

Table S1. Results of the GC-MS analysis of volatile components extracted by mechanical shock crushing from cordierite (from the central part of the crystal) from pegmatite of the Kuhilal deposit, Tajikistan.

Formula	Name	<sup>1</sup> CAS	<sup>2</sup> MW	Cordierite-center	
				<sup>3</sup> RT, min	<sup>4</sup> A, %
<b>Aliphatic hydrocarbons</b>					
<i>Paraffins</i>					
CH <sub>4</sub>	Methane	74-82-8	32	2.03	0.072
C <sub>2</sub> H <sub>6</sub>	Ethane	74-84-0	30	2.78	0.012
C <sub>3</sub> H <sub>8</sub>	n-Propane	74-98-6	44	4.68	0.001
C <sub>4</sub> H <sub>10</sub>	Isobutane	75-28-5	58	6.44	0.018
C <sub>4</sub> H <sub>10</sub>	n-Butane	106-97-8	58	7.22	0.051
C <sub>5</sub> H <sub>12</sub>	n-Pentane	109-66-0	72	8.90	0.011
C <sub>6</sub> H <sub>14</sub>	n-Hexane	110-54-3	86	12.32	0.024
C <sub>7</sub> H <sub>16</sub>	n-Heptane	142-82-5	100	16.35	0.020
C <sub>8</sub> H <sub>18</sub>	2-Methylheptane	592-27-8	114	19.56	0.014
C <sub>8</sub> H <sub>18</sub>	n-Octane	111-65-9	114	20.39	0.040
C <sub>9</sub> H <sub>20</sub>	n-Nonane	111-84-2	128	24.25	0.058
C <sub>10</sub> H <sub>22</sub>	n-Decane	124-18-5	142	27.82	0.013
C <sub>11</sub> H <sub>24</sub>	n-Undecane	1120-21-4	156	31.11	0.012
C <sub>12</sub> H <sub>26</sub>	n-Dodecane	112-40-3	170	34.25	0.008
C <sub>13</sub> H <sub>28</sub>	n-Tridecane	629-50-5	184	38.28	0.038
C <sub>14</sub> H <sub>30</sub>	n-Tetradecane	629-59-4	198	44.35	0.014
C <sub>15</sub> H <sub>32</sub>	5-Methyltetradecane	25117-32-2	212	46.27	0.021
C <sub>15</sub> H <sub>32</sub>	n-Pentadecane	629-62-9	212	53.74	0.031
C <sub>16</sub> H <sub>34</sub>	n-Hexadecane	544-76-3	226	68.65	0.032
C <sub>16</sub> H <sub>33</sub> Cl	1-Chlorohexadecane	4860-03-1	240	120.33	0.026
<i>Olefins</i>					
C <sub>2</sub> H <sub>4</sub>	Ethylene	74-85-1	28	2.56	0.007
C <sub>2</sub> H <sub>2</sub>	Acetylene	74-86-2	26	2.85	0.015
C <sub>3</sub> H <sub>6</sub>	1-Propene	115-07-1	42	4.33	0.020
C <sub>4</sub> H <sub>8</sub>	2-Methyl-1-propene	115-11-7	56	6.21	0.063
C <sub>5</sub> H <sub>8</sub>	1,4-Pentadiene	591-93-5	68	8.53	0.003
C <sub>5</sub> H <sub>10</sub>	1-Pentene	109-67-1	70	8.62	0.029
C <sub>5</sub> H <sub>8</sub>	(E)-1,3-Pentadiene	2004-70-8	68	8.87	0.043
C <sub>5</sub> H <sub>8</sub>	3-Methyl-1,2-butadiene	598-25-4	68	9.15	0.001
C <sub>5</sub> H <sub>8</sub>	1,3-Pentadiene	504-60-9	68	9.38	0.001
C <sub>5</sub> H <sub>8</sub>	(Z)-1,3-Pentadiene	1574-41-0	68	9.47	<0.001
C <sub>6</sub> H	1-Hexene	592-41-6	84	12.01	0.018
C <sub>6</sub> H <sub>10</sub>	4-Methyl-1,3-pentadiene	926-56-7	82	13.54	0.001
C <sub>6</sub> H <sub>10</sub>	(Z)-3-Methyl-1,3-pentadiene	2787-45-3	82	13.70	0.001
C <sub>7</sub> H <sub>14</sub>	1-Heptene	592-76-7	98	16.00	0.018
C <sub>8</sub> H <sub>16</sub>	5-Methyl-3-heptene	13172-91-3	114	19.79	0.096
C <sub>8</sub> H <sub>16</sub>	2,5-Dimethyl-2-hexene	3404-78-2	112	20.01	0.057
C <sub>8</sub> H <sub>16</sub>	(E)-4-Octene	14850-23-8	112	20.09	0.044
C <sub>8</sub> H <sub>16</sub>	2,3-Dimethyl-1-hexene	16746-86-4	112	20.21	0.034
C <sub>8</sub> H <sub>16</sub>	(Z)-3-Octene	14850-22-7	112	20.29	0.005
C <sub>8</sub> H <sub>16</sub>	(E)-2-Octene	13389-42-9	112	20.54	0.005

C <sub>9</sub> H <sub>18</sub>	1-Nonene	124-11-8	126	23.98	0.018
C <sub>10</sub> H <sub>20</sub>	1-Decene	872-05-9	140	27.57	0.005
C <sub>11</sub> H <sub>22</sub>	1-Undecene	821-95-4	154	30.91	0.009
C <sub>12</sub> H <sub>24</sub>	1-Dodecene	112-41-4	168	34.05	0.015
C <sub>13</sub> H <sub>26</sub>	1-Tridecene	2437-56-1	182	38.01	0.062
C <sub>14</sub> H <sub>28</sub>	(E)-3-Tetradecene	41446-68-8	196	43.95	0.041
C <sub>14</sub> H <sub>28</sub>	1-Tetradecene	1120-36-1	196	43.91	0.038
C <sub>15</sub> H <sub>30</sub>	1-Pentadecene	13360-61-7	210	53.17	0.051
C <sub>16</sub> H <sub>32</sub>	1-Hexadecene	629-73-2	224	73.44	0.017
C <sub>17</sub> H <sub>34</sub>	1-Heptadecene	6765-39-5	238	115.09	0.043

### Cyclic hydrocarbons

#### *Cyclic alkanes and alkenes*

C <sub>6</sub> H <sub>10</sub>	4-Methylcyclopentene	1759-81-5	82	12.56	0.016
C <sub>8</sub> H <sub>14</sub>	3-Propylcyclopentene	34067-75-9	110	21.39	0.001

#### *Arenes*

C <sub>6</sub> H <sub>6</sub>	Benzene	71-43-2	78	13.01	0.019
C <sub>7</sub> H <sub>8</sub>	Toluene	108-88-3	92	17.43	0.017
C <sub>8</sub> H <sub>10</sub>	Ethylbenzene	100-41-4	106	21.44	0.035
C <sub>8</sub> H <sub>10</sub>	p-Xylene	106-42-3	106	21.70	0.004
C <sub>8</sub> H <sub>8</sub>	Styrene	100-42-5	104	22.37	0.002
C <sub>9</sub> H <sub>12</sub>	Propylbenzene	103-65-1	120	25.23	0.002
C <sub>10</sub> H <sub>14</sub>	o-Cymene	527-84-4	134	28.04	0.004
C <sub>10</sub> H <sub>14</sub>	Butylbenzene	104-51-8	134	28.93	0.002
C <sub>11</sub> H <sub>16</sub>	Pentylbenzene	538-68-1	148	32.34	0.012
C <sub>12</sub> H <sub>18</sub>	Hexylbenzene	1077-16-3	162	35.75	0.003
C <sub>13</sub> H <sub>20</sub>	Heptylbenzene	1078-71-3	176	38.89	0.016
C <sub>14</sub> H <sub>22</sub>	Octylbenzene	2189-60-8	190	46.24	0.008
C <sub>15</sub> H <sub>24</sub>	Nonylbenzene	1081-77-2	204	71.24	0.012

#### *Polycyclic aromatic hydrocarbons*

C <sub>10</sub> H <sub>8</sub>	Naphthalene	91-20-3	128	32.67	0.001
C <sub>11</sub> H <sub>10</sub>	2-Methylnaphthalene	91-57-6	142	35.77	<0.001
C <sub>11</sub> H <sub>10</sub>	1-Methylnaphthalene	90-12-0	142	36.27	<0.001

### Heterocyclic hydrocarbons

#### *Dioxanes*

C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,4-Dioxane	123-91-1	88	15.15	<0.001
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,3-Dioxane	505-22-6	88	17.89	0.001

#### *Furans*

C <sub>5</sub> H <sub>6</sub> O	2-Methylfuran	534-22-5	82	10.70	0.003
C <sub>6</sub> H <sub>8</sub> O	2-Ethylfuran	3208-16-0	96	16.38	0.002
C <sub>7</sub> H <sub>10</sub> O	2-Propylfuran	4229-91-8	110	18.41	<0.001
C <sub>8</sub> H <sub>12</sub> O	2-Butylfuran	4466-24-4	124	22.70	0.002
C <sub>9</sub> H <sub>14</sub> O	2-Pentylfuran	3777-69-3	138	26.56	<0.001
C <sub>10</sub> H <sub>16</sub> O	2-Hexylfuran	3777-70-6	152	29.88	0.001
C <sub>11</sub> H <sub>18</sub> O	2-Heptylfuran	3777-71-7	166	33.01	0.001
C <sub>12</sub> H <sub>20</sub> O	2-Octylfuran	4179-38-8	180	36.17	0.001
C <sub>15</sub> H <sub>26</sub> O	2-Decylfuran	83469-85-6	222	72.84	0.008

