**T.C. GEBZE TECHNICAL UNIVERSITY**
**FACULTY OF ENGINEERING**
**Department of Environmental Engineering**

**The Gas Chromatography/Mass Spectrometry (GC/MS) Analyze Report of Dioctyl adipate (DOA)**

The DOA sample sent by LEBA Company was firstly extracted with GC grade high purity hexane. Then, it was analyzed with an Agilent 6890N gas chromatograph (GC) equipped with a mass selective detector (Agilent 5975 inert MSD) working at electron impact ionization mode. A capillary column (HP-5ms, 30 m, 0.25 mm, 0.25 µm) was used. The carrier gas (helium) was used at constant flow mode (1.8 mL $min^{-1}$) with a linear velocity of 49 cm $s^{-1}$. The initial oven temperature was held at 40°C for 1 min, raised to 300°C at 25°C $min^{-1}$, and held for 1 min. Total run time was 12.40 min and the injection volume was 1.0 µl. The injector, ion source and quadrupole temperatures were 280, 230 and 150°C, respectively. The results of GC/MS were presented in Figure 2 and Table 1.

**Table 1. GC/MS Library Search Repor**

Search Libraries: C:\Database\wiley7n.l

| Pk# | RT | Area% | Library/ID | Cas No | EC No |
|---|---|---|---|---|---|
| 1 | 10.975 | 99.20 | Di(2-ethylhexyl) adipate<br>Dioctyl adipate | 103-23-1 | 203-090-1 |
| 2 | 12.108 | 0.80 | Terephthalic acid, 2-ethylhexyl octyl ester | 6422-86-2 | 229-176-9 |

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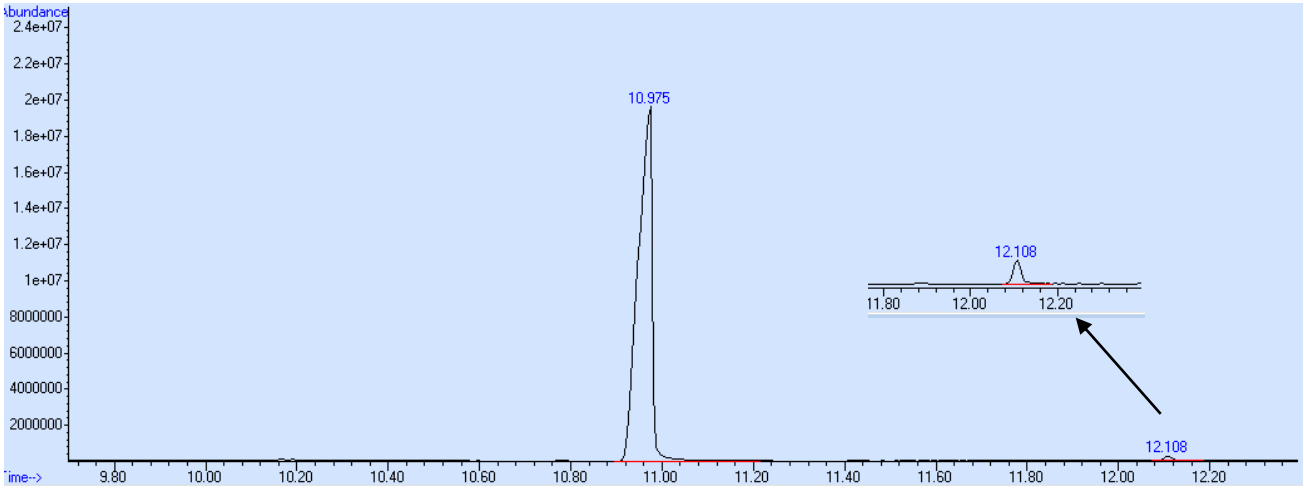


Figure 2. The chromatogram of DOA sample obtained from GC/MS

As can be seen from the figure, peak obtained at 10.975 minute belongs to DOA. Only one peak at 12.108 minute named terephthalic acid, 2-ethylhexyl octyl ester was obtained as impurity. After excluding impurities, purity of DOA sample was found as 99.20 %.

LEBA Company DOA Quantity is ≥ 99 %

**Responsible of Analysis**

**Assoc. Prof. Banu Çetin**

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