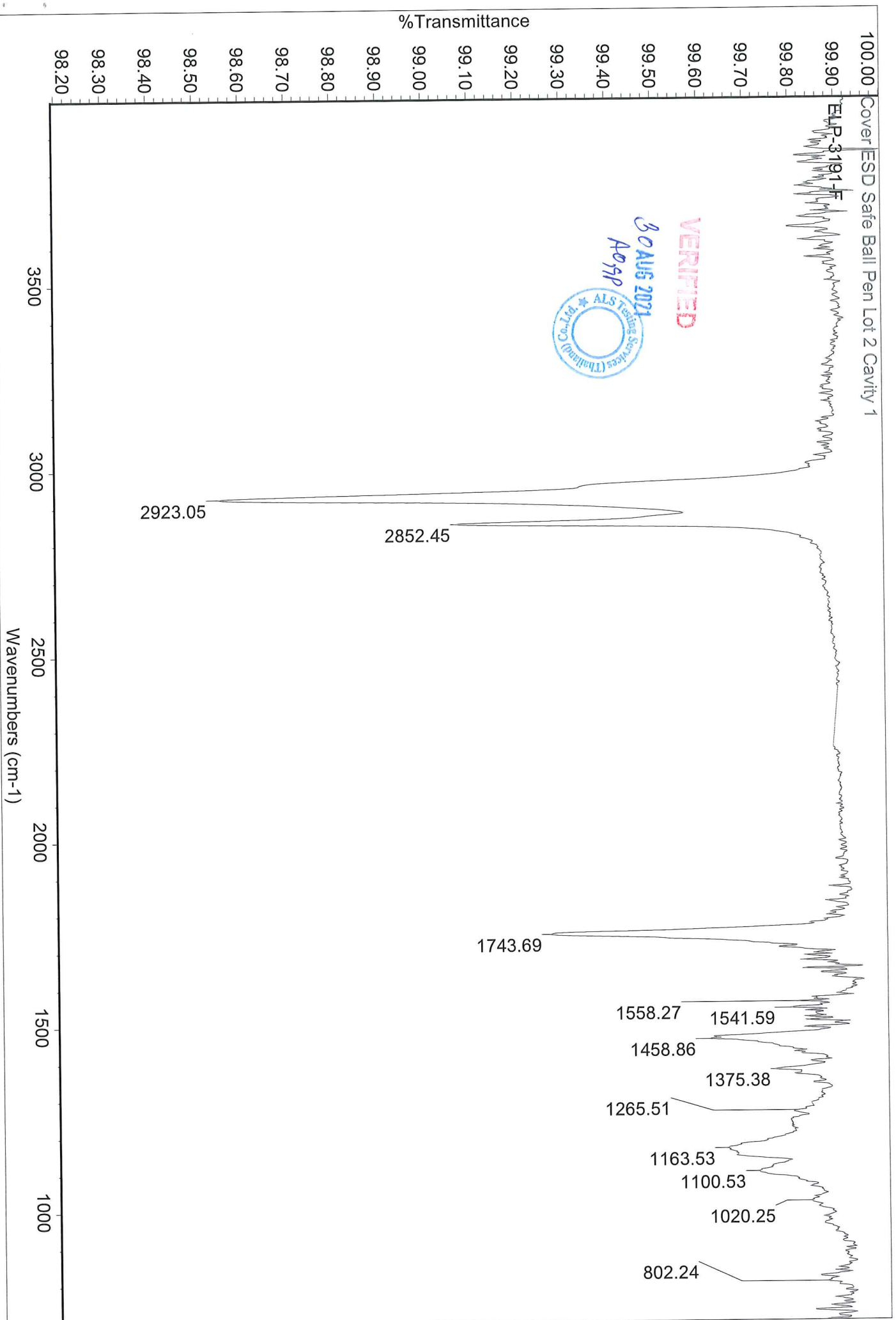
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TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3192-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 2 Cavity 2

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm ²)	Results, (ug/cm ²)
Silicone	< 20.0	0.0005
Hydrocarbon	NA	0.0030
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

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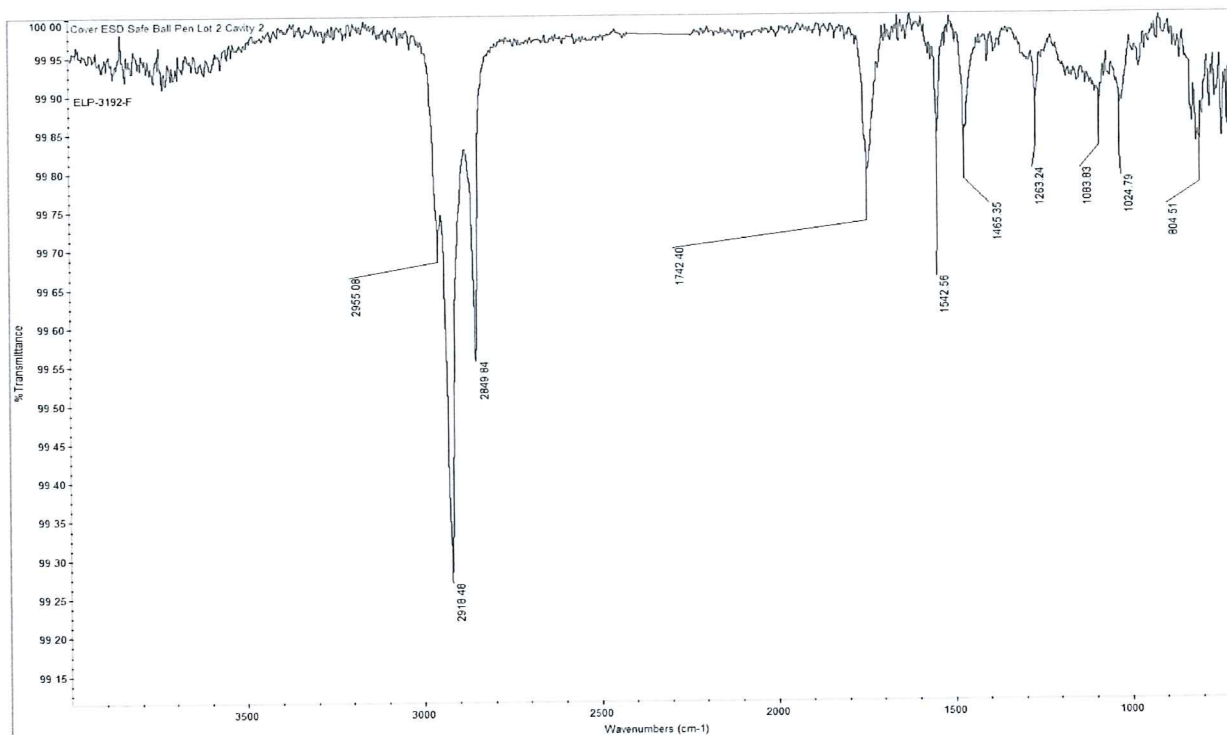
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(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature

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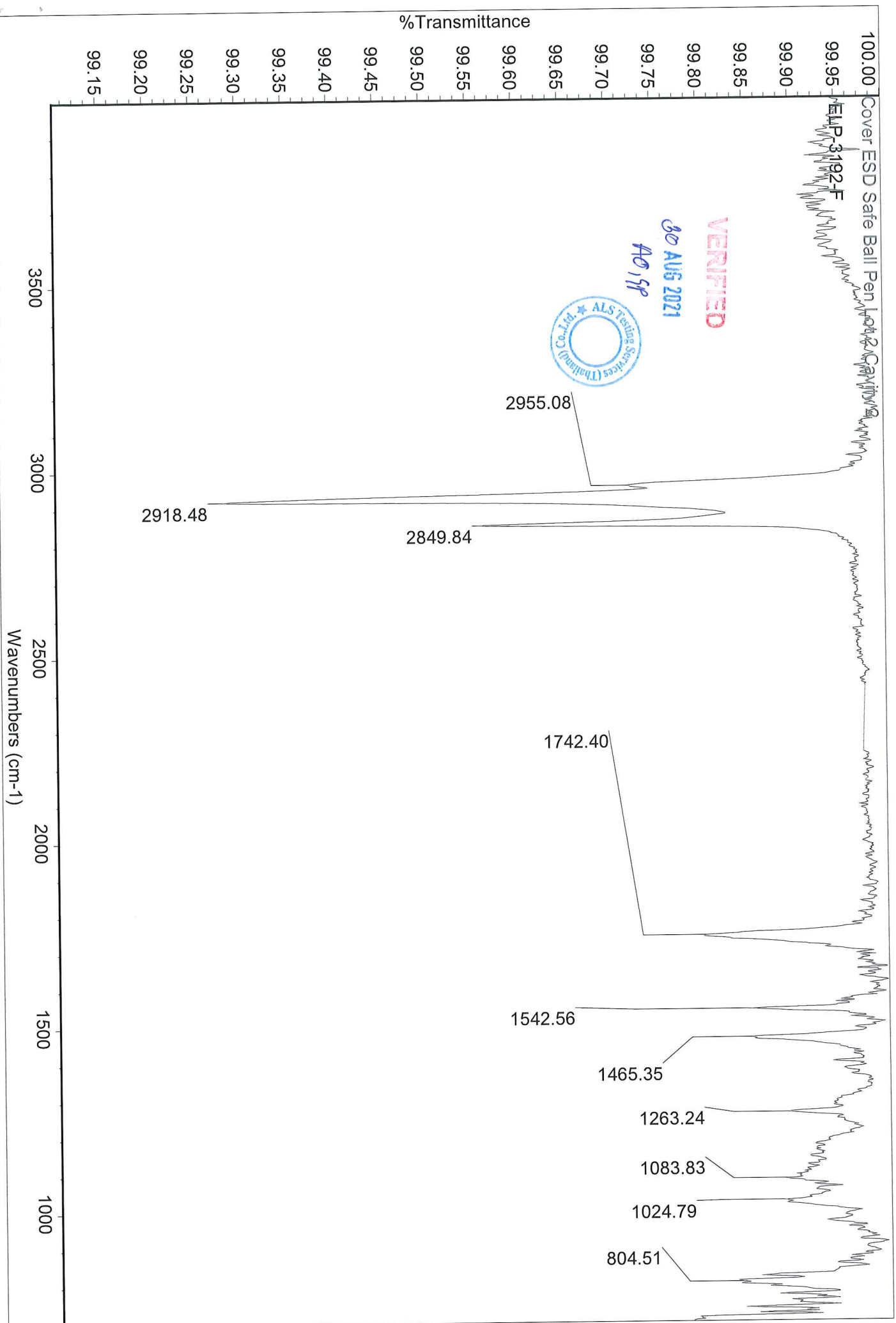


ALS Thailand (Pathumthani)



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TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3193-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 2 Cavity 3

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm ²)	Results, (ug/cm ²)
Silicone	< 20.0	0.0003
Hydrocarbon	NA	0.0013
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