### Oxygenated hydrocarbons

*Alcohols, ethers and esters*

CH <sub>4</sub> O	Methanol	67-56-1	32	4.83	0.181
C <sub>2</sub> H <sub>6</sub> O	Ethanol	64-17-5	46	6.81	0.040
C <sub>4</sub> H <sub>10</sub> O	1-Butanol	71-36-3	74	13.19	0.041
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	Methyl methacrylate	80-62-6	100	14.85	0.027
C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	$\gamma$ -Butyrolactone	96-48-0	86	21.57	0.086
C <sub>6</sub> H <sub>10</sub> O	2-Cyclohexen-1-ol	822-67-3	98	21.88	0.001
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	(E)-4-Cyclopentene-1,3-diol	694-47-3	100	23.15	0.014
C <sub>6</sub> H <sub>6</sub> O	Phenol	108-95-2	94	24.93	0.005
C <sub>8</sub> H <sub>18</sub> O	2-Ethyl-1-hexanol	104-76-7	130	28.12	0.054
C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	$\gamma$ -Caprolactone	695-06-7	114	29.73	0.001
C <sub>8</sub> H <sub>10</sub> O <sub>2</sub>	2-Phenoxyethanol	122-99-6	138	32.87	0.016
C <sub>8</sub> H <sub>14</sub> O <sub>2</sub>	$\gamma$ -Octalactone	104-50-7	142	34.90	0.005
C <sub>10</sub> H <sub>20</sub> O	(E)-2-Decen-1-ol	18409-18-2	156	37.05	0.018
C <sub>9</sub> H <sub>16</sub> O <sub>2</sub>	$\gamma$ -Nonalactone	104-61-0	156	39.44	0.013
C <sub>12</sub> H <sub>22</sub> O <sub>2</sub>	$\gamma$ -Dodecalactone	2305-05-7	198	85.33	0.007
C <sub>14</sub> H <sub>18</sub> O <sub>4</sub>	Dipropyl phthalate	131-16-8	250	126.73	0.089

*Aldehydes*

C <sub>2</sub> H <sub>4</sub> O	Acetaldehyde	75-07-0	44	5.34	0.350
C <sub>3</sub> H <sub>4</sub> O	2-Propenal	107-02-8	56	7.62	0.019
C <sub>3</sub> H <sub>6</sub> O	n-Propanal	123-38-6	58	7.82	0.068
C <sub>3</sub> H <sub>4</sub> O <sub>2</sub>	2-Oxopropanal	78-98-8	72	8.25	0.043
C <sub>4</sub> H <sub>6</sub> O	2-Methylpropanal	78-84-2	70	10.11	0.090
C <sub>4</sub> H <sub>8</sub> O	n-Butanal	123-72-8	72	10.95	0.009
C <sub>5</sub> H <sub>10</sub> O	3-Methylbutanal	590-86-3	86	14.07	0.028
C <sub>5</sub> H <sub>10</sub> O	n-Pentanal	110-62-3	86	15.07	0.041
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	Furfural	98-01-1	96	17.98	0.001
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	3-Furaldehyde	498-60-2	96	18.88	0.010
C <sub>6</sub> H <sub>12</sub> O	n-Hexanal	66-25-1	100	19.36	0.152
C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>	5-Methyl-2-furancarboxaldehyde	620-02-0	110	23.88	0.003
C <sub>7</sub> H <sub>14</sub> O	n-Heptanal	111-71-7	114	23.43	0.156
C <sub>7</sub> H <sub>6</sub> O	Benzaldehyde	100-52-7	106	24.59	0.020
C <sub>8</sub> H <sub>16</sub> O	2-Ethylhexanal	123-05-7	128	25.86	0.017
C <sub>8</sub> H <sub>16</sub> O	n-Octanal	124-13-0	128	27.19	0.244
C <sub>9</sub> H <sub>18</sub> O	n-Nonanal	124-19-6	142	30.65	0.300
C <sub>6</sub> H <sub>6</sub> O <sub>3</sub>	5-Hydroxymethylfurfural	67-47-0	126	31.39	0.021
C <sub>10</sub> H <sub>20</sub> O	n-Decanal	112-31-2	156	35.87	0.373
C <sub>11</sub> H <sub>22</sub> O	n-Undecanal	112-44-7	170	37.81	0.117
C <sub>12</sub> H <sub>24</sub> O	n-Dodecanal	112-54-9	184	43.68	0.071
C <sub>13</sub> H <sub>26</sub> O	n-Tridecanal	10486-19-8	198	52.77	0.025
C <sub>14</sub> H <sub>28</sub> O	n-Tetradecanal	124-25-4	212	67.02	0.014
C <sub>15</sub> H <sub>30</sub> O	n-Pentadecanal	2765-11-9	226	89.93	0.050

*Ketones*

C <sub>3</sub> H <sub>6</sub> O	Acetone	67-64-1	58	7.99	0.017
C <sub>4</sub> H <sub>6</sub> O	3-Buten-2-one	78-94-4	70	10.76	0.002
C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	2,3-Butanedione	431-03-8	86	10.99	0.001
C <sub>4</sub> H <sub>8</sub> O	2-Butanone	78-93-3	72	11.13	0.005

C <sub>5</sub> H <sub>10</sub> O	2-Pentanone	107-87-9	86	14.84	0.010
C <sub>5</sub> H <sub>8</sub> O	Cyclopentanone	120-92-3	84	17.63	0.002
C <sub>6</sub> H <sub>12</sub> O	2-Hexanone	591-78-6	100	19.09	0.011
C <sub>7</sub> H <sub>14</sub> O	2-Heptanone	110-43-0	114	23.11	0.010
C <sub>8</sub> H <sub>16</sub> O	6-Methyl-2-heptanone	928-68-7	128	26.07	0.013
C <sub>8</sub> H <sub>14</sub> O	6-Methyl-5-hepten-2-one	110-93-0	126	26.36	0.009
C <sub>8</sub> H <sub>16</sub> O	2-Octanone	111-13-7	128	27.07	0.013
C <sub>9</sub> H <sub>18</sub> O	2-Nonanone	821-55-6	142	30.33	0.012
C <sub>10</sub> H <sub>20</sub> O	2-Decanone	693-54-9	156	33.49	0.037
C <sub>11</sub> H <sub>22</sub> O	2-Undecanone	112-12-9	170	37.28	0.032
C <sub>12</sub> H <sub>24</sub> O	2-Dodecanone	6175-49-1	184	42.87	0.014
C <sub>13</sub> H <sub>26</sub> O	2-Tridecanone	593-08-8	198	51.44	0.049
C <sub>14</sub> H <sub>28</sub> O	2-Tetradecanone	2345-27-9	212	64.89	0.011
C <sub>15</sub> H <sub>30</sub> O	2-Pentadecanone	2345-28-0	226	86.38	0.071
<i>Carboxylic acids</i>					
C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	Acetic acid	64-19-7	60	11.48	0.095
C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	n-Propanoic acid	79-09-4	74	15.98	0.007
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	n-Butanoic acid	107-92-6	88	19.34	0.033
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	3-Methylbutanoic acid	503-74-2	102	22.35	0.004
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	n-Pentanoic acid	109-52-4	102	23.26	0.021
C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	n-Hexanoic acid	142-62-1	116	26.69	0.040
C <sub>7</sub> H <sub>14</sub> O <sub>2</sub>	n-Heptanoic acid	111-14-8	130	30.11	0.024
C <sub>8</sub> H <sub>16</sub> O <sub>2</sub>	n-Octanoic acid	124-07-2	144	33.12	0.034
C <sub>9</sub> H <sub>18</sub> O <sub>2</sub>	n-Nonanoic acid	112-05-0	158	36.61	0.054
C <sub>10</sub> H <sub>20</sub> O <sub>2</sub>	n-Decanoic acid	334-48-5	172	41.39	0.046
C <sub>11</sub> H <sub>22</sub> O <sub>2</sub>	n-Undecanoic acid	112-37-8	186	63.08	0.014
C <sub>11</sub> H <sub>14</sub> O <sub>3</sub>	2,4,6-Trimethylmandelic acid	20797-56-2	194	87.24	0.001
C <sub>12</sub> H <sub>24</sub> O <sub>2</sub>	n-Dodecanoic acid	143-07-7	200	73.89	0.056
C <sub>13</sub> H <sub>26</sub> O <sub>2</sub>	n-Tridecanoic acid	638-53-9	214	113.49	0.140
<b>Sulfonated compounds</b>					
H <sub>2</sub> S	Hydrogen sulfide	7783-06-4	34	3.43	<0.001
COS	Carbonyl sulfide	463-58-1	60	3.78	0.002
O <sub>2</sub> S	Sulfur dioxide	7446-09-5	64	5.16	0.009
CS <sub>2</sub>	Carbon disulfide	75-15-0	76	8.30	0.003
C <sub>2</sub> H <sub>6</sub> S	Dimethyl sulfide	75-18-3	62	8.19	0.006
C <sub>2</sub> H <sub>6</sub> S <sub>2</sub>	Dimethyl disulfide	624-92-0	94	15.83	0.002
C <sub>10</sub> H <sub>16</sub> S	2-Hexylthiophene	18794-77-9	168	35.30	<0.001
<b>Nitrogenated compounds</b>					
N <sub>2</sub>	Nitrogen	7727-37-9	28	1.98	0.072
C <sub>5</sub> H <sub>9</sub> N	1-Isocyanobutane	2769-64-4	83	6.56	0.015
CH <sub>3</sub> NO	Formamide	75-12-7	45	8.37	0.001
C <sub>5</sub> H <sub>5</sub> N	Pyridine	110-86-1	79	16.10	0.006
C <sub>6</sub> H <sub>11</sub> NO	6-Methyl-2-piperidinone	4775-98-8	113	22.22	0.001
C <sub>4</sub> H <sub>5</sub> NO <sub>2</sub>	Succinimide	123-56-8	99	29.32	0.023
<b>Inorganic compounds</b>					
<i>Oxides</i>					
H <sub>2</sub> O	Water	7732-18-5	18	3.26	89.228

CO <sub>2</sub>	Carbon dioxide	124-38-9	44	2.15	5.536
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Note: <sup>1</sup>CAS – unique numerical identifier of chemical compounds included in the register Chemical Abstracts Service (<https://www.cas.org>); <sup>2</sup>MW – nominal mass; <sup>3</sup>RT – retention time; <sup>4</sup>A – normalized area (the area ratio of the individual gas mixture components to the summ of the areas of all the components in the chromatogram).

