Ringversuche für Gefahrstoffmessstellen

Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA)

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Ringversuche@dguv.de, +49 2241 231 2549

Ergebnismitteilung

Ringversuch Aldehyde 2014
### Zusammenfassung Labormittelwerte

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Erläuterung der Ausreißertypen
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Grubbs
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# Zusammenfassung Labormittelwerte

Probe 2

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<tr>
<td>Mittelwert</td>
<td>0,115</td>
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<td>0,993</td>
</tr>
<tr>
<td>Vergleich-Stdabw.</td>
<td>0,010</td>
<td>0,076</td>
<td>0,109</td>
</tr>
<tr>
<td>Rel. Vergleich-Stdabw.</td>
<td>9,07 %</td>
<td>7,59 %</td>
<td>10,94 %</td>
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<tr>
<td>Referenzwert</td>
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<td>1,040</td>
<td>1,050</td>
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<tr>
<td>Soll-Stdabw.</td>
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<td>0,101</td>
<td>0,099</td>
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<tr>
<td>Rel. Soll-Stdabw.</td>
<td>10,00 %</td>
<td>10,00 %</td>
<td>10,00 %</td>
</tr>
<tr>
<td>unt. Toleranzgr.</td>
<td>0,092</td>
<td>0,805</td>
<td>0,794</td>
</tr>
<tr>
<td>ob. Toleranzgr.</td>
<td>0,138</td>
<td>1,208</td>
<td>1,191</td>
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<td>Anzahl B-Ausreißer</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>Anzahl F-Ausreißer</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Anzahl der Labore, die Ergebnisse vorgelegt haben</td>
<td>38</td>
<td>35</td>
<td>32</td>
</tr>
<tr>
<td>Anzahl teilnehmender Labore, nach der Eliminierung der Ausreißer A-D und F (ohne Labore, die keine Messwerte, sondern nur einen Status angegeben haben)</td>
<td>38</td>
<td>34</td>
<td>32</td>
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</tbody>
</table>

Erläuterung der Ausreißertypen

A: Einzelausreißer
Grubbs
<table>
<thead>
<tr>
<th>B: abw. Labormittelwert</th>
<th>Grubbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>C: überh. Labor-Stdabw.</td>
<td>Cochran</td>
</tr>
<tr>
<td>D: manuell entfernt</td>
<td></td>
</tr>
<tr>
<td>E: Score außerhalb Tol.-Bereich</td>
<td></td>
</tr>
<tr>
<td>F:</td>
<td>Score</td>
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## Zusammenfassung Labormittelwerte

### Probe 3

<table>
<thead>
<tr>
<th>Einheit</th>
<th>Formaldehyd (mg/m³)</th>
<th>Propionaldehyd (mg/m³)</th>
<th>Butyraldehyd (mg/m³)</th>
<th>Z-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0,053 -0,30</td>
<td>0,220 -0,77</td>
<td>0,376 0,81</td>
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<tr>
<td>22</td>
<td>0,057 0,49</td>
<td>0,241 0,11</td>
<td>0,345 -0,08</td>
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<tr>
<td>28</td>
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<td>0,215 -0,98</td>
<td>0,311 -1,05</td>
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</tr>
<tr>
<td>29</td>
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<td>0,239 0,03</td>
<td></td>
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<tr>
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<td>0,364 0,46</td>
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<tr>
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<td>0,382 0,98</td>
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<tr>
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<td>Aldehyde 2014</td>
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<tr>
<th></th>
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<th>Propionaldehyd Z-Score</th>
<th>Butyaldehyd Z-Score</th>
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<tr>
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<td>-1,72</td>
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<td>262</td>
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<td>264</td>
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<td>265</td>
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<td>267</td>
<td>&lt; 0,076</td>
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<td>Vergleich-Stdabwe.</td>
<td>0,005</td>
<td>0,026</td>
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<td>Rel.Vergleich-Stdabwe.</td>
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<tr>
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<td>0,024</td>
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<tr>
<td>Rel.Soll-Stdabwe.</td>
<td>10,00 %</td>
<td>10,00 %</td>
<td>10,00 %</td>
</tr>
<tr>
<td>unt. Toleranzgr.</td>
<td>0,043</td>
<td>0,191</td>
<td>0,278</td>
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<tr>
<td>ob. Toleranzgr.</td>
<td>0,065</td>
<td>0,286</td>
<td>0,417</td>
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<td>Anzahl B-Ausreißer</td>
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<td>0</td>
</tr>
<tr>
<td>Anzahl F-Ausreißer</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Anzahl der Labore, die Ergebnisse vorgelegt haben</td>
<td>35</td>
<td>33</td>
<td>31</td>
</tr>
<tr>
<td>Anzahl teilnehmender Labore, nach der Eliminierung der Ausreißer A-D und F (ohne Labore, die keine Messwerte, sondern nur einen Status angegeben haben)</td>
<td>32</td>
<td>33</td>
<td>31</td>
</tr>
</tbody>
</table>