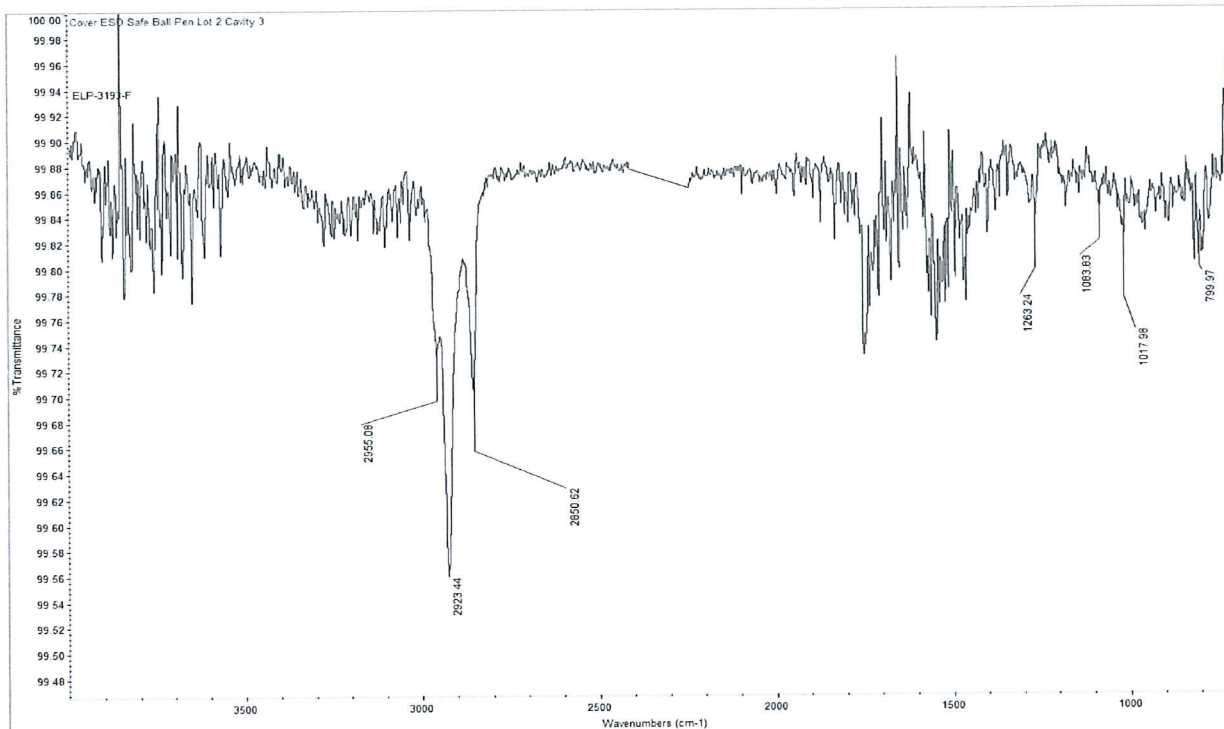
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(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature



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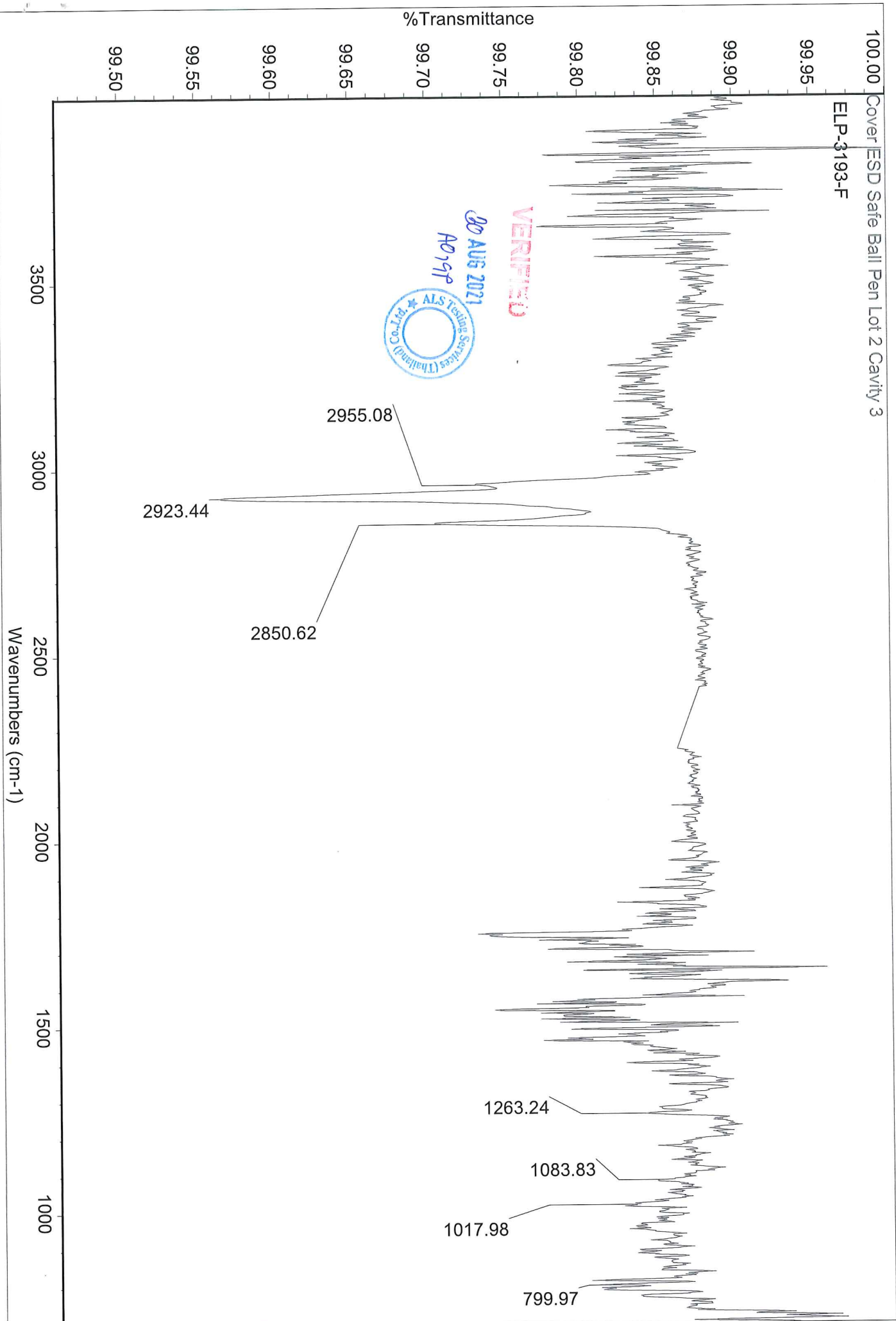


- END OF REPORT



Cover ESD Safe Ball Pen Lot 2 Cavity 3

ELP-3193-F





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TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3194-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 2 Cavity 4

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm2)	Results, (ug/cm2)
Silicone	< 20.0	0.0004
Hydrocarbon	NA	0.0031
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

