新泊地
Accurate analysis CTS

# Special Ingredient Analysis Report

Cilent Name: _____

Report Number: _____XBD-FX-_____

# The following sample information is provided and confirmed by the customer

| Sample Name | Shampoo |
|---|---|
| Test Item | Special Ingredient Analysis |
| Sample State | Liquid |
| InoculationDate | May 9, 2024 |
| Complition Date | May 29, 2024 |

Shanghai Xinbodi Materials Research Co., Ltd.

Authorized Representative Signature

## I. Sample analysis requirements

a) Full component analysis;
b) Process recommendation:
c) Raw material recommendation

## II. Analysis plan design

| Analysis Strategy | Analysis Methods |
|---|---|
| Preliminary System Assessment | FT-IR，HNMR |
| Component Identification & Quantification | FT-IR，HNMR，GCMS，MS，XRF，HS-GCMS，IC，ICP，GC-FID |

I. Component analysis results

| Component No. | Chemical Name | Content (%) | CAS No. / Common Name | Function |
|---|---|---|---|---|
| 1 | ▮▮▮▮ | ▮▮▮ | ▮▮▮ | ▮▮▮▮ |
| 2 | ▮▮▮▮ | ▮▮▮ | ▮▮▮ | ▮▮▮▮ |
| 3 | Sodium Laureth Sulfate | ~10.5-11.5 | AES | Foaming Agent |
| 4 | ▮▮▮▮ | ▮▮▮ | ▮▮ | ▮▮▮▮ |
| 5 | Cocamidopropyl Betaine | ~2.0-2.2 | BS-12 | Foaming Agent |
| 6 | Glycerin | ~1.9-2.2 | 56-81-5 | Humectant |
| 7 | Amodimethicone | ~1.7-2.0 | 9016-00-6 | Emollient |
| 8 | Laureth | ~0.2-0.4 | AEO-7 | Emulsifier |
| 9 | Guar Hydroxypropyltrimonium Chloride | ~0.2-0.5 | / | Thickener |
| 10 | Citric Acid | ~0.02-0.08 | 77-92-9 | pH Adjuster |
| 11 | Benzoic Acid | ~0.05-0.15 | 65-85-0 | Preservative |
| 12 | Calcium Chloride | ~0.05-0.10 | 7447-40-7 | Thickener |
| 13 | ▮▮▮▮ | ▮▮▮ | / | ▮▮▮▮ |
| 14 | ▮▮▮▮ | ▮▮▮ | / | ▮▮▮▮ |
| 15 | Fragrance | ~0.05-0.15 | / | Fragrance |
| 16 | Water | ~73.5-74.5 | / | Solvent |

Ingredients marked with " " are inferred through comprehensive experience of fragment information.

Number: XBD-FX ▨▨▨▨▨

IV. Basis for component analysis

| Component No. | Chemical Name | Basis for Identification | Appendix |
|---|---|---|---|
| 1 | ▨▨▨ | ▨▨ | ▨▨▨ |
| 2 | ▨▨▨ | ▨▨ | ▨▨ |
| 3 | Sodium Laureth Sulfate | NMR/MS | Figure 2-1/Figure 5-2 |
| 4 | ▨▨▨ | ▨▨ | ▨▨▨ |
| 5 | Cocamidopropyl Betaine | NMR/MS | Figure 2-1/Figure 5-1 |
| 6 | Glycerin | NMR/GCMS/GC-FID | Figure 2-1/Figure 3/Figure 7 |
| 7 | Amodimethicone | NMR/XRF | Figure 2-2/Figure 4 |
| 8 | Laureth | NMR/MS | Figure 2-1/Figure 5-1 |
| 9 | Guar Hydroxypropyltrimonium Chloride | XRF | Figure 4 |
| 10 | Citric Acid | NMR/MS | Figure 2-1/Figure 5-2 |
| 11 | Benzoic Acid | NMR/MS | Figure 2-1/Figure 5-2 |
| 12 | Calcium Chloride | IC/ICP | Figure 8/Table 1 |
| 13 | ▨▨▨ | ▨▨ | ▨▨ |
| 14 | ▨▨▨ | ▨▨ | ▨▨ |
| 15 | Fragrance | HS-GCMS | Figure 6 |

V. Key Points Description

## 1. Physicochemical Parameters

1.1 The solid content of the sample is approximately 25.95%. (Dried in an oven at 105°C for 4 hours)

1.2 The pH value of the sample diluted 100 times is approximately 4.39. (Tested by pH meter)

1.3 The ash residue of the sample is approximately 3.94%. (Muffle furnace at 600°C for 6 hours)

## 2. Process Recommendation

2.1 Step 1: Add Phase A (part of the water and Guar Hydroxypropyltrimonium Chloride) into the vacuum emulsifying tank, mix thoroughly until homogeneous, then heat to 85~90°C.

2.2 Step 2: Add Phase B (Sodium Laureth Sulfate, Sodium Tridecyl Sulfate, Laureth, and the remaining part of the water) into the vacuum emulsifying tank, mix thoroughly until homogeneous, then cool down with cooling water.

2.3 When the temperature drops below 45°C, add Phase C (Salicylic Acid, Selenium Sulfide, Cocamidopropyl Betaine, Glycerin, Amodimethicone), Phase D (Citric Acid, Benzoic Acid, Calcium Chloride), and Phase E (Eucalyptus Oil, Peppermint Essential Oil, Fragrance). Mix thoroughly until homogeneous, then discharge the product and let it stand.