Erläuterung der Ausreißertypen

A: Einzelausreißer, Grubbs
B: abw. Labormittelwert, Grubbs
C: überh. Labor-Stdabwe., Cochran
D: manuell entfernt
**Einzeldarstellung Mittelwerte**

<table>
<thead>
<tr>
<th>Merkmal:</th>
<th>Formaldehyd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe:</td>
<td>1</td>
</tr>
<tr>
<td>Methode:</td>
<td>ISO 5725-2</td>
</tr>
<tr>
<td>Rel.Soll-STD:</td>
<td>10,00% (Limited)</td>
</tr>
<tr>
<td>Anzahl Labore:</td>
<td>36</td>
</tr>
<tr>
<td>Vgl.-Stdabw.:</td>
<td>0,011 mg/m³</td>
</tr>
<tr>
<td>Rel.Vergleich-STD:</td>
<td>6,78%</td>
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<tr>
<td>Referenzwert:</td>
<td>0,160 mg/m³</td>
</tr>
<tr>
<td>Toleranzbereich:</td>
<td>0,132 - 0,198 mg/m³ (</td>
</tr>
</tbody>
</table>

**Mittelwert:** 0,165 mg/m³
Einzeldarstellung Mittelwerte

Merkmal: Acetaldehyd  
Probe: 1  
Methode: ISO 5725-2  
Rel.Soll-STD: 10,00% (Limited)  
Anzahl Labore: 36

Mittelwert: 0,487 mg/m³  
Vgl.-Stdabw.: 0,035 mg/m³  
Rel.Vergleich-STD: 7,09%  
Referenzwert: 0,470 mg/m³  
Toleranzbereich: 0,389 - 0,584 mg/m³ (|Z-Score| <= 2,00)
# Einzeldarstellung Mittelwerte

<table>
<thead>
<tr>
<th>Merkmal:</th>
<th>Propionaldehyd</th>
<th>Mittelwert:</th>
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</thead>
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<tr>
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<td>0,049 mg/m³</td>
</tr>
<tr>
<td>Methode:</td>
<td>ISO 5725-2</td>
<td>Rel.Vergleich-STD:</td>
<td>9,79%</td>
</tr>
<tr>
<td>Rel.Soll-STD:</td>
<td>10,00% (Limited)</td>
<td>Referenzwert:</td>
<td>0,519 mg/m³</td>
</tr>
<tr>
<td>Anzahl Labore:</td>
<td>33</td>
<td>Toleranzbereich:</td>
<td>0,402 - 0,603 mg/m³ (</td>
</tr>
</tbody>
</table>

![Graph showing concentration data with reference and tolerance limits]
## Einzeldarstellung Mittelwerte

<table>
<thead>
<tr>
<th>Merkmal</th>
<th>Butyraldehyde</th>
<th>Mittelwert:</th>
<th>0,581 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe:</td>
<td>1</td>
<td>Vgl.-Stdabw.:</td>
<td>0,060 mg/m³</td>
</tr>
<tr>
<td>Methode:</td>
<td>ISO 5725-2</td>
<td>Rel.Vergleich-STD:</td>
<td>10,38%</td>
</tr>
<tr>
<td>Rel.Soll-STD:</td>
<td>10,00% (Limited)</td>
<td>Referenzwert:</td>
<td>0,601 mg/m³</td>
</tr>
<tr>
<td>Anzahl Labore:</td>
<td>31</td>
<td>Toleranzbereich:</td>
<td>0,465 - 0,697 mg/m³ (</td>
</tr>
</tbody>
</table>

