

Table SI-1. Oil fingerprinting compounds, m/z used for peak quantitation and calculated normative diagnostic ratios according with CEN/TR 15522.

Compound name	Abbrev	m/z	Diagnostic ratios
n-heptadecane	C17	85	C17/pris
pristane	Pris	85	C18/phy
n-octadecane	C18	85	pris/phy
phytane	Phy	85	4-MD/1-MD
4-methyldibenzothiophene	4-MD	198	2-MP/1-MP
1-methyldibenzothiophene	1-MD	198	2-MF/4-Mpy
2-methylphenanthrene	2-MP	192	B(a)F/4-Mpy
1-methylphenanthrene	1-MP	192	B(b+c)F/4-Mpy
2-methylfluoranthene	2-MF	216	2-Mpy/4-Mpy
Benzo[a]fluorene	B(a)F	216	1-Mpy/4-Mpy
retene	Retene	234	Retene/ T-M-phen
Benzo[b+c]fluorene	B(b+c)F	216	BNT/T-M-phen
2-methylpyrene	2-Mpy	216	27Ts/30ab
4-methylpyrene	4-Mpy	216	27Tm/30ab
1-methylpyrene	1-Mpy	216	28ab/30ab
tetramethyl-phenanthrene	T-M-phen	234	29ab/30ab
benzo[b]naphtho[1,2-d]thiophene	BNT	234	30O/30ab
13β (H),17α(H),20S-cholestane (diasterane)	27dbS	217	31abS/30ab
13β (H),17α(H),20R-cholestane (diasterane)	27dbR	217	30G/30ab
5α (H),14β(H),17β(H),20(R+S)-cholestane	27bbR+S	218	27dbR/27dbS
18α(H)-22,29,30-trisnorhopane	27-TS	191	27bb/29bb
C26,20S-triaromatic sterane	SC26TA	231	SC26/ RC26+SC27
17α(H)-22,29,30-trisnorhopane	27-TM	191	SC28/RC26 + SC27
C26,20R+C27,20S-triaromatic steranes	RC26TA+SC27TA	231	RC27/RC26+ SC27
24-ethyl-5α(H),14β (H),17β,20(R+S)-cholestane	29bbR+S	218	RC28/RC26+SC27
17α(H),21β(H)-28,30-bisnorhopane	28ab	191	
C28,20S-triaromatic sterane	SC28TA	231	
17α(H),21β(H)-30-norhopane	29ab	191	
C27,20R-triaromatic sterane	RC27TA	231	
18α(H)-oleanane	30O	191	
17α(H),21β(H)-hopane	30ab	191	
C28,20R-triaromatic sterane	RC28TA	231	
17α(H),21β(H),22S-homohopane	31abS	191	
Gammacerane	30G	191	