## 3. Raw Material Recommendations

3.1 Recommended supplier fo⬛⬛⬛ in the sample: ⬛⬛⬛

3.2 Recommended supplier for ⬛⬛⬛ in the sample: ⬛⬛⬛.

3.3 Recommended supplier for Sodium Laureth Sulfate in the sample: ⬛⬛⬛

3.4 Recommended supplier for ⬛⬛⬛ Sulfate in the sample: ⬛⬛⬛

3.5 Recommended supplier for Cocamidopropyl Betaine in the sample: ⬛⬛⬛

3.6 Recommended supplier for Glycerin in the sample: ⬛⬛⬛

3.7 Recommended supplier for Amodimethicone in the sample: ⬛⬛⬛

3.8 Recommended product for Laureth in the sample: ⬛⬛⬛

3.9 Recommended su plier for Guar Hydroxypropyltrimonium Chloride in the sample: ⬛⬛⬛

3.10 Recommended supplier for Citric Acid in the sample ⬛⬛⬛

3.11 Recommended supplier for Benzoic Acid in the sample: ⬛⬛⬛

3.12 Recommended supplier for Potassium Chloride in the sample: ⬛⬛⬛.

3.13 Recommended supplier for ⬛⬛⬛ in the sample: ⬛⬛⬛

3.14 Recommended supplier for ⬛⬛⬛ in the sample: ⬛⬛⬛

| 3.15 Recommended supplier for Floral-type fragrances such as Jasmine and Lavender: [redacted] [redacted]. |
|---|
| 4. Description of other concerns |
| 4.1 During the sample preparation process, the content of guar gum hydroxypropyltrimonium chloride can be appropriately adjusted to achieve a suitable viscosity |

Representative spectrum:

**1、FT-IR**

Figure 1-1 is the infrared spectrum of the sample after drying.
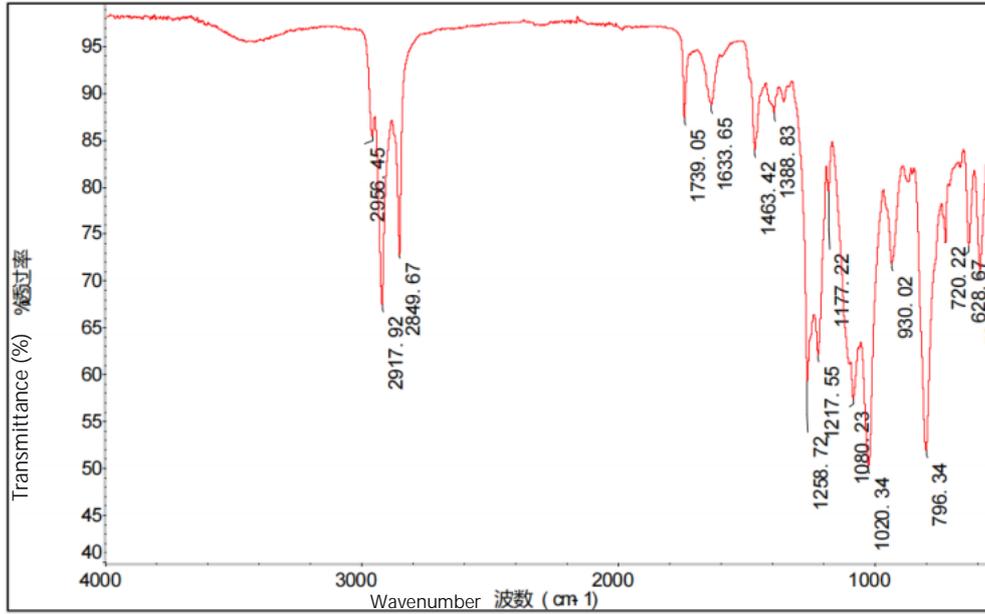
Figure 1-2 is the infrared spectrum of the ash content of the sample.



Figure 1-1 Infrared spectrum of the sample after drying
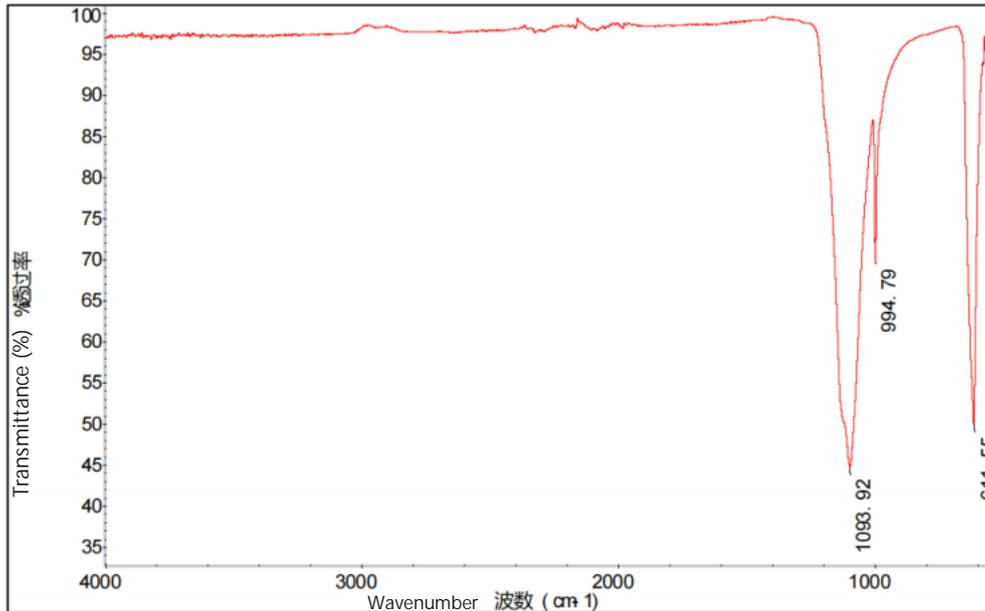


Figure 1-2 Infrared spectrum of sample ash content

2. NMR

Figure 2-1 is the ¹H-NMR test chart of the sample. The peak at ~0.754/1.192/1.537/3.584/4.046 ppm belongs to sodium laureth sulfate, ~0.754/1.192/1.537/3.893 ppm. The peak of ~ is attributed to sodium dodecyl sulfate, the peak of ~0.754/1.192/1.537/3.149/3.372 ppm is attributed to dodec l dimeth l betaine, the eak of ~2.650/2.763 ppm is attributed to citric acid, ~6.827/7.342/7.726 ppm 

and the peak at 7.396/7.484/7.882 ppm is attributed to benzoic acid

Figure 2-2 is the H-NMR test chart of the dried sample. The peak at 0.025 ppm is attributed to polydimethylsiloxane.