![Graph showing measurement data](image-url)
Übersicht Z-Scores

Probe 1

<table>
<thead>
<tr>
<th>Merkmal</th>
<th>Formaldehyd</th>
<th>Acetaldehyd</th>
<th>Propionaldehyd</th>
<th>Butyraldehyd</th>
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</thead>
<tbody>
<tr>
<td>Labor</td>
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</tr>
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Z-Score

-2,79  2,41

-2,15  -2,26

-2,77  -3,00
### Einzeldarstellung Mittelwerte

<table>
<thead>
<tr>
<th>Merkmal</th>
<th>Formaldehyd</th>
<th>Mittelwert:</th>
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<tbody>
<tr>
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<td>Vgl.-Stdw.:</td>
<td>0,010 mg/m³</td>
</tr>
<tr>
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<td>ISO 5725-2</td>
<td>Rel.Vergleich-STD:</td>
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<tr>
<td>Rel.Soll-STD</td>
<td>10,00% (Limited)</td>
<td>Referenzwert:</td>
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</tr>
<tr>
<td>Anzahl Labore</td>
<td>38</td>
<td>Toleranzbereich:</td>
<td>0,092 - 0,138 mg/m³ (</td>
</tr>
</tbody>
</table>

![Diagram showing distribution of values with reference and tolerance limits.](image-url)
### Einzeldarstellung Mittelwerte

<table>
<thead>
<tr>
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<th>Propionaldehyd</th>
<th>Mittelwert: 1,006 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe</td>
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<td>Vgl.-Stdabw.: 0,076 mg/m³</td>
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<tr>
<td>Methode</td>
<td>ISO 5725-2</td>
<td>Rel.Vergleich-STD: 7,59%</td>
</tr>
<tr>
<td>Rel.Soll-STD</td>
<td>10,00% (Limited)</td>
<td>Referenzwert: 1,040 mg/m³</td>
</tr>
<tr>
<td>Anzahl Labore</td>
<td>34</td>
<td>Toleranzbereich: 0,805 - 1,208 mg/m³ (</td>
</tr>
</tbody>
</table>

![Graph showing data distribution and tolerance limits](image-url)
Einzeldarstellung Mittelwerte

Merkmal: Butyraldehyde
Probe: 2
Methode: ISO 5725-2
Rel. Soll-STD: 10,00% (Limited)
Anzahl Labore: 32

Mittelwert: 0,993 mg/m³
Vgl.-Stdabw.: 0,109 mg/m³
Rel. Vergleich-STD: 10,94%
Referenzwert: 1,050 mg/m³
Toleranzbereich: 0,794 - 1,191 mg/m³ (|Z-Score| ≤ 2,00)

Referenzwert
Mittelwert
Toleranzgrenze
Toleranzgrenze
Übersicht Z-Scores

Probe 2

Merkmal

Formaldehyd Propionaldehyd Butyraldehyd

Z-Score

-3 -2 -1 0 1 2 3 -3 -2 -1 0 1 2 3

Labor

Seite 18
Einzeldarstellung Mittelwerte

Merkmal: Formaldehyd  
Probe: 3  
Methode: ISO 5725-2  
Rel.Soll-STD: 10,00% (Limited)  
Anzahl Labore: 32  

Mittelwert: 0,054 mg/m³  
Vgl.-Stdabw.: 0,005 mg/m³  
Rel.Vergleich-STD: 8,81%  
Referenzwert: 0,052 mg/m³  
Toleranzbereich: 0,043 - 0,065 mg/m³ (|Z-Score| <= 2,00)
**Einzeldarstellung Mittelwerte**

<table>
<thead>
<tr>
<th>Merkmal:</th>
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<td>Rel.Vergleich-STD:</td>
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<td>Referenzwert:</td>
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<td>Anzahl Labore:</td>
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<td>Toleranzbereich:</td>
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### Einzeldarstellung Mittelwerte

**Merkmal:** Butyraldehyd  
**Probe:** 3  
**Methode:** ISO 5725-2  
**Rel.Soll-STD:** 10,00% (Limited)  
**Anzahl Labore:** 31  

**Referenzwert:** 0,360 mg/m³  
**Toleranzbereich:** 0,278 - 0,417 mg/m³ (|Z-Score| <= 2,00)  

**Mittelwert:** 0,348 mg/m³  
**Vgl.-Stdabw.:** 0,038 mg/m³  
**Rel.Vergleich-STD:** 10,97%  

---

**Referenzwert**  
**Mittelwert**  
**Toleranzgrenze**  

---  

**Seite 21**
Übersicht Z-Scores

Probe 3

<table>
<thead>
<tr>
<th>Merkmal</th>
<th>Formaldehyd</th>
<th>Propionaldehyd</th>
<th>Butyraldehyd</th>
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Z-Score