Table SI.2. Diagnostic ratios of the investigated oils

	Diagnostic ratios	Azeri	Dalia	Flota	Forcados	Diesel A	Diesel B	Diesel C	HFO	Hungo	Kiriuk	Maya	Murban	Nemba	Norre	North Sea oil	Oseberg	Shearwater light	Sitica	Sorosh
1	C17/Inis	6.24	0.17	2.67	1.15	1.48	1.19	1.21	5.15	1.51	5.42	4.38	2.85	1.10	1.12	2.63	1.13	1.62	1.97	1.32
2	C18/Phy	3.05	0.08	1.88	2.84	1.54	1.14	1.23	3.45	1.32	4.30	2.72	1.90	1.10	1.22	2.77	1.28	1.57	2.30	1.09
3	Prisiphy	0.51	0.86	0.75	2.71	1.09	0.86	1.02	0.88	1.31	0.89	0.75	0.69	1.05	1.11	1.14	1.16	1.03	1.28	0.87
4	4-MDPI-MD	1.78	2.77	1.79	2.70	0.00	2.50	5.84	1.61	2.00	3.54	1.95	2.59	2.33	3.70	3.64	2.86	1.96	1.68	1.57
5	2-MIP1-MIP	0.93	0.86	1.20	1.19	1.74	1.78	1.62	1.25	0.86	1.56	1.07	0.94	1.19	1.25	0.89	0.89	0.71	0.87	0.93
6	2-MIF4-MIP	0.00	0.13	0.21	0.64	0.00	0.08	0.24	0.34	0.00	0.00	0.00	0.00	0.15	0.55	0.24	0.45	0.39	0.16	0.21
7	Blc-c/F4-MIP	0.34	1.21	1.70	2.86	0.00	0.18	0.47	1.49	1.22	0.38	0.53	0.41	0.91	2.40	0.89	2.63	2.04	0.71	1.15
8	1-MIPy4-MIP	0.13	0.28	0.54	0.80	0.00	0.07	0.17	0.85	0.27	0.38	0.16	0.13	0.26	0.61	0.25	0.61	0.52	0.24	0.38
9	2-MIPy4-MIP	0.21	0.40	0.43	0.35	0.49	0.97	1.02	0.81	0.36	0.33	0.25	0.27	0.46	0.45	0.47	0.52	0.39	0.45	0.36
10	Blc-c/F4-MIP	0.52	0.48	0.58	0.59	0.66	0.71	0.63	0.96	0.75	0.64	0.57	0.54	0.62	0.51	0.66	0.64	0.66	0.54	0.67
11	Retene/T-M-phen	0.00	0.00	2.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.23	0.00	5.78	2.66	0.00	1.29
12	BNTT-M-phen	1.33	0.30	0.45	2.07	0.15	0.00	0.14	1.77	0.19	1.80	1.29	2.04	0.39	0.65	0.24	0.93	0.92	0.18	0.89
13	27Ts/30ab	0.30	0.16	0.17	0.17	0.00	0.70	0.00	0.16	0.10	0.13	0.12	0.76	0.13	0.16	0.55	0.18	0.16	0.19	0.07
14	27Tm/30ab	0.27	0.14	0.20	0.21	0.00	0.59	0.00	0.58	0.16	0.43	0.33	0.29	0.16	0.16	0.22	0.15	0.16	0.20	0.33
15	28ab/30ab	0.00	0.10	0.48	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.10	0.00	0.22	0.00	0.00	0.00
16	29ab/30ab	1.17	0.42	0.50	0.59	0.00	1.42	0.00	0.91	0.39	1.30	1.03	0.81	0.52	0.52	0.48	0.42	0.48	0.52	1.20
17	30U/30ab	0.00	0.06	0.05	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
18	31abS/30ab	0.71	0.33	0.33	0.65	0.24	0.00	0.00	0.41	0.43	0.53	0.73	0.56	0.30	0.34	0.55	0.38	0.51	0.39	0.55
19	30G/30ab	0.18	0.07	0.12	0.11	0.06	0.00	0.00	0.00	0.10	0.15	0.00	0.15	0.14	0.08	0.00	0.08	0.08	0.12	0.11
20	27bbS/27qbs	0.00	0.68	0.52	0.61	0.00	0.62	0.57	0.00	0.64	0.00	0.63	0.70	0.64	0.62	0.64	0.62	0.59	0.69	0.53
21	27bb/29bb	0.63	0.78	1.02	0.62	0.00	2.37	0.00	1.09	1.21	0.83	0.83	0.73	1.01	0.85	0.84	1.05	1.24	1.20	0.87
22	SG26/RC26+SC27	0.00	0.31	0.34	0.21	0.34	0.00	0.35	0.00	0.35	0.20	0.18	0.00	0.32	0.26	0.36	0.35	0.24	0.23	0.21
23	SG28/RC26+SC27	0.85	0.49	0.63	0.45	0.74	0.00	0.34	0.67	0.00	0.53	0.59	0.80	0.57	0.71	0.63	0.58	0.48	0.47	0.63
24	RC27/RC26+SC27	0.64	0.52	0.49	0.58	0.54	0.00	0.34	0.42	0.00	0.50	0.62	0.77	0.55	0.57	0.46	0.50	0.51	0.54	0.57
25	RC28/RC26+SC27	0.97	0.46	0.59	0.47	0.63	0.00	0.45	0.00	0.54	0.58	0.60	0.85	0.55	0.63	0.51	0.54	0.47	0.44	0.64