Figure 2-3 is the ¹H-NMR internal standard test chart of the sample. The internal standard is benzyl benzoate The mass ratio of the internal standard to the sample is 0.0285 g: 0.2748 g.
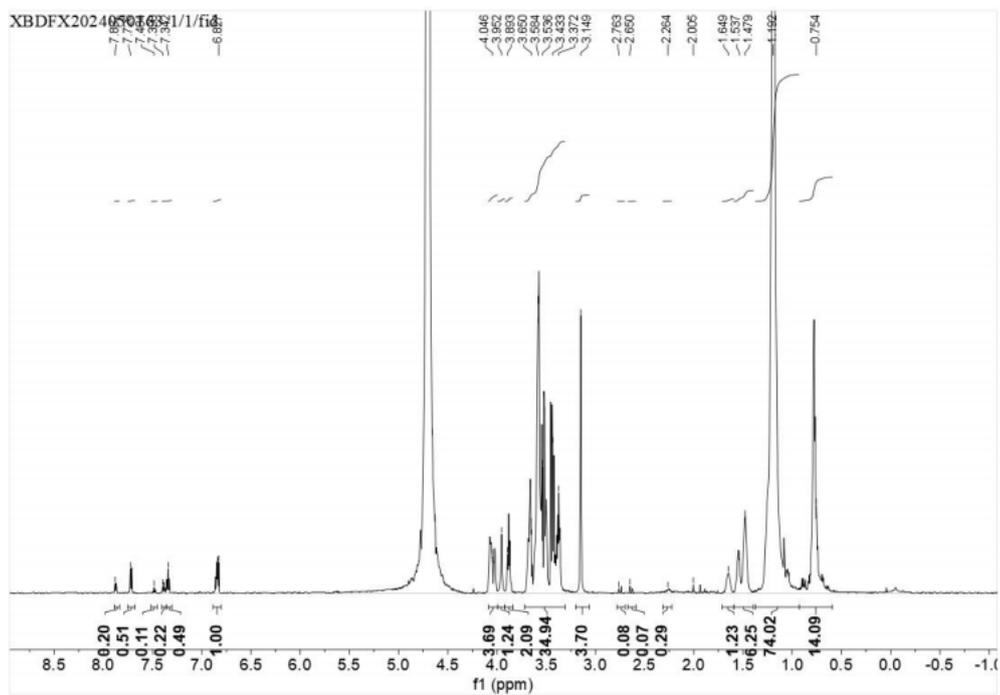


Figure 2-1  H-NMR test pattern of sample

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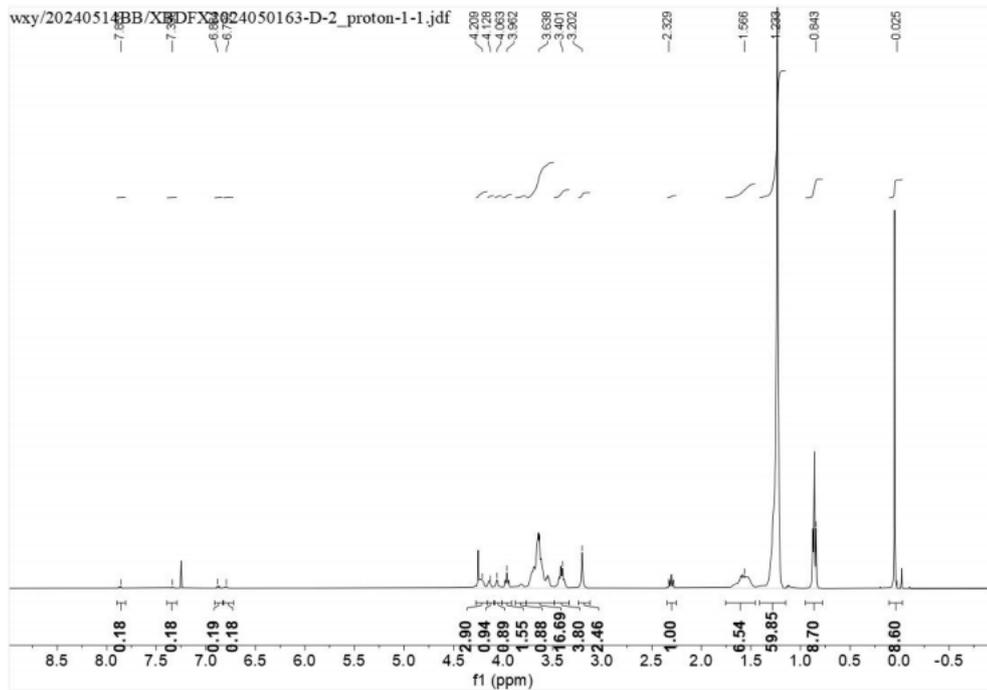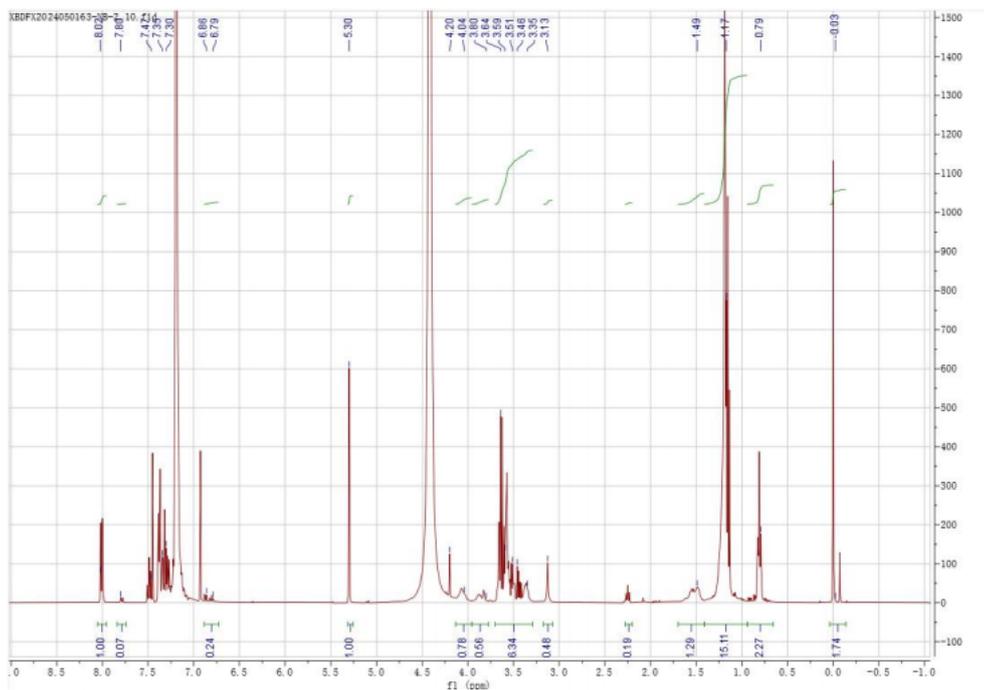Figure 2-2 ¹H-NMR test chart of dried sample