Table S2. Results of the GC-MS analysis of volatile components extracted by mechanical shock crushing from cordierite (from the edge zone of the crystal) from pegmatite of the Kukhilal deposit, Tajikistan.

Formula	Name	<sup>1</sup> CAS	<sup>2</sup> MW	Cordierite-edge	
				<sup>3</sup> RT, min	<sup>4</sup> A, %
<b>Aliphatic hydrocarbons</b>					
<i>Paraffins</i>					
CH <sub>4</sub>	Methane	74-82-8	32	2.02	0.058
C <sub>2</sub> H <sub>6</sub>	Ethane	74-84-0	30	2.85	0.034
C <sub>3</sub> H <sub>8</sub>	n-Propane	74-98-6	44	4.49	0.079
C <sub>4</sub> H <sub>10</sub>	Isobutane	75-28-5	58	6.45	0.036
C <sub>4</sub> H <sub>10</sub>	n-Butane	106-97-8	58	7.22	0.047
C <sub>5</sub> H <sub>12</sub>	n-Pentane	109-66-0	72	8.92	0.024
C <sub>6</sub> H <sub>14</sub>	n-Hexane	110-54-3	86	12.36	0.071
C <sub>7</sub> H <sub>16</sub>	n-Heptane	142-82-5	100	16.36	0.036
C <sub>8</sub> H <sub>18</sub>	2-Methylheptane	592-27-8	114	19.57	0.059
C <sub>8</sub> H <sub>16</sub>	3-Methyl-4-methylenehexane	3404-67-9	112	19.66	0.091
C <sub>8</sub> H <sub>16</sub>	2,5-Dimethylhexane	592-13-2	114	19.80	0.259
C <sub>8</sub> H <sub>18</sub>	n-Octane	111-65-9	114	20.39	0.116
C <sub>9</sub> H <sub>20</sub>	n-Nonane	111-84-2	128	24.24	0.087
C <sub>10</sub> H <sub>22</sub>	n-Decane	124-18-5	142	27.82	0.047
C <sub>11</sub> H <sub>24</sub>	n-Undecane	1120-21-4	156	31.13	0.027
C <sub>12</sub> H <sub>26</sub>	n-Dodecane	112-40-3	170	34.25	0.031
C <sub>13</sub> H <sub>28</sub>	n-Tridecane	629-50-5	184	38.28	0.110
C <sub>14</sub> H <sub>30</sub>	n-Tetradecane	629-59-4	198	44.40	0.043
C <sub>15</sub> H <sub>32</sub>	5-Methyltetradecane	25117-32-2	212	46.23	0.026
C <sub>15</sub> H <sub>32</sub>	n-Pentadecane	629-62-9	212	53.81	0.084
C <sub>16</sub> H <sub>34</sub>	n-Hexadecane	544-76-3	226	68.79	0.057
C <sub>19</sub> H <sub>40</sub>	2,6,10,14-Tetramethylpentadecane	1921-70-6	268	92.81	0.111
C <sub>16</sub> H <sub>33</sub> Cl	1-Chlorohexadecane	4860-03-1	240	120.69	0.062
<i>Olefins</i>					
C <sub>2</sub> H <sub>4</sub>	Ethylene	74-85-1	28	2.60	0.016
C <sub>3</sub> H <sub>6</sub>	1-Propene	115-07-1	42	4.36	0.077
C <sub>4</sub> H <sub>8</sub>	2-Methyl-1-propene	115-11-7	56	6.22	0.158
C <sub>5</sub> H <sub>8</sub>	1,4-Pentadiene	591-93-5	68	8.52	0.004
C <sub>5</sub> H <sub>10</sub>	1-Pentene	109-67-1	70	8.63	0.045
C <sub>5</sub> H <sub>8</sub>	(E)-1,3-Pentadiene	2004-70-8	68	8.88	0.058
C <sub>5</sub> H <sub>8</sub>	3-Methyl-1,2-butadiene	598-25-4	68	9.16	0.003
C <sub>5</sub> H <sub>8</sub>	1,3-Pentadiene	504-60-9	68	9.40	0.003
C <sub>5</sub> H <sub>8</sub>	(Z)-1,3-Pentadiene	1574-41-0	68	9.50	0.001
C <sub>6</sub> H <sub>12</sub>	1-Hexene	592-41-6	84	12.02	0.041
C <sub>6</sub> H <sub>10</sub>	4-Methyl-1,3-pentadiene	926-56-7	82	13.55	0.004
C <sub>6</sub> H <sub>10</sub>	(Z)-3-Methyl-1,3-pentadiene	2787-45-3	82	13.74	0.004
C <sub>7</sub> H <sub>14</sub>	1-Heptene	592-76-7	98	16.01	0.040
C <sub>8</sub> H <sub>16</sub>	2,5-Dimethyl-2-hexene	3404-78-2	112	20.00	0.268
C <sub>8</sub> H <sub>16</sub>	(E)-3-Octene	14919-01-8	112	20.20	0.080
C <sub>8</sub> H <sub>16</sub>	(Z)-3-Octene	14850-22-7	112	20.29	0.128

C <sub>8</sub> H <sub>16</sub>	2-Octene	111-67-1	112	20.54	0.083
C <sub>9</sub> H <sub>18</sub>	1-Nonene	124-11-8	126	24.01	0.157
C <sub>10</sub> H <sub>20</sub>	1-Decene	872-05-9	140	27.59	0.010
C <sub>11</sub> H <sub>22</sub>	1-Undecene	821-95-4	154	30.93	0.005
C <sub>12</sub> H <sub>24</sub>	1-Dodecene	112-41-4	168	34.07	0.069
C <sub>13</sub> H <sub>26</sub>	1-Tridecene	2437-56-1	182	38.06	0.166
C <sub>14</sub> H <sub>28</sub>	(E)-3-Tetradecene	41446-68-8	196	43.95	0.077
C <sub>14</sub> H <sub>28</sub>	1-Tetradecene	1120-36-1	196	44.03	0.077
C <sub>15</sub> H <sub>30</sub>	1-Pentadecene	13360-61-7	210	53.27	0.129
C <sub>16</sub> H <sub>32</sub>	1-Hexadecene	629-73-2	224	73.54	0.026
C <sub>17</sub> H <sub>34</sub>	1-Heptadecene	6765-39-5	238	116.30	0.100

### Cyclic hydrocarbons

#### *Cyclic alkanes and alkenes*

C <sub>6</sub> H <sub>10</sub>	4-Methylcyclopentene	1759-81-5	82	12.57	0.034
C <sub>8</sub> H <sub>14</sub>	3-Propylcyclopentene	34067-75-9	110	21.40	0.004

#### *Arenes*

C <sub>6</sub> H <sub>6</sub>	Benzene	71-43-2	78	13.02	0.043
C <sub>7</sub> H <sub>8</sub>	Toluene	108-88-3	92	17.46	0.042
C <sub>8</sub> H <sub>10</sub>	Ethylbenzene	100-41-4	106	21.45	0.002
C <sub>8</sub> H <sub>10</sub>	p-Xylene	106-42-3	106	21.72	0.008
C <sub>8</sub> H <sub>8</sub>	Styrene	100-42-5	104	22.38	0.007
C <sub>9</sub> H <sub>12</sub>	Propylbenzene	103-65-1	120	25.26	0.003
C <sub>10</sub> H <sub>14</sub>	o-Cymene	527-84-4	134	28.03	0.019
C <sub>10</sub> H <sub>14</sub>	Butylbenzene	104-51-8	134	28.95	0.004
C <sub>11</sub> H <sub>16</sub>	Pentylbenzene	538-68-1	148	32.31	0.013
C <sub>12</sub> H <sub>18</sub>	Hexylbenzene	1077-16-3	162	35.78	0.008
C <sub>13</sub> H <sub>20</sub>	Heptylbenzene	1078-71-3	176	38.86	0.033
C <sub>14</sub> H <sub>22</sub>	Octylbenzene	2189-60-8	190	44.96	0.018
C <sub>15</sub> H <sub>24</sub>	Nonylbenzene	1081-77-2	204	71.16	0.024

#### *Polycyclic aromatic hydrocarbons*

C <sub>10</sub> H <sub>8</sub>	Naphthalene	91-20-3	128	32.64	0.004
C <sub>11</sub> H <sub>10</sub>	2-Methylnaphthalene	91-57-6	142	35.28	0.003
C <sub>11</sub> H <sub>10</sub>	1-Methylnaphthalene	90-12-0	142	36.15	0.002