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## Fragen und Antworten

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<th>Probenträger</th>
<th>Analysenmethode</th>
<th>Beginn der Aufarbeitung</th>
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<th>Desorptionslösung</th>
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### Ringversuch Aldehyde 2014

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## Ringversuch Aldehyde 2014

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<td>Zorbax ODS 4,6 mm id * 25 cm (5um) van Agilent</td>
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</table>
## Ringversuch Aldehyde 2014

<table>
<thead>
<tr>
<th>Teilnehmer</th>
<th>Trennsäule</th>
</tr>
</thead>
<tbody>
<tr>
<td>121</td>
<td>Prontosil Säule</td>
</tr>
<tr>
<td>123</td>
<td>C8</td>
</tr>
<tr>
<td>153</td>
<td>Zorbax Extend-C18</td>
</tr>
<tr>
<td>155</td>
<td>Agilent Zorbax XDB-C18 4,6mm X 150mm 5µm</td>
</tr>
<tr>
<td>165</td>
<td>LV18</td>
</tr>
<tr>
<td>167</td>
<td>Waters Symmetry C18, 3,5 µm, (4,6 x 100) mm Cartridge + Waters µBondapak C18, 10 µm, (3,9 x 20) mm Guard Column</td>
</tr>
<tr>
<td>174</td>
<td>WATERS NOVAPACK C18 / 150nm<em>3.9mm</em>4µm</td>
</tr>
<tr>
<td>186</td>
<td>Waters Symmetry C18</td>
</tr>
<tr>
<td>191</td>
<td>Ascentis Express C18 (100 mm X 4,6 mm X 3 µm)</td>
</tr>
<tr>
<td>195</td>
<td>C18</td>
</tr>
<tr>
<td>207</td>
<td>Kinetex 2,6µ 100mm (Phenomenex)</td>
</tr>
<tr>
<td>219</td>
<td>Silica C18</td>
</tr>
<tr>
<td>228</td>
<td>Allure-AK</td>
</tr>
<tr>
<td>230</td>
<td>MZ PAH C 18, 5 µm</td>
</tr>
<tr>
<td>231</td>
<td>SEPSERV UltraSep ES PAH, 250 mm³,0 mm ID; Vorsäule, SEPSERV UltraSep ES PAH, 10 mm³,0 mm ID</td>
</tr>
<tr>
<td>241</td>
<td>ULTRASEP ES ALD 125 x 2 mm, 3 µm</td>
</tr>
<tr>
<td>260</td>
<td>EC 250/3 nucéosil 100-5 C18 HD</td>
</tr>
<tr>
<td>262</td>
<td>YMC Pack C4</td>
</tr>
<tr>
<td>264</td>
<td>Acclaim carbonyl</td>
</tr>
<tr>
<td>265</td>
<td>Waters Nova-Pak C18 4µm</td>
</tr>
<tr>
<td>267</td>
<td>Symmetry C18, 250mm x 4,5mm x 5µm (Waters)</td>
</tr>
<tr>
<td>275</td>
<td>Perkin elmer C18 150*4,6mm 5</td>
</tr>
<tr>
<td>281</td>
<td>Grace C18</td>
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<table>
<thead>
<tr>
<th>Teilnehmer</th>
<th>Laufmittel</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>70/30 (ACN / H2O)</td>
</tr>
<tr>
<td>22</td>
<td>Acetonitril/Wasser (Milli-Q)</td>
</tr>
<tr>
<td>28</td>
<td>Acetonitrile</td>
</tr>
<tr>
<td>29</td>
<td>H2O/ACN/THF : ACN</td>
</tr>
<tr>
<td>30</td>
<td>Acetonitril / water</td>
</tr>
<tr>
<td>42</td>
<td>A: 34 Vol.% Acetonitril / 43 Vol.% H2O / 32 Vol.% Methanol; B: Acetonitril (Gradient)</td>
</tr>
</tbody>
</table>
## Ringversuch Aldehyde 2014