Figure 2-3  H-NMR internal standard test chart of sample

### 3.GC-MS

Figure 3 is the GC-MS total efflux diagram (solvent method) of the sample methanol soluble solvent, which mainly reflects the information of glycerol and laureth polyoxyethylene ether.
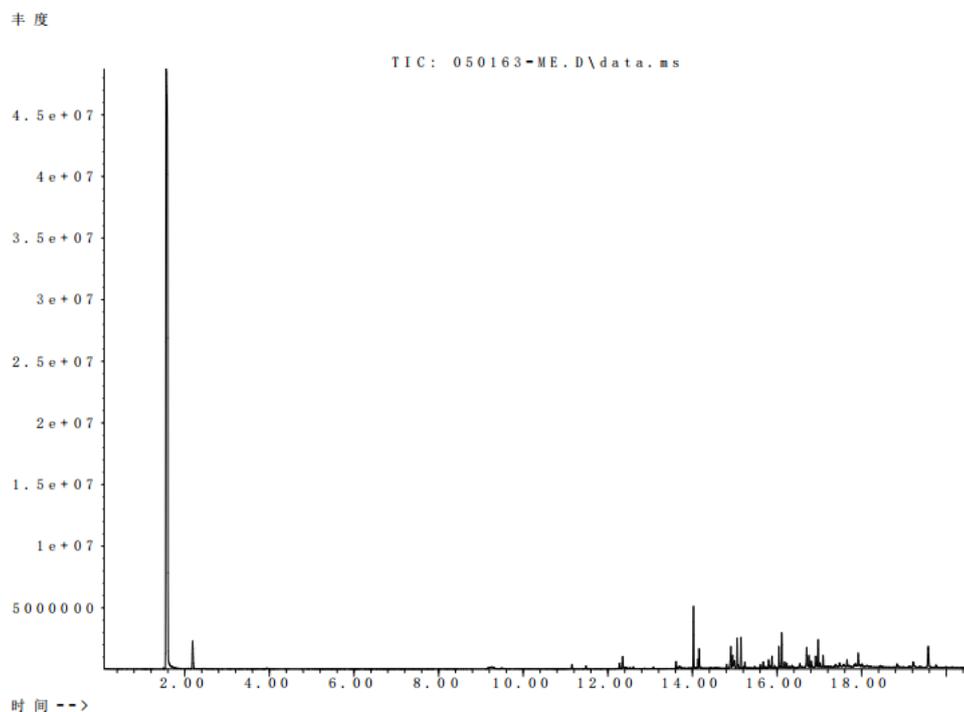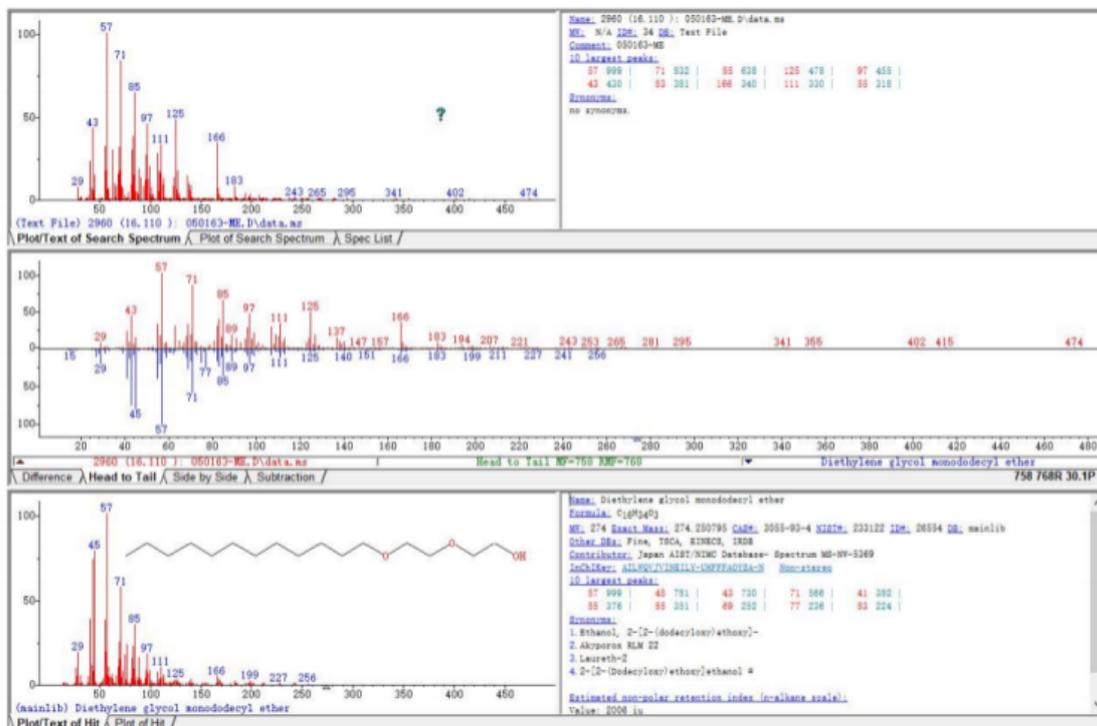


Figure 3 GC-MS total efflux diagram of sample methanol soluble solvent (solvent method)

R.T.:9.230 min (attributable to glycerol)

R.T: 16.110 min (belongs to laureth)

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4.XRF

Fi ure 4 shows the XRF test results of the sample. ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮, the Si element is derived from polydimethylsiloxane, ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮, an d the Cl element is derived from guar gum hydroxypropyltrimonium chloride.

定量结果

| 元素 | 结果 | [3-sigma] | 处理-计算 | 线 | 强度(cps/uA) |
|------|------|-----------|----------|-----|-------------|
| Na | 42.151 % | [ 1.819] | 定量分析-FP | NaKa | 0.2806 |
| S | 28.618 % | [ 0.093] | 定量分析-FP | S Ka | 8.0005 |
| Si | 15.436 % | [ 0.044] | 定量分析-FP | SiKa | 23.6714 |
| Cl | 4.281 % | [ 0.031] | 定量分析-FP | ClKa | 1.5659 |
| Se | 2.956 % | [ 0.004] | 定量分析-FP | SeKa | 1695.3778 |
| K | 0.190 % | [ 0.003] | 定量分析-FP | K Ka | 0.2548 |
| C | 6.368 % | [-----] | 平衡 | | |

Figure 4 XRF test results of the sample

5. MS

Figure 5-1 is the MS+ test result of the original sample. The peak at 272.3 is attributed to M+1 of dodecyldimethylbetaine.