### Heterocyclic hydrocarbons

#### *Dioxanes*

C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,4-Dioxane	123-91-1	88	14.17	0.001
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,3-Dioxane	505-22-6	88	17.91	0.001

#### *Furans*

C <sub>5</sub> H <sub>6</sub> O	2-Methylfuran	534-22-5	82	10.69	0.005
C <sub>6</sub> H <sub>8</sub> O	2-Ethylfuran	3208-16-0	96	16.41	0.006
C <sub>7</sub> H <sub>10</sub> O	2-Propylfuran	4229-91-8	110	18.44	0.001
C <sub>8</sub> H <sub>12</sub> O	2-Butylfuran	4466-24-4	124	22.58	0.003
C <sub>9</sub> H <sub>14</sub> O	2-Pentylfuran	3777-69-3	138	26.55	0.018
C <sub>10</sub> H <sub>16</sub> O	2-Hexylfuran	3777-70-6	152	29.90	0.003
C <sub>11</sub> H <sub>18</sub> O	2-Heptylfuran	3777-71-7	166	33.00	0.001
C <sub>12</sub> H <sub>20</sub> O	2-Octylfuran	4179-38-8	180	36.16	0.001
C <sub>15</sub> H <sub>26</sub> O	2-Decylfuran	83469-85-6	222	72.37	0.003

## Oxygenated hydrocarbons

### *Alcohols, ethers and esters*

CH <sub>4</sub> O	Methanol	67-56-1	32	4.54	0.235
C <sub>2</sub> H <sub>6</sub> O	Ethanol	64-17-5	46	6.67	0.039
C <sub>4</sub> H <sub>10</sub> O	1-Butanol	71-36-3	74	13.19	0.125
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	Methyl methacrylate	80-62-6	100	14.87	0.047
C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	γ-Butyrolactone	96-48-0	86	21.57	0.047
C <sub>6</sub> H <sub>6</sub> O	Phenol	108-95-2	94	24.96	0.014
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	δ-Valerolactone	542-28-9	100	26.39	0.002
C <sub>8</sub> H <sub>18</sub> O	2-Ethyl-1-hexanol	104-76-7	130	28.17	0.142
C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	γ-Caprolactone	695-06-7	114	29.75	0.001
C <sub>5</sub> H <sub>8</sub> Cl <sub>2</sub> O <sub>2</sub>	Methyl ester 3,4-dichlorobutanoic acid	819-93-2	170	30.10	0.005
C <sub>8</sub> H <sub>10</sub> O <sub>2</sub>	2-Phenoxyethanol	122-99-6	138	32.91	0.042
C <sub>8</sub> H <sub>14</sub> O <sub>2</sub>	γ-Octalactone	104-50-7	142	34.93	0.007
C <sub>10</sub> H <sub>20</sub> O	(E)-2-Decen-1-ol	18409-18-2	156	36.95	0.069
C <sub>9</sub> H <sub>16</sub> O <sub>2</sub>	γ-Nonalactone	104-61-0	156	39.49	0.011
C <sub>12</sub> H <sub>22</sub> O <sub>2</sub>	γ-Dodecalactone	2305-05-7	198	86.51	0.011
C <sub>14</sub> H <sub>18</sub> O <sub>4</sub>	Dipropyl phthalate	131-16-8	250	127.04	0.243

### *Aldehydes*

C <sub>2</sub> H <sub>4</sub> O	Acetaldehyde	75-07-0	44	5.09	0.584
C <sub>3</sub> H <sub>4</sub> O	2-Propenal	107-02-8	56	7.59	0.022
C <sub>3</sub> H <sub>6</sub> O	n-Propanal	123-38-6	58	7.95	0.294
C <sub>3</sub> H <sub>4</sub> O <sub>2</sub>	2-Oxopropanal	78-98-8	72	8.27	0.056
C <sub>4</sub> H <sub>6</sub> O	2-Methylpropanal	78-84-2	70	10.13	0.168
C <sub>4</sub> H <sub>8</sub> O	n-Butanal	123-72-8	72	10.98	0.013
C <sub>5</sub> H <sub>10</sub> O	3-Methylbutanal	590-86-3	86	14.09	0.002
C <sub>5</sub> H <sub>10</sub> O	n-Pentanal	110-62-3	86	15.08	0.075
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	Furfural	98-01-1	96	17.99	0.001
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	3-Furaldehyde	498-60-2	96	18.89	0.032
C <sub>6</sub> H <sub>12</sub> O	n-Hexanal	66-25-1	100	19.36	0.288
C <sub>7</sub> H <sub>14</sub> O	n-Heptanal	111-71-7	114	23.46	0.204
C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>	5-Methyl-2-furancarboxaldehyde	620-02-0	110	23.89	0.008
C <sub>7</sub> H <sub>6</sub> O	Benzaldehyde	100-52-7	106	24.61	0.111
C <sub>8</sub> H <sub>16</sub> O	2-Ethylhexanal	123-05-7	128	25.86	0.001
C <sub>8</sub> H <sub>16</sub> O	n-Octanal	124-13-0	128	27.22	0.471
C <sub>9</sub> H <sub>18</sub> O	n-Nonanal	124-19-6	142	30.68	0.100
C <sub>6</sub> H <sub>6</sub> O <sub>3</sub>	5-Hydroxymethylfurfural	67-47-0	126	31.43	0.060
C <sub>10</sub> H <sub>20</sub> O	n-Decanal	112-31-2	156	33.89	0.693
C <sub>11</sub> H <sub>22</sub> O	n-Undecanal	112-44-7	170	37.88	0.200
C <sub>12</sub> H <sub>24</sub> O	n-Dodecanal	112-54-9	184	43.73	0.155
C <sub>13</sub> H <sub>26</sub> O	n-Tridecanal	10486-19-8	198	52.88	0.036
C <sub>14</sub> H <sub>28</sub> O	n-Tetradecanal	124-25-4	212	67.07	0.061
C <sub>15</sub> H <sub>30</sub> O	n-Pentadecanal	2765-11-9	226	89.93	0.118

### *Ketones*

C <sub>3</sub> H <sub>6</sub> O	Acetone	67-64-1	58	7.97	0.284
C <sub>4</sub> H <sub>6</sub> O	3-Buten-2-one	78-94-4	70	10.78	0.004



C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	2,3-Butanedione	431-03-8	86	11.01	0.018
C <sub>4</sub> H <sub>8</sub> O	2-Butanone	78-93-3	72	11.13	0.010
C <sub>5</sub> H <sub>10</sub> O	2-Pentanone	107-87-9	86	14.85	0.014
C <sub>5</sub> H <sub>8</sub> O	Cyclopentanone	120-92-3	84	17.64	0.003
C <sub>6</sub> H <sub>12</sub> O	2-Hexanone	591-78-6	100	19.11	0.011
C <sub>8</sub> H <sub>14</sub> O	4-Octen-3-one	14129-48-7	126	21.05	0.094
C <sub>6</sub> H <sub>10</sub> O	Cyclohexanone	108-94-1	98	22.20	0.003
C <sub>7</sub> H <sub>14</sub> O	2-Heptanone	110-43-0	114	23.15	0.026
C <sub>8</sub> H <sub>16</sub> O	6-Methyl-2-heptanone	928-68-7	128	26.09	0.038
C <sub>8</sub> H <sub>14</sub> O	6-Methyl-5-hepten-2-one	110-93-0	126	26.37	0.009
C <sub>8</sub> H <sub>16</sub> O	2-Octanone	111-13-7	128	26.89	0.031
C <sub>9</sub> H <sub>18</sub> O	2-Nonanone	821-55-6	142	30.35	0.027
C <sub>10</sub> H <sub>20</sub> O	2-Decanone	693-54-9	156	33.54	0.041
C <sub>11</sub> H <sub>22</sub> O	2-Undecanone	112-12-9	170	37.33	0.050
C <sub>12</sub> H <sub>24</sub> O	2-Dodecanone	6175-49-1	184	42.88	0.034
C <sub>13</sub> H <sub>26</sub> O	2-Tridecanone	593-08-8	198	51.46	0.046
C <sub>14</sub> H <sub>28</sub> O	2-Tetradecanone	2345-27-9	212	65.06	0.034
C <sub>15</sub> H <sub>30</sub> O	2-Pentadecanone	2345-28-0	226	86.43	0.103
<i>Carboxylic acids</i>					
C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	Acetic acid	64-19-7	60	11.54	0.178
C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	n-Propanoic acid	79-09-4	74	16.13	0.014
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	n-Butanoic acid	107-92-6	88	19.44	0.057
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	3-Methylbutanoic acid	503-74-2	102	22.53	0.006
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	n-Pentanoic acid	109-52-4	102	23.38	0.027
C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	n-Hexanoic acid	142-62-1	116	26.75	0.073
C <sub>7</sub> H <sub>14</sub> O <sub>2</sub>	n-Heptanoic acid	111-14-8	130	30.15	0.034
C <sub>8</sub> H <sub>16</sub> O <sub>2</sub>	n-Octanoic acid	124-07-2	144	33.20	0.068
C <sub>9</sub> H <sub>18</sub> O <sub>2</sub>	n-Nonanoic acid	112-05-0	158	36.73	0.081
C <sub>10</sub> H <sub>20</sub> O <sub>2</sub>	n-Decanoic acid	334-48-5	172	42.15	0.067
C <sub>11</sub> H <sub>22</sub> O <sub>2</sub>	n-Undecanoic acid	112-37-8	186	63.98	0.073
C <sub>11</sub> H <sub>14</sub> O <sub>3</sub>	2,4,6-Trimethylmandelic acid	20797-56-2	194	71.35	0.020
C <sub>12</sub> H <sub>24</sub> O <sub>2</sub>	n-Dodecanoic acid	143-07-7	200	73.96	0.126
C <sub>13</sub> H <sub>26</sub> O <sub>2</sub>	n-Tridecanoic acid	638-53-9	214	113.49	0.176
<b>Sulfonated compounds</b>					
H <sub>2</sub> S	Hydrogen sulfide	7783-06-4	34	3.46	<0.001
COS	Carbonyl sulfide	463-58-1	60	3.83	0.006
O <sub>2</sub> S	Sulfur dioxide	7446-09-5	64	4.96	0.016
CS <sub>2</sub>	Carbon disulfide	75-15-0	76	8.33	0.005
C <sub>2</sub> H <sub>6</sub> S	Dimethyl sulfide	75-18-3	62	8.22	0.004
C <sub>2</sub> H <sub>6</sub> S <sub>2</sub>	Dimethyl disulfide	624-92-0	94	15.85	0.003
C <sub>9</sub> H <sub>14</sub> S	2-Pentylthiophene	4861-58-9	154	31.29	0.001
C <sub>10</sub> H <sub>16</sub> S	2-Hexylthiophene	18794-77-9	168	35.30	0.001
<b>Nitrogenated compounds</b>					
N <sub>2</sub>	Nitrogen	7727-37-9	28	1.95	0.224
C <sub>5</sub> H <sub>9</sub> N	1-Isocyanobutane	2769-64-4	83	6.55	0.025
C <sub>2</sub> H <sub>3</sub> N	Acetonitrile	75-05-8	41	7.17	0.038
C <sub>2</sub> H <sub>7</sub> N	Dimethylamine	124-40-3	45	6.84	0.029