<table>
<thead>
<tr>
<th>Teilnehmer</th>
<th>Laufmittel</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>Acetonitril 60% / Water 40%</td>
</tr>
<tr>
<td>55</td>
<td>gradient elution of 10% THF in water and acetonitril</td>
</tr>
<tr>
<td>56</td>
<td>Water/acetonitrile</td>
</tr>
<tr>
<td>58</td>
<td>acetonitril / H2O</td>
</tr>
<tr>
<td>60</td>
<td>Eau/ACN</td>
</tr>
<tr>
<td>62</td>
<td>Acetonitrile/Water</td>
</tr>
<tr>
<td>121</td>
<td>Wasser/Acetonitril</td>
</tr>
<tr>
<td>123</td>
<td>CH3CNH2O</td>
</tr>
<tr>
<td>155</td>
<td>Acetonitril ACN   Wasser H2O   Tetrahydrofuran THF</td>
</tr>
<tr>
<td>165</td>
<td>Wasser/Acetonitril 40/60</td>
</tr>
<tr>
<td>167</td>
<td>AcN with 0,1 % Phosphoric Acid and water with 0,1 % Phosphoric Acid</td>
</tr>
<tr>
<td>174</td>
<td></td>
</tr>
<tr>
<td>186</td>
<td>water/ACN/THF</td>
</tr>
<tr>
<td>191</td>
<td>H2O, CH3CN, THF</td>
</tr>
<tr>
<td>195</td>
<td>ACN:H2O (30:70)</td>
</tr>
<tr>
<td>199</td>
<td>Wasser/Acetonitril</td>
</tr>
<tr>
<td>207</td>
<td>ACN/THF H2O</td>
</tr>
<tr>
<td>219</td>
<td>Acetonitrile:Water</td>
</tr>
<tr>
<td>228</td>
<td>Acetonitril/Wasser</td>
</tr>
<tr>
<td>230</td>
<td>A= dest. Wasser, B = Acetonitril</td>
</tr>
<tr>
<td>231</td>
<td>Wasser und Acetonitril HPLC Qualität</td>
</tr>
<tr>
<td>241</td>
<td>Acetonitril / Wasser</td>
</tr>
<tr>
<td>260</td>
<td>Acetonitrile 60%- Eau 40%</td>
</tr>
<tr>
<td>262</td>
<td>A: Acetonitril; B: Wasser/THF (90/10 %)</td>
</tr>
<tr>
<td>264</td>
<td></td>
</tr>
<tr>
<td>265</td>
<td>H2O/ACN/THF</td>
</tr>
<tr>
<td>267</td>
<td>Acetonitrile/Wasser</td>
</tr>
<tr>
<td>275</td>
<td>acetonitril:water(6:4)</td>
</tr>
<tr>
<td>281</td>
<td>Water/Acetonitrile</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teilnehmer</th>
<th>Gradient/Temp.-Programm</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th>Teilnehmer</th>
<th>Gradient/Temp.-Programm</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>No</td>
</tr>
<tr>
<td>22</td>
<td>Zuerst 12 min isokratisch bei 53% ACN und 47% Wasser, dann in 4,5 min linear auf 100% ACN und danach 3,5 min belassen / T=const=28°C</td>
</tr>
<tr>
<td>28</td>
<td>0 min 60%; 7,5 min 63,8%; 12,5 min 63,8%; 20 min 37,5%; 26 min 67,5%; 30 min 100%; 32 min 100%; 35 min 60% / 35°C</td>
</tr>
<tr>
<td>29</td>
<td>ja</td>
