

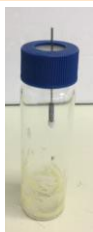
Tapping paste is a type of metalworking oil used for cutting.

In this analysis, volatile compounds of a new and an old tapping paste had been collected by MonoTrap RGPS TD and thermally desorbed by Handy TD265. The results were then compared.

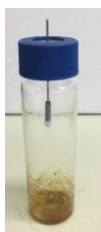
Compounds related to fresh aroma such as pinene and limonene were detected in the new tapping paste, while these ingredients were not detected in the old tapping paste, and components such as fatty acids, which may be derived from the oxidation of the oils, were detected with high sensitivity.

## Sample Preparation Procedure

New Tapping Paste



Old Tapping Paste



Place 0.5 g of tapping paste in a 40 mL vial

Sampling (Head Space)

MonoTrap RGPS TD × 1

60 °C 1 hour to sampling

HandyTD/GC/MS



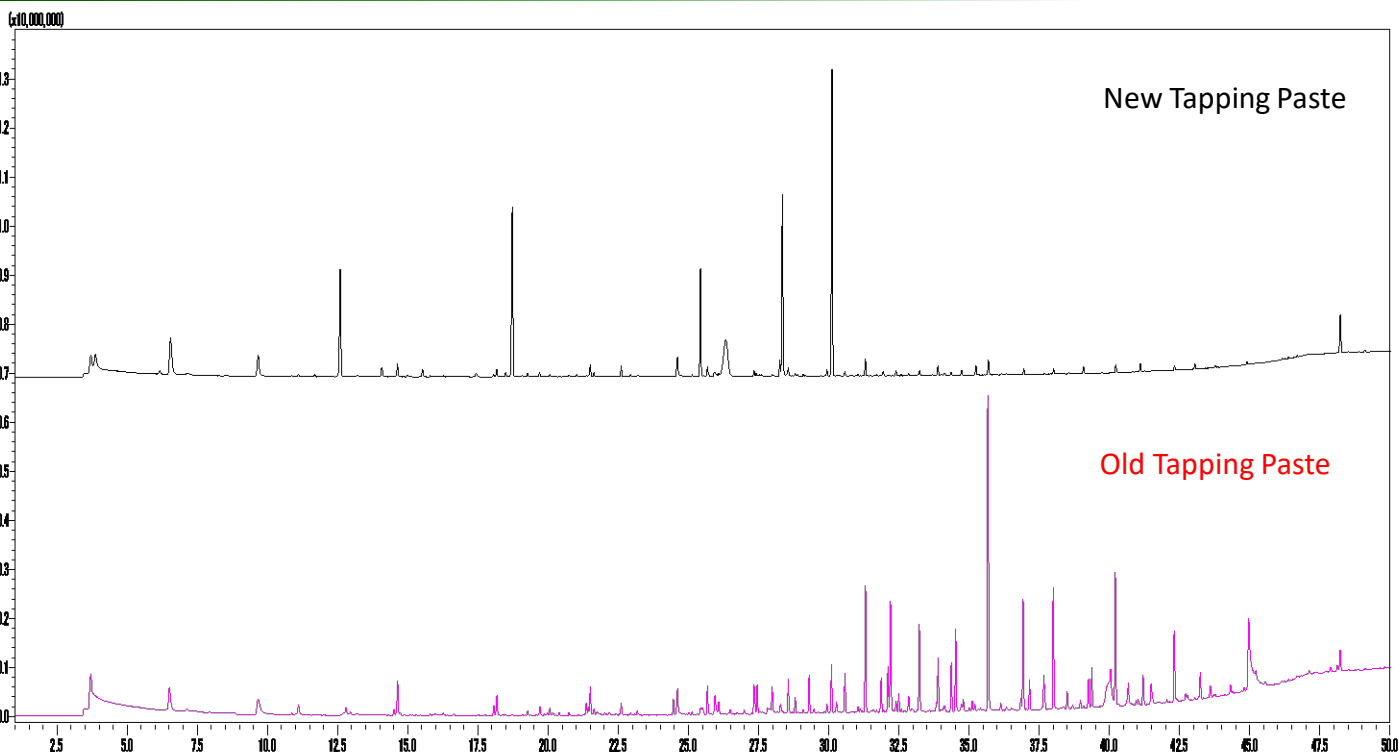
### GC/MS Conditions

<b>System</b>	: Thermal Desorption-GC/MS (HandyTD TD265)
<b>Column</b>	: InertCap Pure-WAX 0.25 mm I.D. × 60 m, df = 0.5 μm
<b>Col.Cat. No.</b>	: 1010-68164
<b>Col.Temp.</b>	: 40 °C (5 min) - 5 °C/min - 250 °C (13 min)
<b>Carrier Gas</b>	: He, 1.38 mL/min
<b>GC Inlet</b>	: 250 °C, Split 10:1
<b>Detection</b>	: MS Scan ( <i>m/z</i> 35-450)

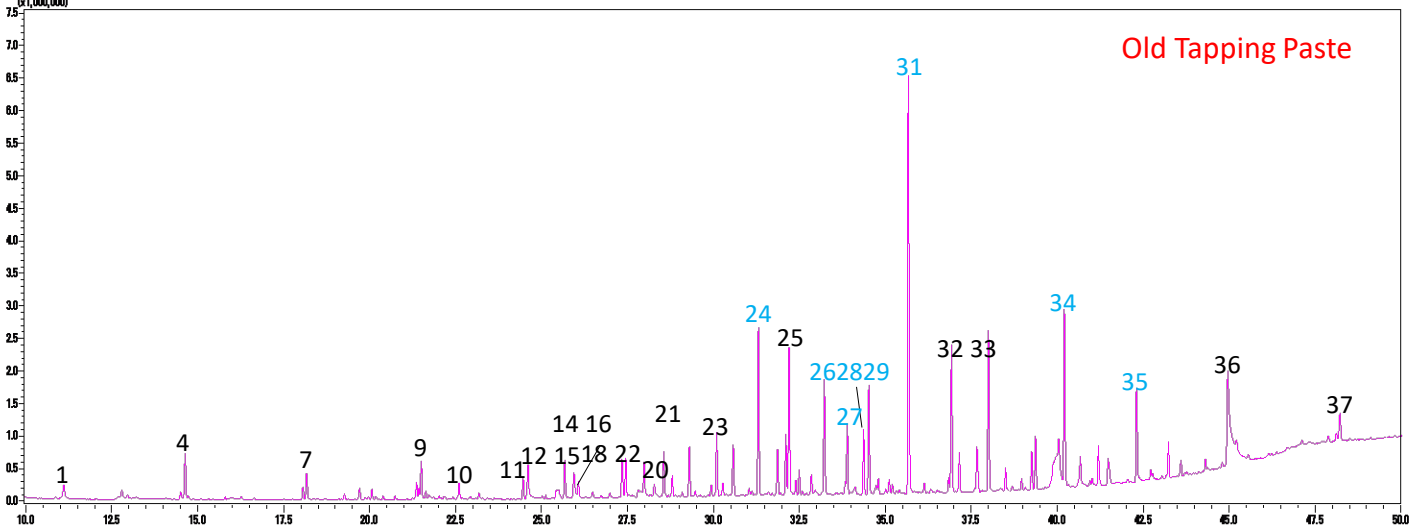
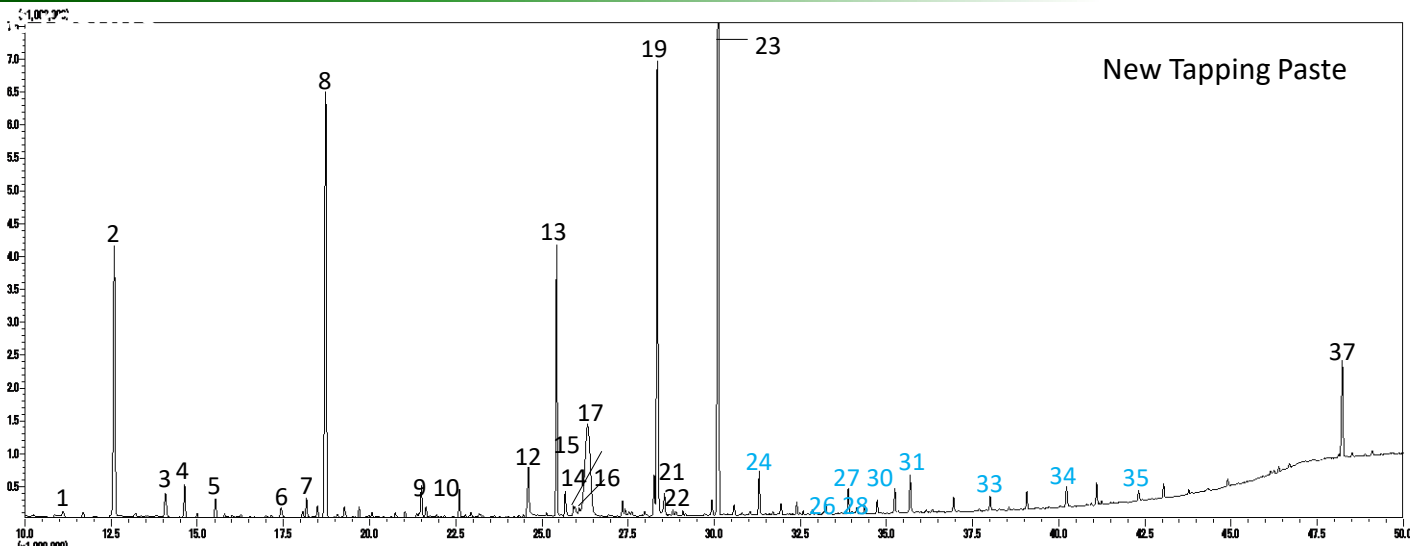
### HandyTD Conditions