CH <sub>3</sub> NO	Formamide	75-12-7	45	8.37	0.004
C <sub>5</sub> H <sub>5</sub> N	Pyridine	110-86-1	79	16.11	0.007
C <sub>6</sub> H <sub>11</sub> NO	6-Methyl-2-piperidinone	4775-98-8	113	22.22	0.001
C <sub>4</sub> H <sub>5</sub> NO <sub>2</sub>	Succinimide	123-56-8	99	29.36	0.074
<b>Inorganic compounds</b>					
<i>Oxides</i>					
H <sub>2</sub> O	Water	7732-18-5	18	3.68	65.673
CO <sub>2</sub>	Carbon dioxide	124-38-9	44	2.25	23.486

Note: <sup>1</sup>CAS – unique numerical identifier of chemical compounds included in the register Chemical Abstracts Service (<https://www.cas.org>); <sup>2</sup>MW – nominal mass; <sup>3</sup>RT – retention time; <sup>4</sup>A – normalized area (the area ratio of the individual gas mixture components to the summ of the areas of all the components in the chromatogram).

Table S3. Results of the GC-MS analysis of volatile components extracted by mechanical shock crushing from quartz from pegmatite of the Kukhilal deposit, Tajikistan.

Formula	Name	<sup>1</sup> CAS/(NIST)	<sup>2</sup> MW	Quartz	
				<sup>3</sup> RT, min	<sup>4</sup> A, %
<b>Aliphatic hydrocarbons</b>					
<i>Paraffins</i>					
CH <sub>4</sub>	Methane	74-82-8	32	1.82	2.637
C <sub>2</sub> H <sub>6</sub>	Ethane	74-84-0	30	2.45	0.022
C <sub>3</sub> H <sub>8</sub>	n-Propane	74-98-6	44	4.28	0.124
C <sub>4</sub> H <sub>10</sub>	n-Butane	106-97-8	58	6.16	0.019
C <sub>5</sub> H <sub>12</sub>	2-Methylbutane	78-78-4	72	8.18	0.015
C <sub>5</sub> H <sub>12</sub>	n-Pentane	109-66-0	72	8.63	0.011
C <sub>6</sub> H <sub>14</sub>	n-Hexane	110-54-3	86	12.12	0.025
C <sub>4</sub> H <sub>9</sub> Cl	1-Chlorobutane	109-69-3	92	12.66	0.082
C <sub>7</sub> H <sub>16</sub>	n-Heptane	142-82-5	100	16.22	0.023
C <sub>8</sub> H <sub>18</sub>	n-Octane	111-65-9	114	20.32	0.152
C <sub>9</sub> H <sub>20</sub>	n-Nonane	111-84-2	128	24.25	0.080
C <sub>10</sub> H <sub>22</sub>	n-Decane	124-18-5	142	27.84	0.027
C <sub>11</sub> H <sub>24</sub>	n-Undecane	1120-21-4	156	31.21	0.023
C <sub>12</sub> H <sub>26</sub>	n-Dodecane	112-40-3	170	34.37	0.019
C <sub>13</sub> H <sub>28</sub>	n-Tridecane	629-50-5	184	38.55	0.039
C <sub>14</sub> H <sub>30</sub>	n-Tetradecane	629-59-4	198	44.95	0.044
C <sub>15</sub> H <sub>32</sub>	n-Pentadecane	629-62-9	212	55.00	0.094
C <sub>16</sub> H <sub>34</sub>	n-Hexadecane	544-76-3	226	63.70	0.520
C <sub>17</sub> H <sub>36</sub>	7-Methylhexadecane	26730-20-1	240	71.06	0.183
C <sub>17</sub> H <sub>36</sub>	n-Heptadecane	629-78-7	240	90.14	1.139
C <sub>18</sub> H <sub>38</sub>	7-Methylheptadecane	20959-33-5	254	97.32	0.242
C <sub>18</sub> H <sub>38</sub>	4-Methylheptadecane	26429-11-8	254	121.68	0.392
C <sub>18</sub> H <sub>38</sub>	2-Methylheptadecane	1560-89-0	254	128.48	0.158
C <sub>18</sub> H <sub>38</sub>	3-Methylheptadecane	6418-44-6	254	132.89	0.234
<i>Olefins</i>					
C <sub>2</sub> H <sub>2</sub>	Acetylene	74-86-2	26	2.28	0.009
C <sub>3</sub> H <sub>6</sub>	1-Propene	115-07-1	42	4.06	0.038
C <sub>4</sub> H <sub>8</sub>	1-Butene	106-98-9	56	5.83	0.106
C <sub>4</sub> H <sub>8</sub>	2-Methyl-1-propene	115-11-7	56	5.95	0.191
C <sub>4</sub> H <sub>8</sub>	(E)-2-Butene	624-64-6	56	6.16	0.051
C <sub>4</sub> H <sub>8</sub>	2-Butene	107-01-7	56	6.26	0.055
C <sub>5</sub> H <sub>8</sub>	1,4-Pentadiene	591-93-5	68	7.98	0.001
C <sub>5</sub> H <sub>10</sub>	1-Pentene	109-67-1	70	8.33	0.023
C <sub>5</sub> H <sub>8</sub>	1,3-Pentadiene	504-60-9	68	8.54	0.011
C <sub>5</sub> H <sub>10</sub>	2-Methyl-2-butene	513-35-9	70	8.69	0.022
C <sub>5</sub> H <sub>8</sub>	(Z)-1,3-Pentadiene	1574-41-0	68	8.76	0.002
C <sub>5</sub> H <sub>8</sub>	1,2-Pentadiene	591-95-7	68	9.06	0.002
C <sub>5</sub> H <sub>8</sub>	2,3-Pentadiene	591-96-8	68	9.13	0.001
C <sub>6</sub> H <sub>12</sub>	1-Hexene	592-41-6	84	11.77	0.025
C <sub>6</sub> H <sub>10</sub>	4-Methyl-1,3-pentadiene	926-56-7	82	13.11	0.003
C <sub>6</sub> H <sub>10</sub>	(Z)-3-Methyl-1,3-pentadiene	2787-45-3	82	13.46	0.002
C <sub>7</sub> H <sub>12</sub>	5-Methyl-1-hexyne	2203-80-7	96	14.11	0.001

C <sub>7</sub> H <sub>12</sub>	1-Heptyne	628-71-7	96	15.04	0.003
C <sub>7</sub> H <sub>14</sub>	1-Heptene	592-76-7	98	15.84	0.023
C <sub>8</sub> H <sub>16</sub>	2,3-Dimethyl-3-hexene	7145-23-5	112	19.53	0.120
C <sub>8</sub> H <sub>16</sub>	5-Methyl-3-heptene	13172-91-3	114	19.68	0.313
C <sub>8</sub> H <sub>16</sub>	2,5-Dimethyl-2-hexene	3404-78-2	112	19.88	0.200
C <sub>8</sub> H <sub>16</sub>	(E)-4-Octene	14850-23-8	112	19.97	0.067
C <sub>8</sub> H <sub>16</sub>	(Z)-3-Octene	14850-22-7	112	20.02	0.245
C <sub>8</sub> H <sub>16</sub>	2,3-Dimethyl-1-hexene	16746-86-4	112	20.18	0.104
C <sub>8</sub> H <sub>16</sub>	(E)-2-Octene	13389-42-9	112	20.43	0.026
C <sub>9</sub> H <sub>18</sub>	1-Nonene	124-11-8	126	23.96	0.058
C <sub>10</sub> H <sub>20</sub>	1-Decene	872-05-9	140	27.61	0.006
C <sub>11</sub> H <sub>22</sub>	1-Undecene	821-95-4	154	31.08	0.024
C <sub>12</sub> H <sub>24</sub>	1-Dodecene	112-41-4	168	34.14	0.014
C <sub>13</sub> H <sub>26</sub>	1-Tridecene	2437-56-1	182	38.29	0.030
C <sub>14</sub> H <sub>28</sub>	1-Tetradecene	1120-36-1	196	44.55	0.031
C <sub>15</sub> H <sub>30</sub>	1-Pentadecene	13360-61-7	210	54.32	0.034
C <sub>16</sub> H <sub>32</sub>	1-Hexadecene	629-73-2	224	79.47	0.055