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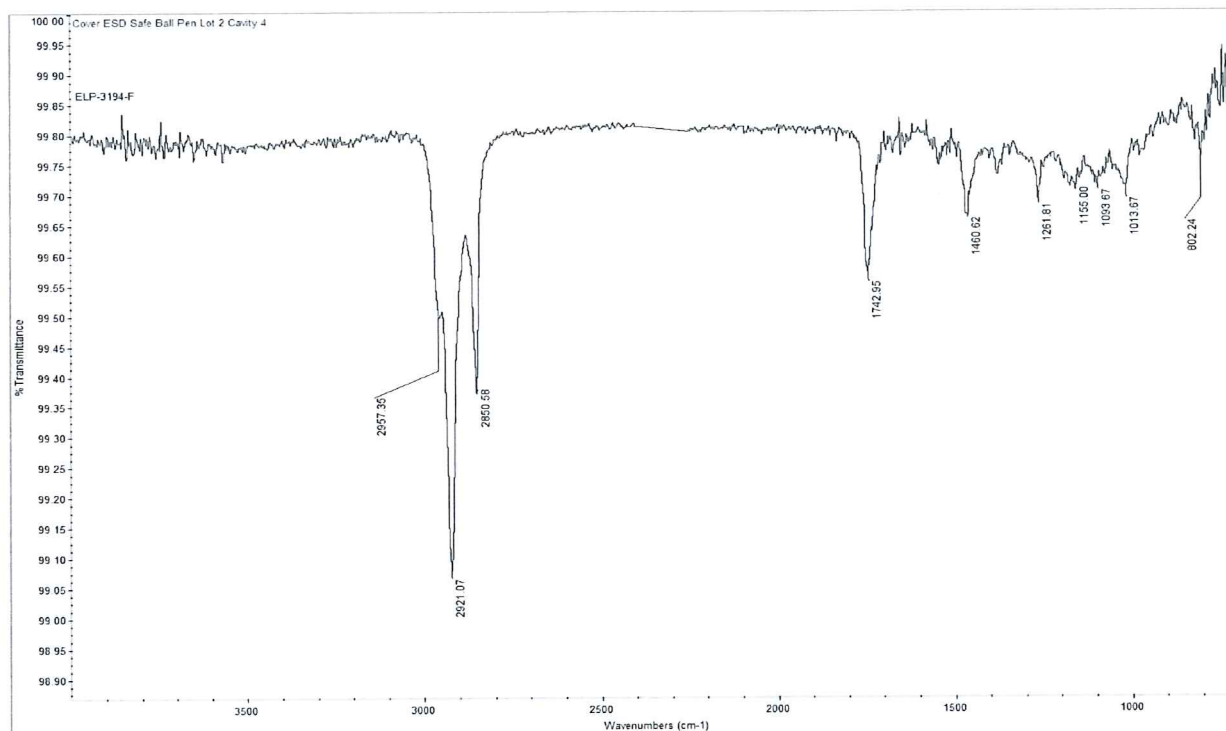
(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature



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ALS Thailand (Pathumthani)



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Cover ESD Safe Ball Pen Lot 2 Cavity 4
ELP-3194-F

%Transmittance

100.00
99.90
99.80
99.70
99.60
99.50
99.40
99.30
99.20
99.10
99.00
98.90

VERIFIED

30 AUG 2021

AD 14P



2957.35
2921.07
2850.58

1742.95

1460.62

1261.81

1155.00

1093.67

1013.67

802.24

Wavenumbers (cm⁻¹)

3500
3000
2500
2000
1500
1000



TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3195-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 3 Cavity 1

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

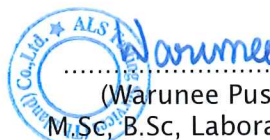
Organic Contamination	Specification Limits, (ug/cm2)	Results, (ug/cm2)
Silicone	< 20.0	0.0004
Hydrocarbon	NA	0.0133
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

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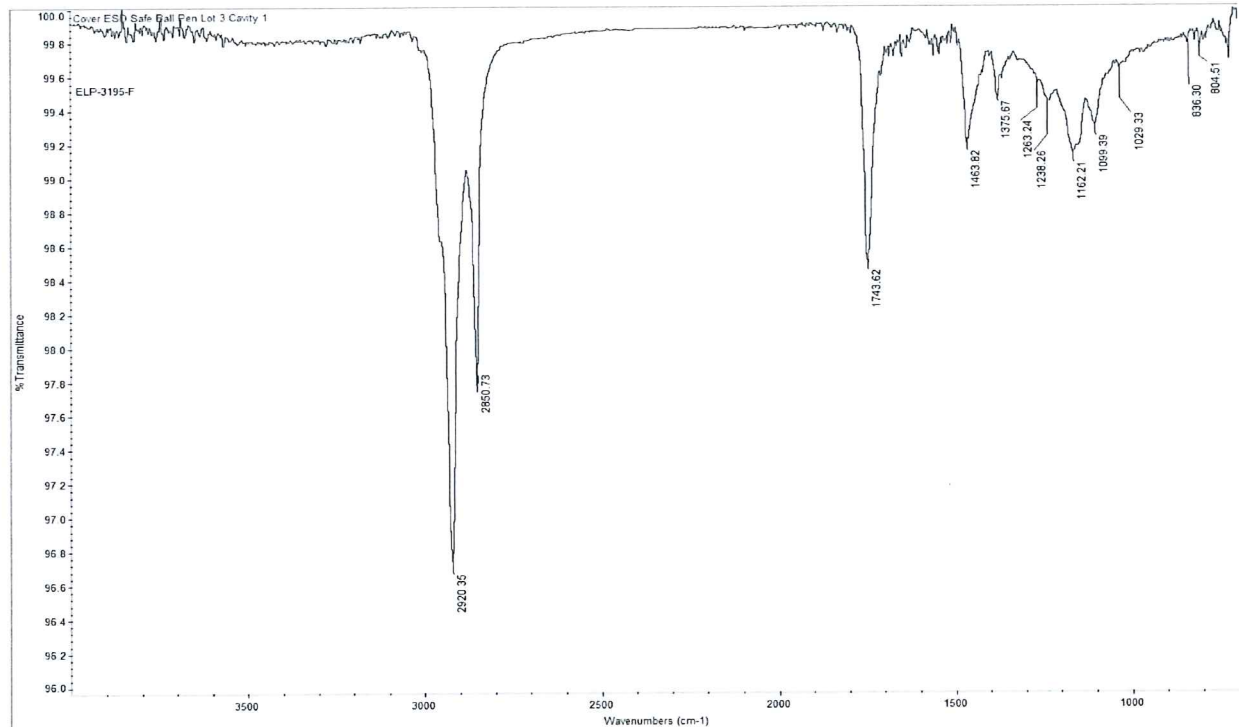