<b>Desorb Temp.</b>	: 40 °C - 45 °C/sec - 250 °C (5 min)
<b>Desorb Press.</b>	: 180 kPa

## Comparison of Analysis Results



## Qualitativ



Library search results. The components that were more sensitively detected in older Tapping Pastes compared to the new are shown in blue letters.

- |                |                            |  |   |
|----------------|----------------------------|--|---|
| 1. Pentanal    | 11. 2-Nonanone             | 21. 2-Nonenal                                | 30. 2, 4-Decadienal                           |
| 2. Pinene      | 12. Nonanal                | 22. 1-Octanol                                | 31. Hexanoic acid                             |
| 3. Camphene    | 13. 3,7-Dimethyl-3-octanol | 23. Isobornyl acetate                        | 32. Diethoxyhexane                            |
| 4. Hexanal     | 14. 2-Octenal              | 24. 2-Decenal                                | 33. Heptanoic acid                            |
| 5. Pinene      | 15. Acetic acid            | 25. 1,3-Dioxolane-4-methanol                 | 34. Octanoic acid                             |
| 6. Myrcene     | 16. 1-Heptanol             | 26. Pentanoic acid                           | 35. Nonanoic acid                             |
| 7. Heptanal    | 17. Ethyl acetoacetate     | 27. 2-Undecenal                              | 36. Glycerin                                  |
| 8. Limonene    | 18. Decadiene              | 28. Dibutylformamide                         | 37. 2-Propenoic acid,<br>3-(2-hydroxyphenyl)- |
| 9. Octanal     | 19. Benzaldehyde           | 29. Butanoic acid,<br>2-methyl-, hexyl ester |   |
| 10. 2-Heptenal | 20. Propanoic acid         |  |   |

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