Figure 5-2 is the MS-test result of the original sample. ▬▬▬▬▬▬▬▬▬▬▬▬ , the peak at 265.2/309.2/353.2/397.2 is attributed to M-23+44 of sodium laureth sulfate, and the peak at 121.0 is attributed to M-23 of sodium lauryl sulfate. The peak is assigned to M-1 of benzoic acid.
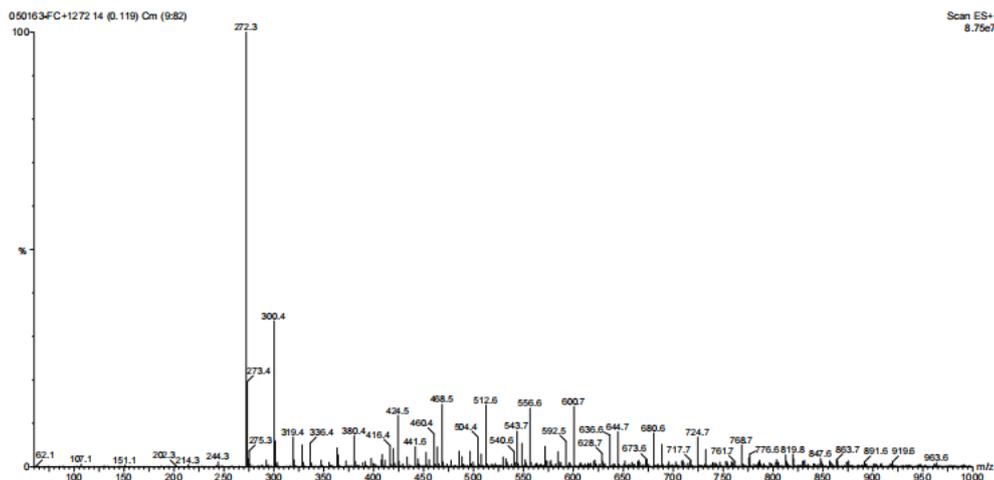


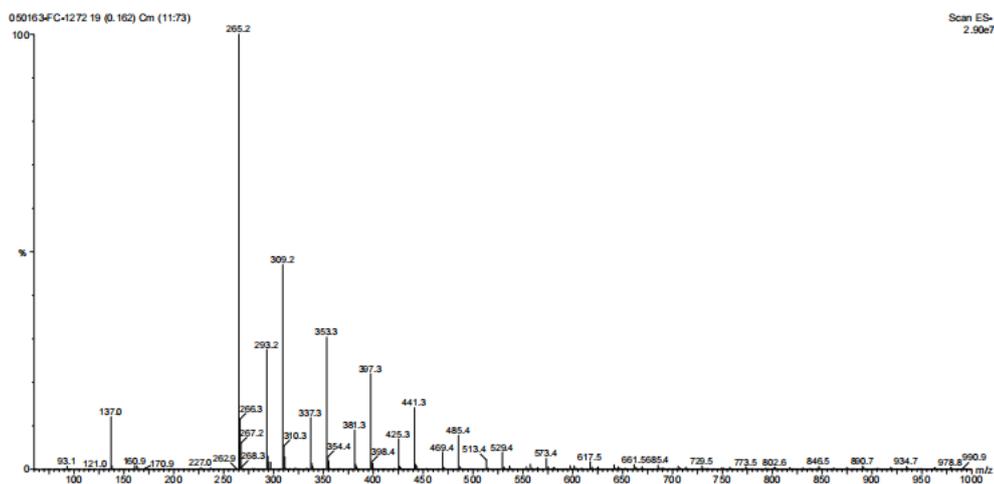Figure 5-1 MS+ test results of the original sample



Figure 5-2 MS-test results of the original sample

6.HS-GC-MS

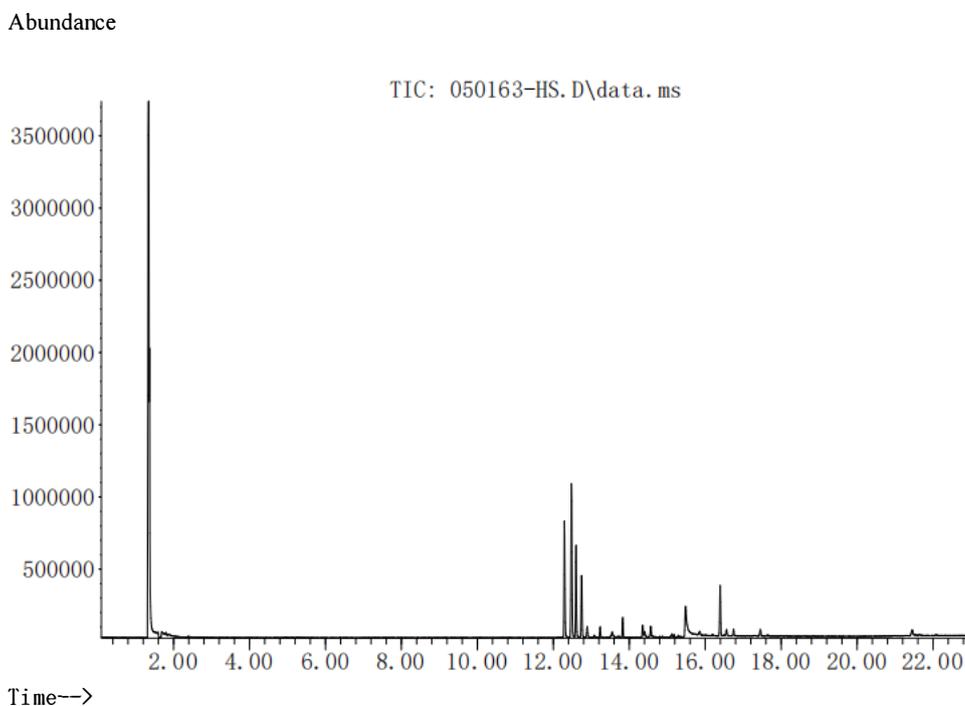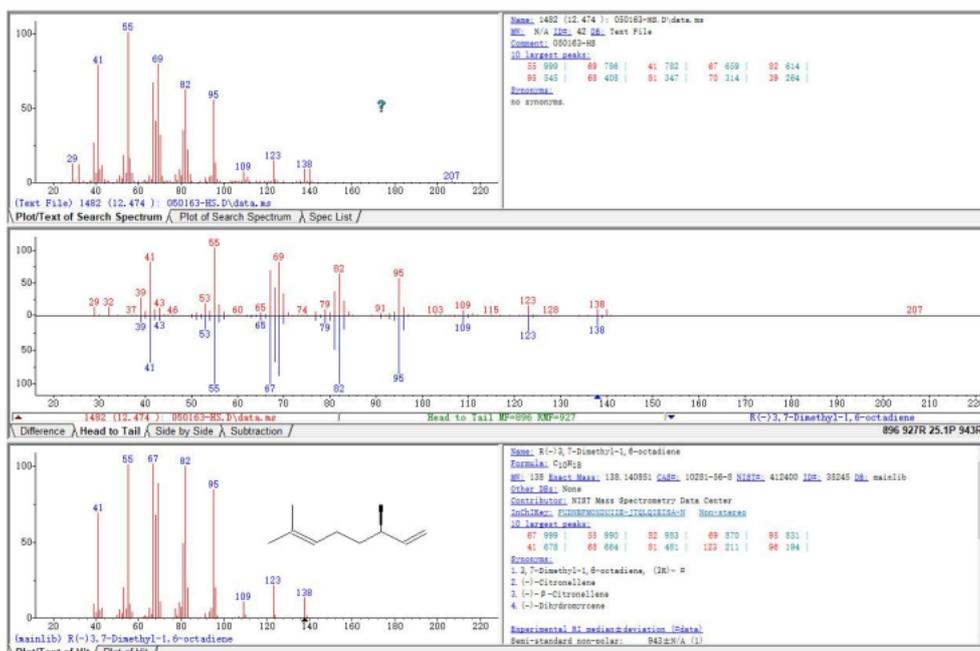Abundance