(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature



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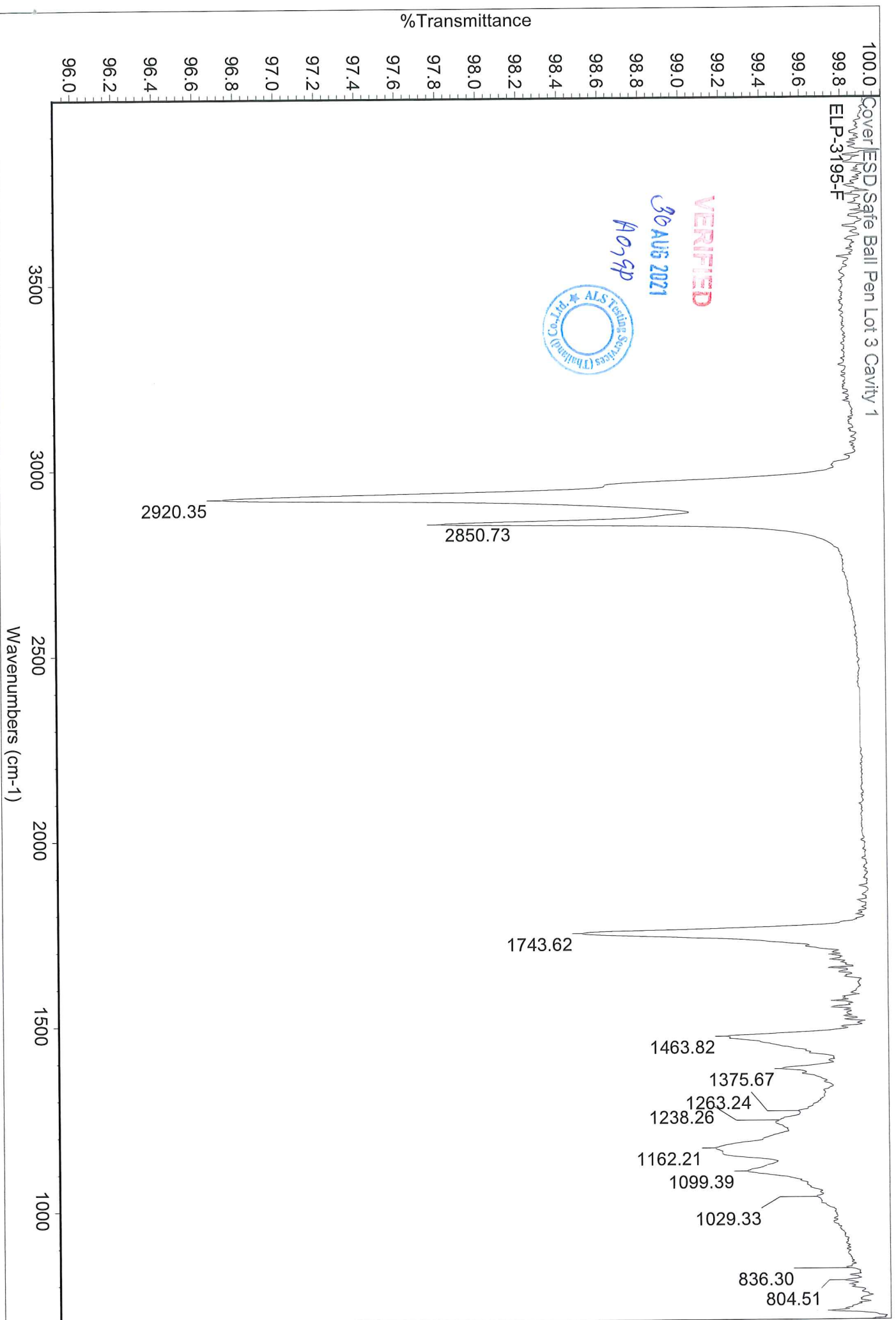
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CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3196-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 3 Cavity 2

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm2)	Results, (ug/cm2)
Silicone	< 20.0	0.0001
Hydrocarbon	NA	0.0016
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

1. The result related only to the tested sample(s) as indicated in this report.
2. The test report shall not be reproduced except in full, without written approval of ALS Testing Services (Thailand) Co., Ltd.