</tr>
<tr>
<td>30</td>
<td>0 min 55/45 18 min 64/36 22 min 70/30 32 min 100/0</td>
</tr>
<tr>
<td>42</td>
<td>0 - 3 min 0 % B</td>
</tr>
<tr>
<td>45</td>
<td>Yes / Oven column Temp : 40°C</td>
</tr>
<tr>
<td>55</td>
<td>40°C</td>
</tr>
<tr>
<td>56</td>
<td>0 min 52% ACN 48% water; 6 min 52% ACN 48% water; 15 min 100% ACN; 17 min 100% ACN</td>
</tr>
<tr>
<td>58</td>
<td>35°C</td>
</tr>
<tr>
<td>60</td>
<td>70/30</td>
</tr>
<tr>
<td>62</td>
<td>40/60 - 2 min ;75/25 - 25 min ; 100/0 - 18 min ; 30°C</td>
</tr>
<tr>
<td>121</td>
<td>-</td>
</tr>
<tr>
<td>123</td>
<td>t=0 min 60/40 (H2O/CH3CN); t=48 min 20/80 (H2O/CH3CN); t=53 min 60/40 (H2O/CH3CN)</td>
</tr>
<tr>
<td>153</td>
<td>Acetonitrile 50 % &gt; 100 %</td>
</tr>
<tr>
<td>155</td>
<td>Gradient Start ACN 30% THF 10% H2O 60% Ende ACN 95% THF 5% H2O 0% 35°C constant</td>
</tr>
<tr>
<td>165</td>
<td>0:00-60;06:00-80;15:00-100;17:00-100;18:00-60;21:00-80;Temp 25°C</td>
</tr>
<tr>
<td>167</td>
<td>Water / AcN 45 / 55 (3 min), up to AcN 100 in 4 min + 1 min. Back to water / AcN 45 / 55 in 1 min + 5 min</td>
</tr>
<tr>
<td>174</td>
<td>-</td>
</tr>
<tr>
<td>186</td>
<td>Mobile phase Gradient - 35°C</td>
</tr>
<tr>
<td>191</td>
<td>-</td>
</tr>
<tr>
<td>195</td>
<td>5 min. isocratic ACN:H2O (30:70), 35 min. gradient ACN:H2O (50:50), 25 min. gradient ACN:H2O (70:30), 5 min. return gradient ACN:H2O (30:70)</td>
</tr>
<tr>
<td>199</td>
<td>Gradient: Wasser/Acetonitril; Temp.: 30°C</td>
</tr>
<tr>
<td>207</td>
<td>-</td>
</tr>
<tr>
<td>219</td>
<td>Yes, 35 C</td>
</tr>
<tr>
<td>228</td>
<td>Beginn: A=55% + B = 45% nach 10 min auf 75% B; 11 min = 100% B bis 15 Min = 45 %B</td>
</tr>
<tr>
<td>231</td>
<td>Temperatur: 40°C; Gradient: 0 min, 60% Wasser + 40% Acetonitril; 14 min, 20% Wasser + 80% Acetonitril; 15 min, 5% Wasser + 95% Acetonitril; 23 min 5% Wasser + 95% Acetonitril; 24 min, 60% Wasser + 40% Acetonitril; 30 min, 60% Wasser + 40% Acetonitril;</td>
</tr>
<tr>
<td>241</td>
<td>ca. 70 / 30 bis 80 / 20</td>
</tr>
<tr>
<td>260</td>
<td>isocratic-ACN 60%, Eau 40%, 33°C , durée analyse 7 min</td>
</tr>
<tr>
<td>262</td>
<td>0-18 min, 35% A, 65% B; 18-20 min, 80% A, 20% B; 20-20,1 min, 100% A, 0%B; 20,1-30 min, 35% A, 65 % B</td>
</tr>
<tr>
<td>264</td>
<td>-</td>
</tr>
</tbody>
</table>
### Ringversuch Aldehyde 2014