TIC: 050163-HS.D\data.ms

Time-->

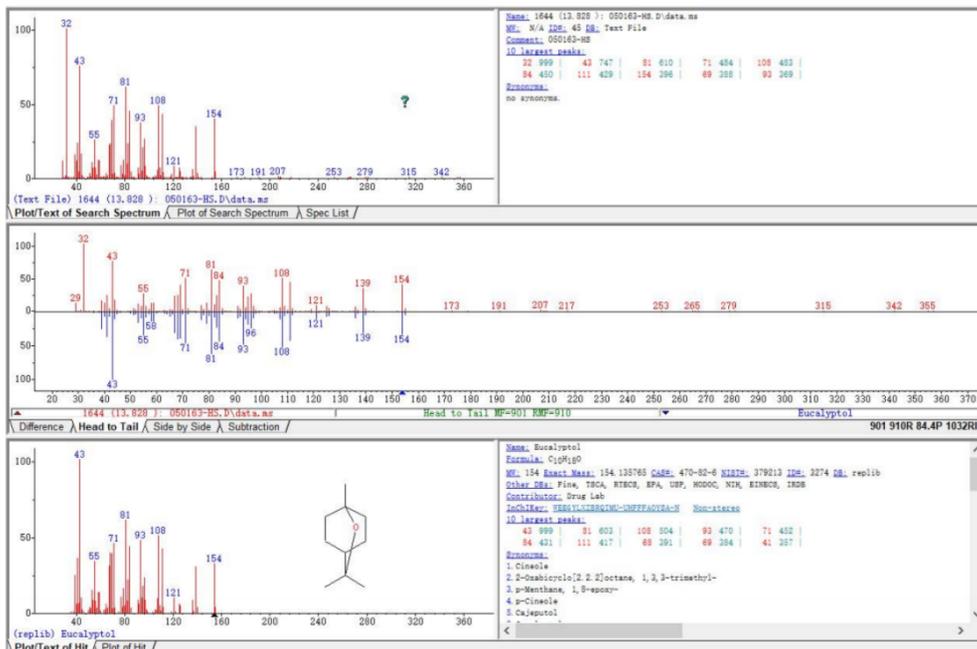**Figure 6 HS-GC-MS test results of the original sample**

R.T.:12.474 min (attributed to citronellene)

R.T:13.828 min(belongs to eucalyptol)
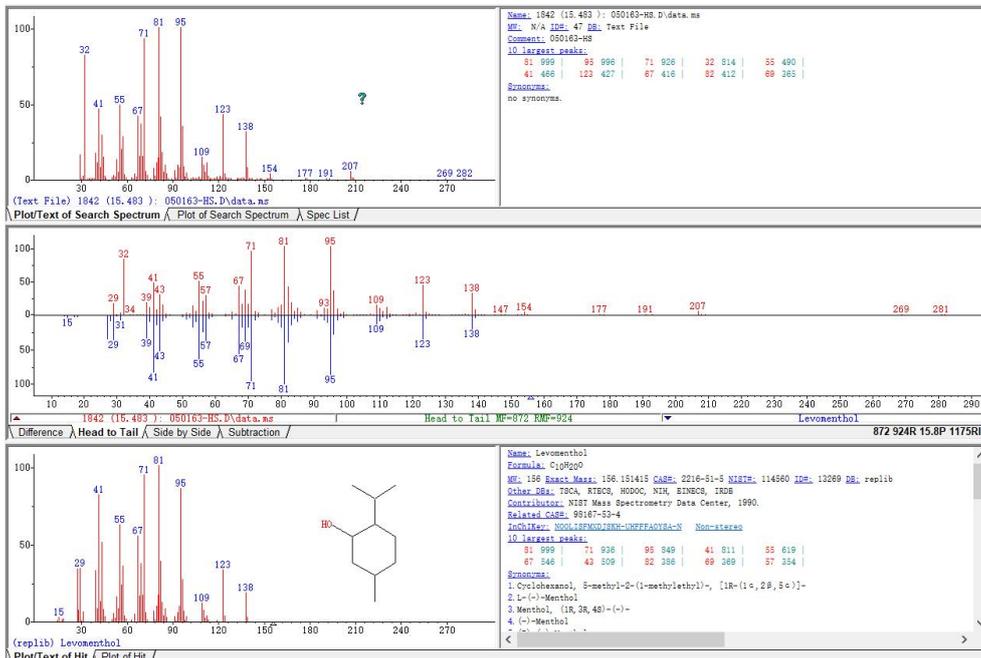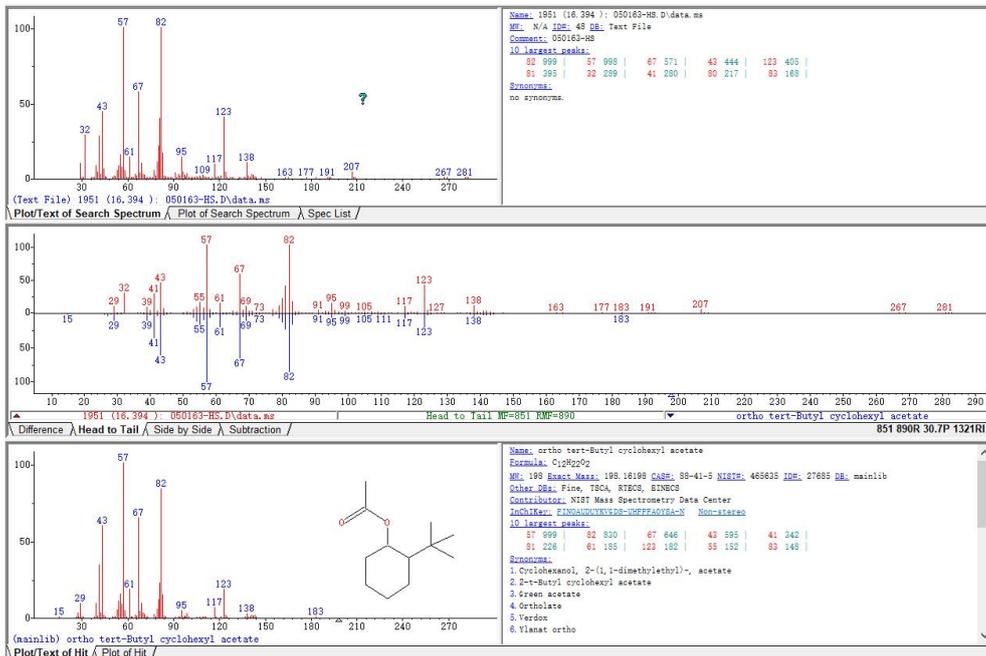