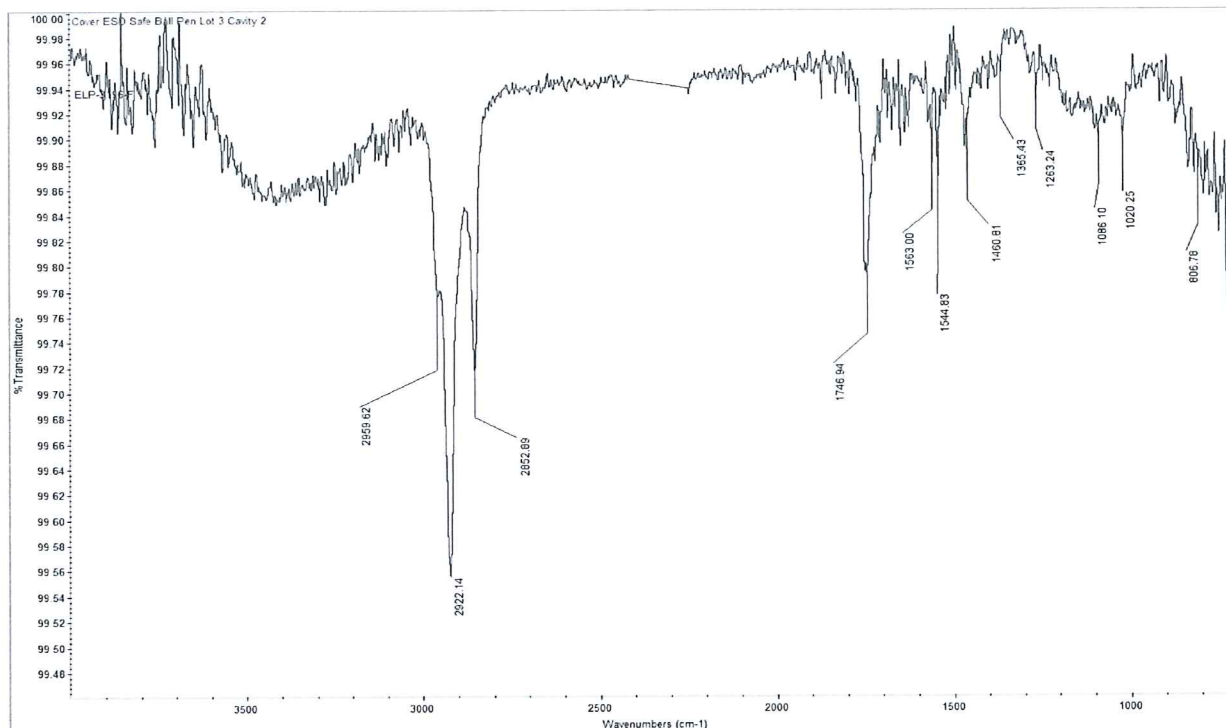
ALS Testing Services (Thailand) Co.,Ltd



(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature



ALS Thailand (Pathumthani)

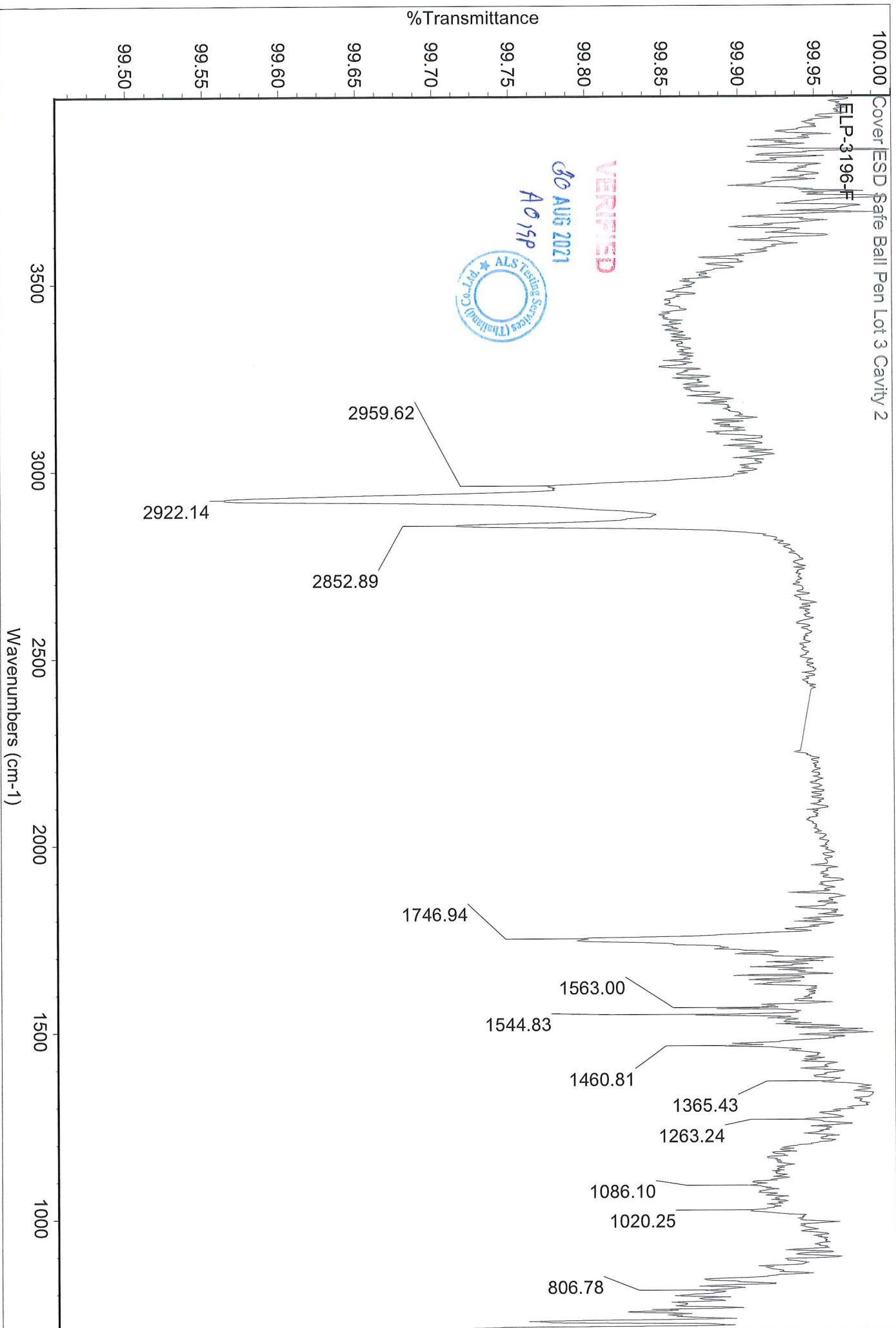


- END OF REPORT -



Cover ESD Safe Ball Pen Lot 3 Cavity 2

ELP-3196-F





ALS Testing Services (Thailand) Co.,Ltd.
34/13 Moo 15, Klong Song Sub-district,
Klong Luang District, Pathumthani 12120
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Page 1 of 2

TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3197-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 3 Cavity 3

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm2)	Results, (ug/cm2)
Silicone	< 20.0	0.0003
Hydrocarbon	NA	0.0018
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