### Cyclic hydrocarbons

#### *Cyclic alkanes and alkenes*

C <sub>6</sub> H <sub>10</sub>	4-Methylcyclopentene	1759-81-5	82	12.22	0.014
C <sub>7</sub> H <sub>12</sub>	1-Methyl-2-methylenecyclopentane	41158-41-2	96	16.10	0.007
C <sub>7</sub> H <sub>14</sub>	Methylcyclohexane	108-87-2	98	18.12	0.003
C <sub>8</sub> H <sub>14</sub>	3-Propylcyclopentene	34067-75-9	110	21.25	0.009

#### *Arenes*

C <sub>6</sub> H <sub>6</sub>	Benzene	71-43-2	78	12.57	0.023
C <sub>7</sub> H <sub>8</sub>	Toluene	108-88-3	92	17.07	0.083
C <sub>8</sub> H <sub>10</sub>	Ethylbenzene	100-41-4	106	21.15	0.002
C <sub>8</sub> H <sub>10</sub>	p-Xylene	106-42-3	106	21.42	0.006
C <sub>8</sub> H <sub>8</sub>	Styrene	100-42-5	104	22.03	0.006
C <sub>9</sub> H <sub>12</sub>	Propylbenzene	103-65-1	120	25.00	0.005
C <sub>10</sub> H <sub>14</sub>	o-Cymene	527-84-4	134	27.88	0.044
C <sub>10</sub> H <sub>14</sub>	Butylbenzene	104-51-8	134	28.79	0.007
C <sub>11</sub> H <sub>16</sub>	Pentylbenzene	538-68-1	148	32.22	0.010
C <sub>10</sub> H <sub>12</sub>	2-Butenylbenzene	1560-06-1	132	34.07	0.009
C <sub>12</sub> H <sub>18</sub>	Hexylbenzene	1077-16-3	162	35.72	0.008
C <sub>13</sub> H <sub>20</sub>	Heptylbenzene	1078-71-3	176	38.83	0.044
C <sub>14</sub> H <sub>22</sub>	Octylbenzene	2189-60-8	190	45.51	0.017
C <sub>15</sub> H <sub>24</sub>	Nonylbenzene	1081-77-2	204	61.08	0.028

#### *Polycyclic aromatic hydrocarbons*

C <sub>10</sub> H <sub>8</sub>	Naphthalene	91-20-3	128	32.27	0.003
C <sub>11</sub> H <sub>10</sub>	2-Methylnaphthalene	91-57-6	142	36.14	0.003
C <sub>11</sub> H <sub>10</sub>	1-Methylnaphthalene	90-12-0	142	36.64	0.002

### Heterocyclic hydrocarbons

#### *Dioxanes*

C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,4-Dioxane	123-91-1	88	13.64	0.001
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,3-Dioxane	505-22-6	88	17.34	0.002

#### *Furans*

C <sub>5</sub> H <sub>6</sub> O	2-Methylfuran	534-22-5	82	10.31	0.006
C <sub>5</sub> H <sub>6</sub> O	3-Methylfuran	930-27-8	92	10.56	0.001
C <sub>6</sub> H <sub>8</sub> O	2-Ethylfuran	3208-16-0	96	12.22	0.002
C <sub>7</sub> H <sub>10</sub> O	2-Propylfuran	4229-91-8	110	18.59	0.002
C <sub>8</sub> H <sub>12</sub> O	2-Butylfuran	4466-24-4	124	22.37	0.005
C <sub>9</sub> H <sub>14</sub> O	2-Pentylfuran	3777-69-3	138	26.25	0.014
C <sub>10</sub> H <sub>16</sub> O	2-Hexylfuran	3777-70-6	152	29.84	0.002
C <sub>11</sub> H <sub>18</sub> O	2-Heptylfuran	3777-71-7	166	32.94	0.001
C <sub>12</sub> H <sub>20</sub> O	2-Octylfuran	4179-38-8	180	36.84	0.008
C <sub>15</sub> H <sub>26</sub> O	2-Decylfuran	83469-85-6	222	69.24	0.010

### Oxygenated hydrocarbons

#### *Alcohols, ethers and esters*

CH <sub>4</sub> O	Methanol	67-56-1	32	4.88	0.054
C <sub>2</sub> H <sub>6</sub> O	Ethanol	64-17-5	46	6.45	0.034
C <sub>4</sub> H <sub>10</sub> O	Isobutanol	78-83-1	74	11.96	0.002
C <sub>4</sub> H <sub>10</sub> O	1-Butanol	71-36-3	74	12.82	0.162
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	Methyl methacrylate	80-62-6	100	14.49	0.026
C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	γ-Butyrolactone	96-48-0	86	20.78	0.120
C <sub>6</sub> H <sub>10</sub> O	2-Cyclohexen-1-ol	822-67-3	98	21.65	0.002
C <sub>6</sub> H <sub>6</sub> O	Phenol	108-95-2	94	24.71	0.020
C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	γ-Caprolactone	695-06-7	114	27.41	0.006
C <sub>8</sub> H <sub>18</sub> O	2-Ethyl-1-hexanol	104-76-7	130	27.99	0.199
C <sub>7</sub> H <sub>12</sub> O <sub>2</sub>	γ-Heptanolactone	105-21-5	128	32.11	0.005
C <sub>8</sub> H <sub>10</sub> O <sub>2</sub>	2-Phenoxyethanol	122-99-6	138	33.09	0.067
C <sub>8</sub> H <sub>14</sub> O <sub>2</sub>	γ-Octalactone	104-50-7	142	34.57	0.010
C <sub>10</sub> H <sub>20</sub> O	(E)-2-Decen-1-ol	18409-18-2	156	36.97	0.041
C <sub>9</sub> H <sub>16</sub> O <sub>2</sub>	γ-Nonalactone	104-61-0	156	39.13	0.017
C <sub>10</sub> H <sub>18</sub> O <sub>2</sub>	γ-Decalactone	706-14-9	170	46.16	0.012
C <sub>11</sub> H <sub>20</sub> O <sub>2</sub>	γ-Undecalactone	104-67-6	184	57.22	0.007
C <sub>12</sub> H <sub>14</sub> O <sub>4</sub>	Diethyl Phthalate	84-66-2	222	58.93	0.026
C <sub>14</sub> H <sub>18</sub> O <sub>4</sub>	Diisopropyl phthalate	605-45-8	250	70.11	0.084
C <sub>12</sub> H <sub>22</sub> O <sub>2</sub>	γ-Dodecalactone	2305-05-7	198	75.00	0.022
C <sub>13</sub> H <sub>24</sub> O <sub>2</sub>	δ-Tridecalactone	7370-92-5	212	108.33	0.075

#### *Aldehydes*

C <sub>2</sub> H <sub>4</sub> O	Acetaldehyde	75-07-0	44	5.21	0.086
C <sub>3</sub> H <sub>4</sub> O	2-Propenal	107-02-8	56	7.19	0.007
C <sub>3</sub> H <sub>6</sub> O	n-Propanal	123-38-6	58	7.39	0.072
C <sub>4</sub> H <sub>6</sub> O	2-Methyl-2-propenal	78-85-3	70	9.66	0.023
C <sub>4</sub> H <sub>8</sub> O	2-Methylpropanal	78-84-2	72	9.73	0.012
C <sub>4</sub> H <sub>8</sub> O	n-Butanal	123-72-8	72	10.49	0.003
C <sub>5</sub> H <sub>10</sub> O	3-Methylbutanal	590-86-3	86	13.69	0.134
C <sub>5</sub> H <sub>10</sub> O	n-Pentanal	110-62-3	86	14.69	0.022
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	Furfural	98-01-1	96	17.35	0.003
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	3-Furaldehyde	498-60-2	96	18.24	0.024
C <sub>6</sub> H <sub>12</sub> O	n-Hexanal	66-25-1	100	19.04	0.206
C <sub>7</sub> H <sub>14</sub> O	n-Heptanal	111-71-7	114	23.18	0.146
C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>	5-Methyl-2-furancarboxaldehyde	620-02-0	110	23.30	0.006