<table>
<thead>
<tr>
<th>Teilnehmer</th>
<th>Gradient/Temp.-Programm</th>
</tr>
</thead>
<tbody>
<tr>
<td>265</td>
<td>60/30/10 2min; bis 31 min 40/60/0; bis 34 min 0/100/0; bis 39 min 0/100/0; bis 45 60/30/10; alles bei 40°C</td>
</tr>
<tr>
<td>267</td>
<td>40/60 H2O-Acetonitrile 7 min., 100% Acetonitrile 20min.</td>
</tr>
<tr>
<td>275</td>
<td>Isocratic</td>
</tr>
<tr>
<td>281</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teilnehmer</th>
<th>Flussrate</th>
<th>Messwellenlänge</th>
<th>Wiederfindungsraten</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
<td>365</td>
<td>No</td>
</tr>
<tr>
<td>22</td>
<td>0,6 ml/min</td>
<td>360 nm</td>
<td>nein</td>
</tr>
<tr>
<td>28</td>
<td>1,000 mL/min</td>
<td>360nm</td>
<td>No</td>
</tr>
<tr>
<td>29</td>
<td>1,5</td>
<td>365nm</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>1,2</td>
<td>360</td>
<td>no</td>
</tr>
<tr>
<td>42</td>
<td>1 ml/min</td>
<td>365 nm</td>
<td>nein</td>
</tr>
<tr>
<td>45</td>
<td>1</td>
<td>360 nm</td>
<td>Formaldehyde: quantity 1µg (83.7%-101.3%) and quantity 10µg (94.8%-103.5%)</td>
</tr>
<tr>
<td>55</td>
<td>0,5</td>
<td>360 nm</td>
<td>yes</td>
</tr>
<tr>
<td>56</td>
<td>0,4 mL/min</td>
<td>360 nm</td>
<td>100%</td>
</tr>
<tr>
<td>58</td>
<td>1 ml/min</td>
<td>360 nm</td>
<td>95%</td>
</tr>
<tr>
<td>60</td>
<td>1mL/min</td>
<td>360</td>
<td>No</td>
</tr>
<tr>
<td>62</td>
<td>1 mL/min</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>1,5 ml / min</td>
<td>354 nm</td>
<td>Butylaldehyd 84,5%, alle anderen Aldehyde &gt; 95%</td>
</tr>
<tr>
<td>123</td>
<td>1 ml/min</td>
<td>365,4 nm</td>
<td>no</td>
</tr>
<tr>
<td>153</td>
<td>1,00 ml/min</td>
<td>365/8 nm</td>
<td>97 %</td>
</tr>
<tr>
<td>155</td>
<td>1 ml / min</td>
<td>360nm  / 365 nm / 380nm</td>
<td>Kontrolle der vollständigen Desorption erfolgte durch eine weitere Desorption des Adsorbers</td>
</tr>
<tr>
<td>165</td>
<td>1,3 ml/min</td>
<td>360 nm</td>
<td></td>
</tr>
<tr>
<td>167</td>
<td>1,5 mL/min</td>
<td>360 nm</td>
<td>100 ± 2 %</td>
</tr>
<tr>
<td>174</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>186</td>
<td>1,5 mL/min</td>
<td>360</td>
<td>yes</td>
</tr>
<tr>
<td>191</td>
<td>1,2 ml/min</td>
<td>360 nm</td>
<td>-</td>
</tr>
<tr>
<td>195</td>
<td>0,80 mL/min</td>
<td>360 nm</td>
<td>100</td>
</tr>
<tr>
<td>199</td>
<td>0,8mL/min.</td>
<td>370nm</td>
<td>Nein; WF:90-120%</td>
</tr>
<tr>
<td>207</td>
<td>1,5 ml/min</td>
<td>360 nm</td>
<td></td>
</tr>
<tr>
<td>219</td>
<td>0,4 ml/min</td>
<td>360 nm</td>
<td>No</td>
</tr>
<tr>
<td>228</td>
<td>1,5 ml</td>
<td>365 nm</td>
<td>95%</td>
</tr>
<tr>
<td>Teilnehmer</td>
<td>Flussrate</td>
<td>Messwellenlänge</td>
<td>Wiederfindungsrate</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>230</td>
<td>0,5 ml/min</td>
<td>DAD = 362 nm, Referenzwellenlänge = 550 nm</td>
<td>nicht bestimmt</td>
</tr>
<tr>
<td>231</td>
<td>0,7 ml/min</td>
<td>365 nm</td>
<td>nein (95-98%)</td>
</tr>
<tr>
<td>241</td>
<td>0,5 ml/min</td>
<td>365 nm</td>
<td></td>
</tr>
<tr>
<td>260</td>
<td>0,7 ml/min</td>
<td>350 nm</td>
<td>non</td>
</tr>
<tr>
<td>262</td>
<td>1,5 ml/min</td>
<td>365</td>
<td></td>
</tr>
<tr>
<td>264</td>
<td>0,8 mL/min</td>
<td>365</td>
<td>0,86 acetaldehyde - 0,92 propionaldehyde</td>
</tr>
<tr>
<td>265</td>
<td>1,0 ml/min</td>
<td>356 nm</td>
<td></td>
</tr>
<tr>
<td>267</td>
<td>1,5 ml</td>
<td>365</td>
<td></td>
</tr>
<tr>
<td>275</td>
<td>1,000</td>
<td>360</td>
<td>Yes</td>
</tr>
<tr>
<td>281</td>
<td>1,3 mL/min</td>
<td>360 nm</td>
<td></td>
</tr>
</tbody>
</table>