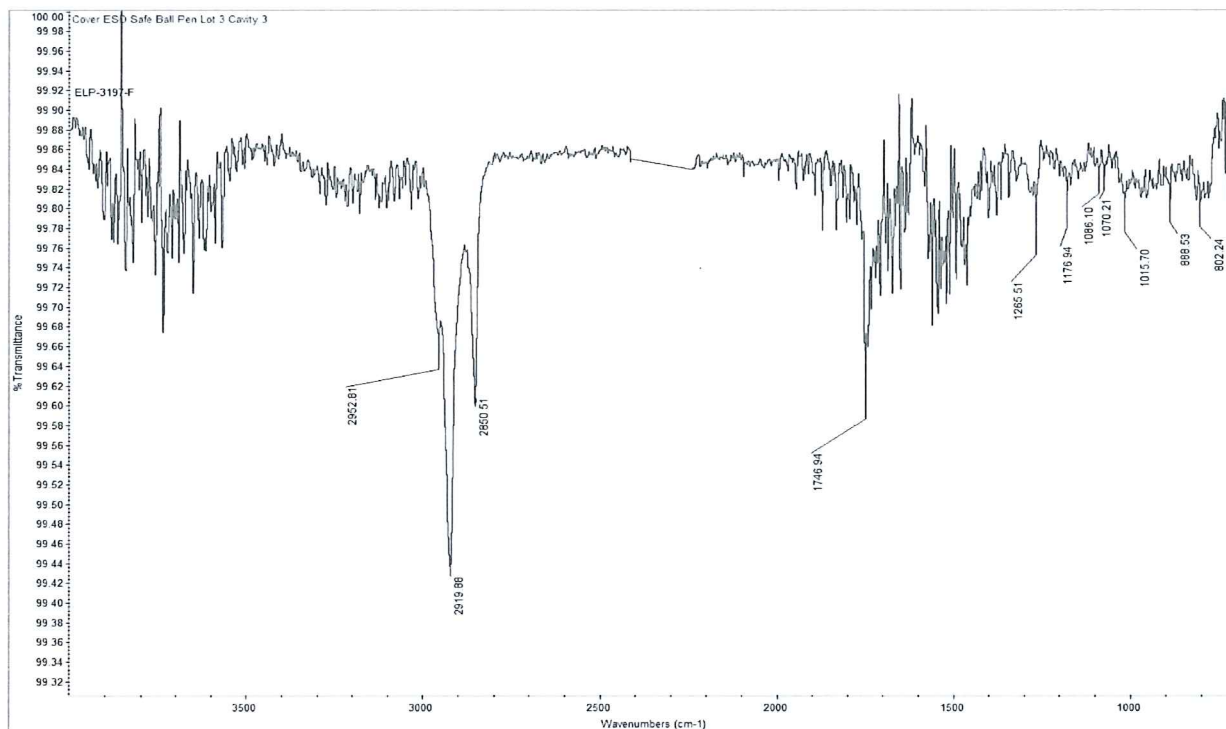
1. The result related only to the tested sample(s) as indicated in this report.
2. The test report shall not be reproduced except in full, without written approval of ALS Testing Services (Thailand) Co., Ltd.