$C_7H_6O$	Benzaldehyde	100-52-7	106	24.05	0.032
$C_8H_{16}O$	2-Ethylhexanal	123-05-7	128	25.78	0.034
$C_8H_{16}O$	n-Octanal	124-13-0	128	27.06	0.035
$C_9H_{18}O$	n-Nonanal	124-19-6	142	30.58	0.055
$C_6H_6O_3$	5-Hydroxymethylfurfural	67-47-0	126	31.96	0.023
$C_{10}H_{20}O$	n-Decanal	112-31-2	156	33.87	0.042
$C_{11}H_{22}O$	n-Undecanal	112-44-7	170	37.92	0.055
$C_{12}H_{24}O$	n-Dodecanal	112-54-9	184	44.03	0.018
$C_{13}H_{26}O$	n-Tridecanal	10486-19-8	198	53.84	0.024
$C_{14}H_{28}O$	n-Tetradecanal	124-25-4	212	61.85	0.072
<i>Ketones</i>					
$C_3H_6O$	Acetone	67-64-1	58	7.56	0.137
$C_4H_6O_2$	2,3-Butanedione	431-03-8	86	10.58	0.003
$C_4H_8O$	2-Butanone	78-93-3	72	10.64	0.004
$C_5H_{10}O$	2-Pentanone	107-87-9	86	14.46	0.013
$C_5H_8O$	Cyclopentanone	120-92-3	84	16.82	0.002
$C_6H_{12}O$	2-Hexanone	591-78-6	100	18.79	0.007
$C_7H_{14}O$	2-Heptanone	110-43-0	114	22.92	0.025
$C_8H_{16}O$	6-Methyl-2-heptanone	928-68-7	128	25.95	0.011
$C_8H_{14}O$	6-Methyl-5-hepten-2-one	110-93-0	126	26.20	0.017
$C_8H_{16}O$	2-Octanone	111-13-7	128	26.73	0.030
$C_9H_{18}O$	2-Nonanone	821-55-6	142	30.28	0.024
$C_{10}H_{20}O$	2-Decanone	693-54-9	156	33.52	0.029
$C_8H_4O_3$	Phthalic anhydride	85-44-9	148	35.82	0.101
$C_{11}H_{22}O$	2-Undecanone	112-12-9	170	37.39	0.048
$C_{12}H_{24}O$	2-Dodecanone	6175-49-1	184	43.16	0.024
$C_{13}H_{26}O$	2-Tridecanone	593-08-8	198	52.32	0.027
$C_{14}H_{28}O$	2-Tetradecanone	2345-27-9	212	59.55	0.040
$C_{15}H_{30}O$	2-Pentadecanone	2345-28-0	226	83.46	0.157
<i>Carboxylic acids</i>					
$C_2H_4O_2$	Acetic acid	64-19-7	60	11.26	0.383
$C_3H_6O_2$	n-Propanoic acid	79-09-4	74	15.22	0.016
$C_4H_8O_2$	n-Butanoic acid	107-92-6	88	19.04	0.073
$C_5H_{10}O_2$	3-Methylbutanoic acid	503-74-2	102	22.13	0.012
$C_5H_{10}O_2$	n-Pentanoic acid	109-52-4	102	23.03	0.056
$C_6H_{12}O_2$	n-Hexanoic acid	142-62-1	116	26.51	0.292
$C_7H_{14}O_2$	n-Heptanoic acid	111-14-8	130	30.01	0.124
$C_8H_{16}O_2$	n-Octanoic acid	124-07-2	144	33.12	0.189
$C_9H_{18}O_2$	n-Nonanoic acid	112-05-0	158	36.69	0.153
$C_{10}H_{20}O_2$	n-Decanoic acid	334-48-5	172	42.22	0.152
$C_{11}H_{22}O_2$	n-Undecanoic acid	112-37-8	186	51.79	0.034
$C_{12}H_{24}O_2$	n-Dodecanoic acid	143-07-7	200	65.23	0.118
$C_{13}H_{26}O_2$	n-Tetradecanoic acid	544-63-8	214	123.18	0.127
<b>Sulfonated compounds</b>					
$H_2S$	Hydrogen sulfide	7783-06-4	34	2.83	0.128
$COS$	Carbonyl sulfide	463-58-1	60	3.53	0.045
$O_2S$	Sulfur dioxide	7446-09-5	64	4.73	0.059

CH <sub>4</sub> S	Methanethiol	74-93-1	48	5.50	0.249
CS <sub>2</sub>	Carbon disulfide	75-15-0	76	7.83	0.039
C <sub>2</sub> H <sub>6</sub> S	Dimethyl sulfide	75-18-3	62	7.78	1.817
C <sub>2</sub> H <sub>6</sub> S <sub>2</sub>	Dimethyl disulfide	624-92-0	94	15.37	0.048
C <sub>10</sub> H <sub>16</sub> S	2-Hexylthiophene	18794-77-9	168	35.05	0.001
<b>Nitrogenated compounds</b>					
N <sub>2</sub>	Nitrogen	7727-37-9	28	1.62	0.099
H <sub>3</sub> N	Ammonia	7664-41-7	17	2.88	0.059
C <sub>2</sub> H <sub>3</sub> N	2H-Azirine	157-16-4	41	6.80	0.016
C <sub>5</sub> H <sub>5</sub> N	Pyridine	110-86-1	79	15.37	0.028
C <sub>6</sub> H <sub>9</sub> N	2,3-Dimethyl-1H-pyrrole	600-28-2	95	18.65	0.002
C <sub>6</sub> H <sub>11</sub> NO	6-Methyl-2-piperidinone	4775-98-8	113	21.93	0.001
C <sub>4</sub> H <sub>5</sub> NO <sub>2</sub>	Succinimide	123-56-8	99	28.68	0.009
C <sub>5</sub> H <sub>9</sub> NO	1-Methyl-2-pyrrolidinone	872-50-4	99	29.89	0.006
C <sub>9</sub> H <sub>9</sub> NS	3-Methyl-2-methylene-benzothiazoline	23574-67-6	163	51.09	0.038
C <sub>10</sub> H <sub>11</sub> NO <sub>4</sub>	(2-Methyl-3-nitrophenyl)methyl ester acetic acid	(367949)	209	86.41	0.082
<b>Inorganic compounds</b>					
<i>Oxides</i>					
H <sub>2</sub> O	Water	7732-18-5	18	3.20	76.171
CO <sub>2</sub>	Carbon dioxide	124-38-9	44	1.90	7.958

Note: <sup>1</sup>CAS/(NIST) – unique numerical identifier of chemical compounds included in the register Chemical Abstracts Service (<https://www.cas.org>) or NIST number (a unique number given to each spectrum in the NIST archive); <sup>2</sup>MW – nominal mass; <sup>3</sup>RT – retention time; <sup>4</sup>A – normalized area (the area ratio of the individual gas mixture components to the summ of the areas of all the components in the chromatogram).

Table S4. Results of the GC-MS analysis of volatile components extracted by mechanical shock crushing from tourmaline from pegmatite of the Kukhilal field, Tajikistan.

Formula	Name	<sup>1</sup> CAS	<sup>2</sup> MW	Tourmaline	
				<sup>3</sup> RT, min	<sup>4</sup> A, %
<b>Aliphatic hydrocarbons</b>					
<i>Paraffins</i>					
CH <sub>4</sub>	Methane	74-82-8	32	1.73	0.011
C <sub>2</sub> H <sub>6</sub>	Ethane	74-84-0	30	2.42	0.018
C <sub>3</sub> H <sub>8</sub>	n-Propane	74-98-6	44	4.18	0.012
C <sub>4</sub> H <sub>10</sub>	n-Butane	106-97-8	58	6.08	0.056
C <sub>5</sub> H <sub>12</sub>	n-Pentane	109-66-0	72	8.48	0.017
C <sub>6</sub> H <sub>14</sub>	n-Hexane	110-54-3	86	11.86	0.035
C <sub>7</sub> H <sub>16</sub>	n-Heptane	142-82-5	100	15.87	0.037
C <sub>8</sub> H <sub>16</sub>	2-Methylheptane	592-27-8	114	19.18	0.015
C <sub>8</sub> H <sub>18</sub>	n-Octane	111-65-9	114	19.95	0.072
C <sub>9</sub> H <sub>20</sub>	n-Nonane	111-84-2	128	23.81	0.126
C <sub>10</sub> H <sub>22</sub>	n-Decane	124-18-5	142	27.39	0.062
C <sub>11</sub> H <sub>24</sub>	n-Undecane	1120-21-4	156	30.71	0.090
C <sub>12</sub> H <sub>26</sub>	n-Dodecane	112-40-3	170	33.81	0.088
C <sub>13</sub> H <sub>28</sub>	n-Tridecane	629-50-5	184	37.65	0.052
C <sub>14</sub> H <sub>30</sub>	n-Tetradecane	629-59-4	198	43.43	0.049
C <sub>15</sub> H <sub>32</sub>	n-Pentadecane	629-62-9	212	52.47	0.059
C <sub>16</sub> H <sub>34</sub>	n-Hexadecane	544-76-3	226	66.76	0.080
C <sub>17</sub> H <sub>36</sub>	n-Heptadecane	629-78-7	240	89.98	0.073
C <sub>18</sub> H <sub>38</sub>	7-Methylheptadecane	20959-33-5	254	96.64	0.085
C <sub>18</sub> H <sub>38</sub>	4-Methylheptadecane	26429-11-8	254	116.99	0.068
C <sub>18</sub> H <sub>38</sub>	2-Methylheptadecane	1560-89-0	254	126.91	0.075
<i>Olefins</i>					
C <sub>2</sub> H <sub>2</sub>	Acetylene	74-86-2	26	2.23	0.014
C <sub>3</sub> H <sub>6</sub>	1-Propene	115-07-1	42	4.03	0.049
C <sub>4</sub> H <sub>8</sub>	1-Butene	106-98-9	56	5.90	0.201
C <sub>4</sub> H <sub>8</sub>	2-Methyl-1-propene	115-11-7	56	6.11	0.021
C <sub>4</sub> H <sub>8</sub>	(E)-2-Butene	624-64-6	56	6.21	0.015
C <sub>5</sub> H <sub>8</sub>	1,4-Pentadiene	591-93-5	68	7.88	0.001
C <sub>5</sub> H <sub>10</sub>	1-Pentene	109-67-1	70	8.19	0.044
C <sub>5</sub> H <sub>8</sub>	1,3-Pentadiene	504-60-9	68	8.44	0.013
C <sub>5</sub> H <sub>10</sub>	2-Methyl-2-butene	513-35-9	70	8.56	0.004
C <sub>5</sub> H <sub>8</sub>	(Z)-1,3-Pentadiene	1574-41-0	68	8.68	0.005
C <sub>5</sub> H <sub>8</sub>	1,2-Pentadiene	591-95-7	68	8.94	0.002
C <sub>5</sub> H <sub>8</sub>	2,3-Pentadiene	591-96-8	68	9.03	0.001
C <sub>6</sub> H <sub>12</sub>	1-Hexene	592-41-6	84	11.54	0.041
C <sub>6</sub> H <sub>10</sub>	4-Methyl-1,3-pentadiene	926-56-7	82	12.66	0.020
C <sub>6</sub> H <sub>10</sub>	3-Hexyne	928-49-4	82	12.97	0.007
C <sub>6</sub> H <sub>10</sub>	(Z)-3-Methyl-1,3-pentadiene	2787-45-3	82	13.22	0.006
C <sub>7</sub> H <sub>12</sub>	5-Methyl-1-hexyne	2203-80-7	96	13.92	0.001
C <sub>7</sub> H <sub>14</sub>	1-Heptene	592-76-7	98	15.52	0.025
C <sub>8</sub> H <sub>16</sub>	5-Methyl-3-heptene	13172-91-3	114	19.35	0.043
C <sub>8</sub> H <sub>16</sub>	(E)-4-Octene	14850-23-8	112	19.52	0.022