R.T:14.355 min(belongs to dihydromyrryl alcohol)
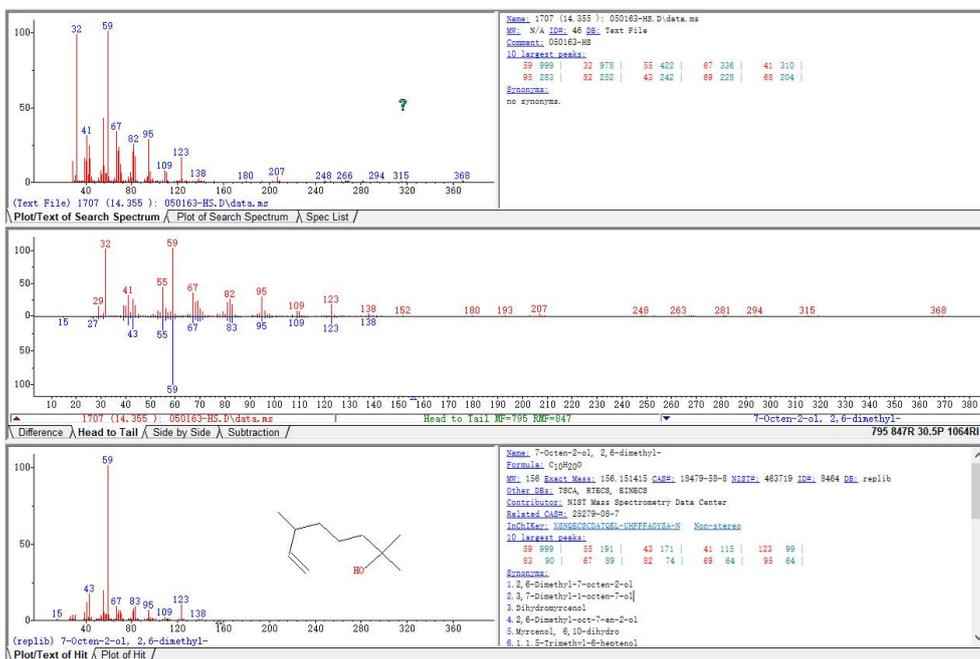
R.T :15.483 min(attributed to L-menthol)
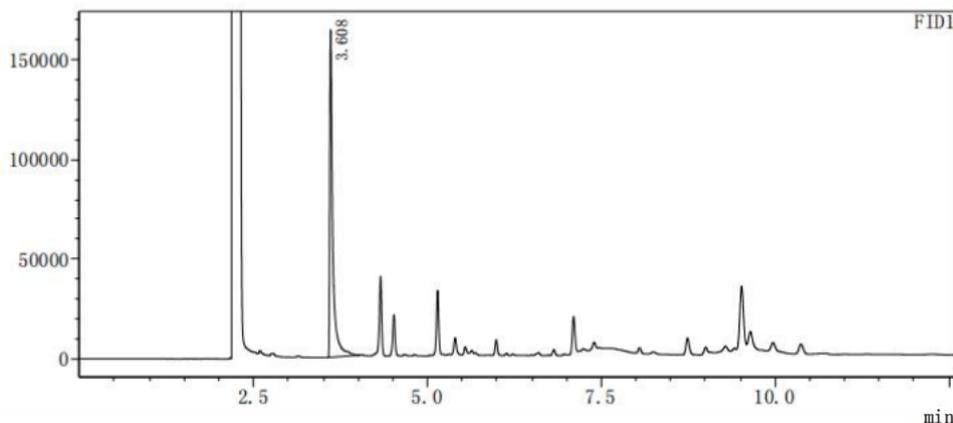


R.T :16.394 min(attributed to o-ter-butyleyclohexyl acetate)

7.GC-FID

Figure 7 is the test result of the external standard quantification of the sample methanol dilution. The dilution factor is 18 69 times. The calculated glycerol content in the sample is 2.06%
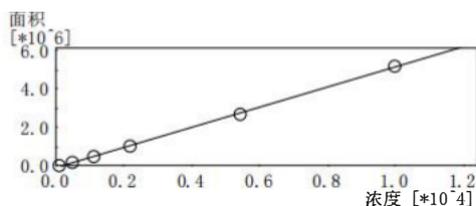
〈色谱图〉

uV



〈峰表〉

FID1

| 峰号 | 保留时间 | 面积 | 高度 | 浓度 | 浓度单位 | 标记 | 化合物名 |
|---|---|---|---|---|---|---|---|
| 1 | 3.608 | 495038 | 62058 | 1102.119 | ppm | M | 甘油 |
| 总计 | | 495038 | 62058 | | | | |