ALS Testing Services (Thailand) Co.,Ltd


(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature

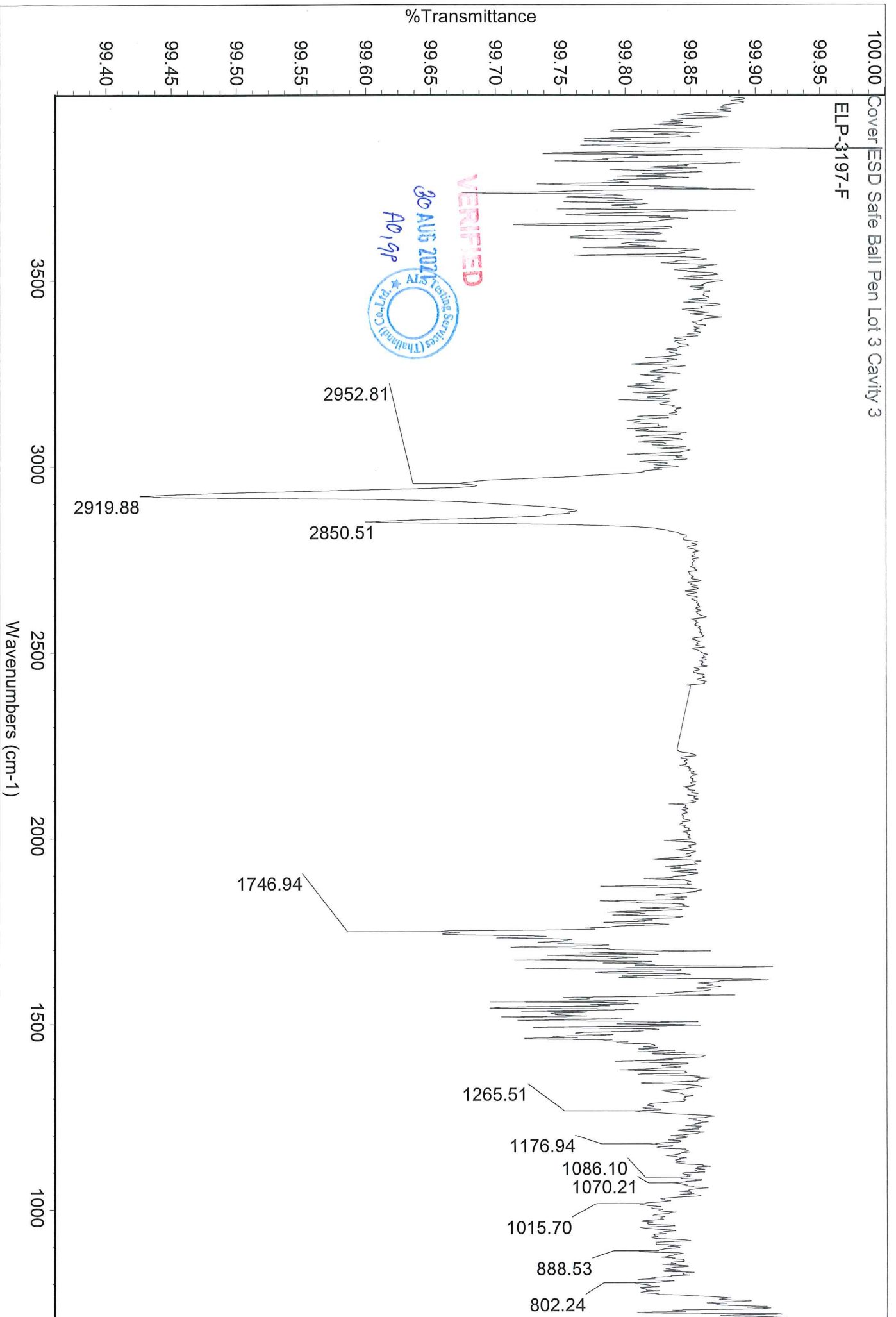


ALS Thailand (Pathumthani)



- END OF REPORT -







TEST REPORT

CUSTOMER PO NO.:
ALS THAILAND REF NO.: ATT/ELP/21/3198-F
DATE: 30 August 2021
COMPANY: Material Expertise Co., Ltd.
50 Moo.1 T.Klong pra udom A.Latlumkaew Pathumthani 12140
DATE SAMPLE RECEIVED: 23 August 2021
DATE ANALYZED: 26 August 2021
DATE TEST COMPLETED: 30 August 2021
SAMPLE DESCRIPTION: One lot of sample was received with references:
Description: Cover ESD Safe Ball Pen Lot 3 Cavity 4

METHOD/PROCEDURE:

Analysis	Procedure No	Number of pieces used for extraction	Extraction Medium	Extraction Volume
FTIR	20800032-001 Rev. D, 20800014-001 Rev. H, 20800033-001 Rev. U, 35344-001 Rev. AA	Estimated surface use 32.50 cm ²	n-hexane(HPLC Grade)	20mL

Results

The Specification is based on Seagate's Doc 35344-001 Rev.AA Pen / Marker Body

Organic Contamination	Specification Limits, (ug/cm2)	Results, (ug/cm2)
Silicone	< 20.0	0.0003
Hydrocarbon	NA	0.0024
Phthalate	NA	Not Detected
Amide	NA	Not Detected

Note: The above analysis was carried out using FTIR spectrometer equipped with a MCT detector & a VATR accessory. The instrument detection limit for Silicone Oil is 0.002 ug/part

Remark:

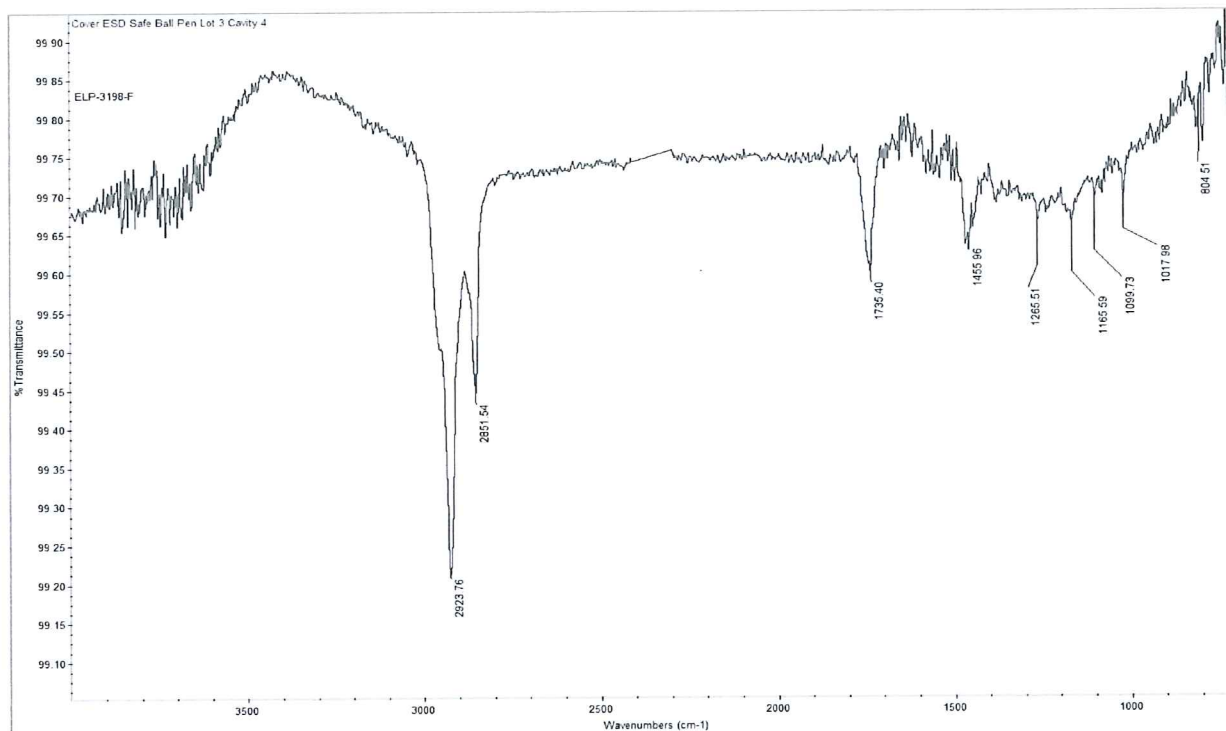
1. The result related only to the tested sample(s) as indicated in this report.
2. The test report shall not be reproduced except in full, without written approval of ALS Testing Services (Thailand) Co., Ltd.

ALS Testing Services (Thailand) Co.,Ltd

 *Warunee*
(Warunee Pusatjapong)
M.Sc, B.Sc, Laboratory Manager
Approval Signature



ALS Thailand (Pathumthani)



- END OF REPORT -



Cover ESD Safe Ball Pen Lot 3 Cavity 4
ELP-3198-F

VERIFIED

80 AUG 2021

AO 19P

