

Supporting Information

Liquid Chromatography-Mass Spectrometric Study of Composition and Structure of Alkyl Salicylate as Detergent Additives in Lubricants

Guiying Kang,^{1,*} Wei Cheng,² Jin Li,¹ Dahua Zhang,¹ and Yufeng Liu¹

¹ PetroChina Lanzhou Lubricating Oil R & D Institute, Lanzhou, Gansu 730060,
China

² School of Materials Science and Engineering, Shaanxi University of Science &
Technology, Xi'an, Shaanxi 710021, China

List of Contents (8 pages, 7 figures, 2 tables)

1. Figure S1-S7

2. Table S1-S2

Figure S1. Chromatogram of alkylsalicylic acid obtained from samples ASA-1 to ASA-8.

Figure S2. The UV absorption spectra corresponding to the chromatographic peaks at each time point in Figure 1.

Figure S3. Chromatograms of standard solutions of MASA.

Figure S4. Standard curve of MASA.

Figure S5. Chromatograms of standard solutions of SA.

Figure S6. Standard curve of SA.

Table S1. Repeatability test data of external standard method for MASA

Number of tests	Content of MASA /%							
	ASA-1	ASA-2	ASA-3	ASA-4	ASA-5	ASA-6	ASA-7	ASA-8
1	72.7	78.7	90.7	87.9	90.8	91.9	79.5	92.0
2	73.4	78.9	91.3	87.9	91.1	91.9	79.6	92.6
3	73.0	78.0	91.1	88.0	90.9	91.9	79.2	92.3
4	73.1	78.3	90.7	87.6	91.0	91.8	79.2	92.2
5	73.0	78.1	90.2	87.4	90.5	91.8	78.6	92.3
6	73.1	78.0	90.4	87.0	90.4	91.6	79.1	92.6
7	72.7	77.5	90.5	87.4	90.2	91.7	78.5	92.9
8	72.5	77.1	90.1	87.7	90.0	91.4	78.8	91.9
Average value	72.9	78.1	90.6	87.6	90.6	91.8	79.1	92.4
RSD	0.0033	0.0075	0.0046	0.0038	0.0044	0.0019	0.0051	0.0036

Table S2. Repeatability test data of external standard method for SA

Number of tests	Content of SA /%							
	ASA-1	ASA-2	ASA-3	ASA-4	ASA-5	ASA-6	ASA-7	ASA-8
1	0.239	0.307	0.287	0.371	0.246	0.347	0.295	0.291
2	0.239	0.308	0.287	0.371	0.247	0.347	0.295	0.292
3	0.239	0.305	0.288	0.371	0.246	0.348	0.295	0.292
4	0.238	0.306	0.287	0.370	0.246	0.348	0.295	0.292
5	0.239	0.306	0.287	0.370	0.246	0.348	0.294	0.292
6	0.239	0.305	0.287	0.369	0.246	0.347	0.294	0.292
7	0.238	0.304	0.287	0.369	0.245	0.348	0.293	0.292
8	0.238	0.304	0.285	0.371	0.245	0.347	0.294	0.292
Average value	0.239	0.306	0.287	0.370	0.246	0.348	0.294	0.292
RSD	0.0022	0.0046	0.0029	0.0024	0.0026	0.0015	0.0025	0.0012

Figure S7. Repeatability test results of quantitative analysis of MASA and SA in 8 test samples.