校准曲线

ID号                    : 1
化合物名                 : 甘油
定量计算法               : 外标法
校准曲线公式             : f(x)=524.749*x-83298.0
    相关系数(R)=0.9997399  拟合度(R^2)=0.9994798  剩余值的平方和(RSS)=1.050526e+010
    平均 RF 4.236722e+002  RF标准偏差 1.121797e+002  RF相对标准偏差RSD 26.477955
校准曲线类型             : 直线
原点                    : 未过原点
加权方法                 : 无
检测器名                 : FID1



| # | 浓度(比率) | 平均面积 |
|---|---|---|
| 1 | 118.84 | 25328 |
| 2 | 507.12 | 200064 |
| 3 | 134.09 | 500758 |
| 4 | 2204.52 | 1049030 |
| 5 | 5449.39 | 2703311 |
| 6 | 10000 | 5209170 |

Figure 7 Test results of external standard quantification of sample methanol dilution

8.IC

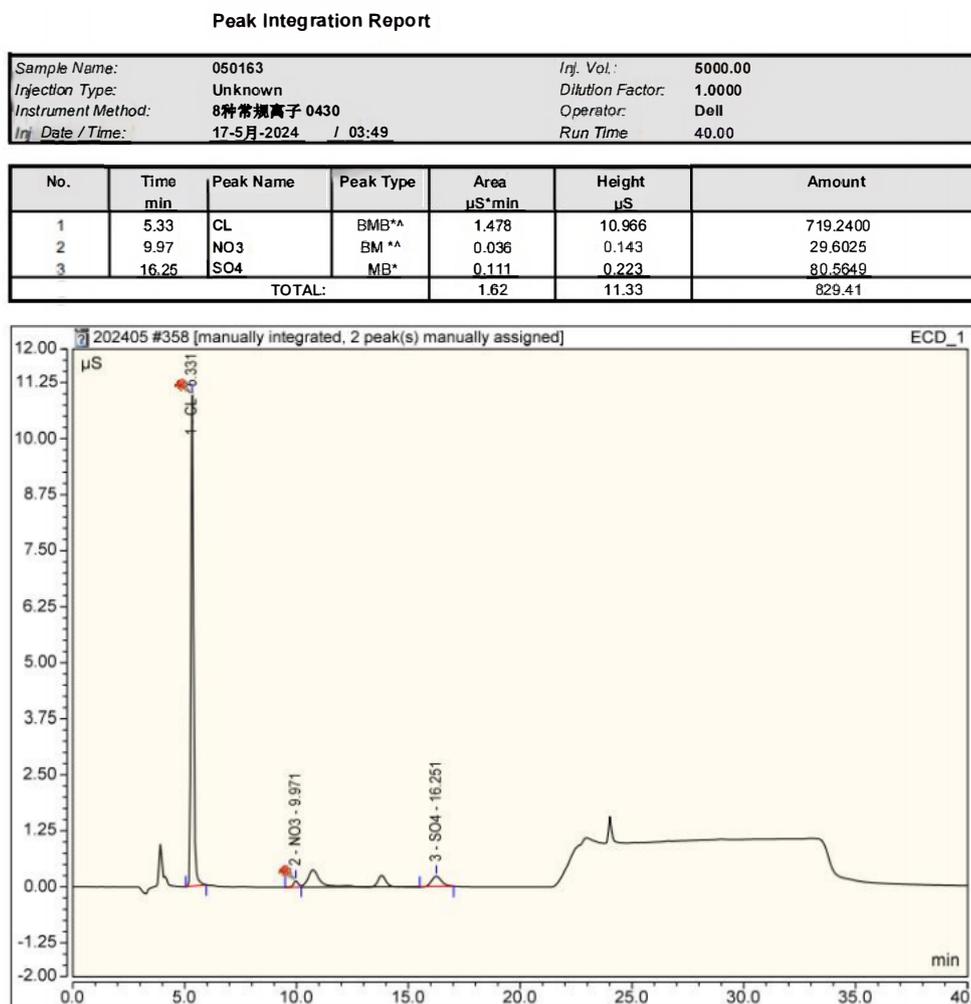Figure 8 shows the IC test results of a sample diluted 5000 times.

**Peak Integration Report**

| Sample Name: | 050163 | Inj. Vol.: | 5000.00 |
|---|---|---|---|
| Injection Type: | Unknown | Dilution Factor: | 1.0000 |
| Instrument Method: | 8种常规离子 0430 | Operator: | Dell |
| Inj. Date / Time: | 17-5月-2024　/　03:49 | Run Time | 40.00 |

| No. | Time min | Peak Name | Peak Type | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|---|
| 1 | 5.33 | CL | BMB*^ | 1.478 | 10.966 | 719.2400 |
| 2 | 9.97 | NO3 | BM *^ | 0.036 | 0.143 | 29.6025 |
| 3 | 16.25 | SO4 | MB* | 0.111 | 0.223 | 80.5649 |
| | | | TOTAL: | 1.62 | 11.33 | 829.41 |



**Figure 8 IC test results of samples diluted 5000 times**

9.ICP

Table 1 shows the ICP test results of the sample (hot digestion, diluted 2000 times). The conversion indicates that the content of Selenium Sulfide in the sample is 1.03%.

Table 1 ICP Test Results of the Sample (Hot Digestion, Diluted 2000 Times)

| Element | Content (μg/g) |
|---|---|
| Sodium (Na) | 6.515 |
| Selenium (Se) | 2.850 |
| Potassium (K) | 0.220 |
| Silicon (Si) | 1.453 |

Sample photos:



This photo is for analysis report use only

Notes:

3. The results stated in this report are only responsible for the sample tested this time;

4. Xinbodi Technology fulfills its obligation to keep confidential the technical documents, report texts and other business secre

5. The content and data in the Xinbodi technical analysis report are obtained based on various spectra and technical experience. They are not third-party notarized data and cannot be used for trade settlement, safety protection, medical and health care, environmental monitoring, resource protection and statutory evaluation, etc.

**\*\*\*\*End of Report\*\*\*\***