C <sub>8</sub> H <sub>16</sub>	2,3-Dimethyl-1-hexene	16746-86-4	112	19.73	0.038
C <sub>8</sub> H <sub>16</sub>	(Z)-3-Octene	14850-22-7	112	19.63	0.038
C <sub>8</sub> H <sub>16</sub>	(E)-2-Octene	13389-42-9	112	19.80	0.013
C <sub>9</sub> H <sub>18</sub>	1-Nonene	124-11-8	126	23.56	0.094
C <sub>10</sub> H <sub>20</sub>	1-Decene	872-05-9	140	27.17	0.012
C <sub>11</sub> H <sub>22</sub>	1-Undecene	821-95-4	154	30.53	0.009
C <sub>12</sub> H <sub>24</sub>	1-Dodecene	112-41-4	168	33.62	0.033
C <sub>13</sub> H <sub>26</sub>	1-Tridecene	2437-56-1	182	37.40	0.022
C <sub>14</sub> H <sub>28</sub>	1-Tetradecene	1120-36-1	196	43.03	0.026
C <sub>15</sub> H <sub>30</sub>	1-Pentadecene	13360-61-7	210	51.91	0.056
C <sub>16</sub> H <sub>32</sub>	1-Hexadecene	629-73-2	224	78.90	0.021

### Cyclic hydrocarbons

#### *Cyclic alkanes and alkenes*

C <sub>6</sub> H <sub>10</sub>	4-Methylcyclopentene	1759-81-5	82	11.94	0.008
C <sub>8</sub> H <sub>16</sub>	Pentylcyclopropane	2511-91-3	112	20.05	0.019
C <sub>8</sub> H <sub>14</sub>	3-Propylcyclopentene	34067-75-9	110	20.92	0.003

#### *Arenes*

C <sub>6</sub> H <sub>6</sub>	Benzene	71-43-2	78	12.46	0.177
C <sub>7</sub> H <sub>8</sub>	Toluene	108-88-3	92	16.87	0.084
C <sub>8</sub> H <sub>10</sub>	Ethylbenzene	100-41-4	106	20.90	0.002
C <sub>8</sub> H <sub>10</sub>	p-Xylene	106-42-3	106	21.17	0.109
C <sub>8</sub> H <sub>8</sub>	Styrene	100-42-5	104	21.82	0.016
C <sub>9</sub> H <sub>12</sub>	Propylbenzene	103-65-1	120	24.71	0.010
C <sub>10</sub> H <sub>14</sub>	o-Cymene	527-84-4	134	27.54	0.020
C <sub>10</sub> H <sub>14</sub>	Butylbenzene	104-51-8	134	28.48	0.013
C <sub>11</sub> H <sub>16</sub>	Pentylbenzene	538-68-1	148	31.87	0.009
C <sub>12</sub> H <sub>18</sub>	Hexylbenzene	1077-16-3	162	35.26	0.010
C <sub>13</sub> H <sub>20</sub>	Heptylbenzene	1078-71-3	176	38.47	0.026
C <sub>14</sub> H <sub>22</sub>	Octylbenzene	2189-60-8	190	45.06	0.008
C <sub>15</sub> H <sub>24</sub>	Nonylbenzene	1081-77-2	204	60.30	0.029

#### *Polycyclic aromatic hydrocarbons*

C <sub>10</sub> H <sub>8</sub>	Naphthalene	91-20-3	128	32.07	0.018
C <sub>11</sub> H <sub>10</sub>	2-Methylnaphthalene	91-57-6	142	35.82	0.008
C <sub>11</sub> H <sub>10</sub>	1-Methylnaphthalene	90-12-0	142	36.34	0.009

### Heterocyclic hydrocarbons

#### *Dioxanes*

C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,4-Dioxane	123-91-1	88	13.66	0.001
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#### *Furans*

C <sub>4</sub> H <sub>4</sub> O	Furan	110-00-9	68	7.21	0.001
C <sub>5</sub> H <sub>6</sub> O	2-Methylfuran	534-22-5	82	10.21	0.005
C <sub>5</sub> H <sub>6</sub> O	3-Methylfuran	930-27-8	92	10.49	0.001
C <sub>6</sub> H <sub>8</sub> O	2-Ethylfuran	3208-16-0	96	12.01	0.001
C <sub>7</sub> H <sub>10</sub> O	2-Propylfuran	4229-91-8	110	18.34	0.002
C <sub>8</sub> H <sub>12</sub> O	2-Butylfuran	4466-24-4	124	22.10	0.002
C <sub>9</sub> H <sub>14</sub> O	2-Pentylfuran	3777-69-3	138	25.91	0.004
C <sub>10</sub> H <sub>16</sub> O	2-Hexylfuran	3777-70-6	152	29.41	0.002
C <sub>11</sub> H <sub>18</sub> O	2-Heptylfuran	3777-71-7	166	32.72	0.002

C <sub>12</sub> H <sub>20</sub> O	2-Octylfuran	4179-38-8	180	36.35	0.002
C <sub>15</sub> H <sub>26</sub> O	2-Decylfuran	83469-85-6	222	69.21	0.004

### Oxygenated hydrocarbons

#### *Alcohols, ethers and esters*

CH <sub>4</sub> O	Methanol	67-56-1	32	4.61	0.237
C <sub>2</sub> H <sub>6</sub> O	Ethanol	64-17-5	46	6.63	0.114
C <sub>4</sub> H <sub>10</sub> O	1-Butanol	71-36-3	74	12.54	0.012
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	Methyl methacrylate	80-62-6	100	14.39	0.017
C <sub>6</sub> H <sub>6</sub> O	Phenol	108-95-2	94	24.78	0.015
C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	γ-Caprolactone	695-06-7	114	27.01	0.002
C <sub>7</sub> H <sub>12</sub> O <sub>2</sub>	γ-Heptanolactone	105-21-5	128	31.11	0.006
C <sub>8</sub> H <sub>14</sub> O <sub>2</sub>	γ-Octalactone	104-50-7	142	34.56	0.008
C <sub>10</sub> H <sub>20</sub> O	(E)-2-Decen-1-ol	18409-18-2	156	36.50	0.053
C <sub>9</sub> H <sub>16</sub> O <sub>2</sub>	γ-Nonalactone	104-61-0	156	39.02	0.009
C <sub>10</sub> H <sub>18</sub> O <sub>2</sub>	γ-Decalactone	706-14-9	170	45.76	0.009
C <sub>11</sub> H <sub>20</sub> O <sub>2</sub>	γ-Undecalactone	104-67-6	184	52.97	0.003
C <sub>12</sub> H <sub>22</sub> O <sub>2</sub>	γ-Dodecalactone	2305-05-7	198	72.91	0.010
C <sub>13</sub> H <sub>24</sub> O <sub>2</sub>	δ-Tridecalactone	7370-92-5	212	106.73	0.002

#### Aldehydes

C <sub>2</sub> H <sub>4</sub> O	Acetaldehyde	75-07-0	44	5.33	0.276
C <sub>3</sub> H <sub>4</sub> O	2-Propenal	107-02-8	56	7.29	0.005
C <sub>4</sub> H <sub>6</sub> O	2-Methyl-2-propenal	78-85-3	70	9.69	0.019
C <sub>4</sub> H <sub>8</sub> O	2-Methylpropanal	78-84-2	72	9.73	0.021
C <sub>4</sub> H <sub>8</sub> O	n-Butanal	123-72-8	72	10.53	0.005
C <sub>5</sub> H <sub>10</sub> O	3-Methylbutanal	590-86-3	86	13.64	0.016
C <sub>5</sub> H <sub>10</sub> O	n-Pentanal	110-62-3	86	14.65	0.022
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	Furfural	98-01-1	96	17.47	0.001
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	3-Furaldehyde	498-60-2	96	18.35	0.035
C <sub>6</sub> H <sub>12</sub> O	n-Hexanal	66-25-1	100	18.94	0.072
C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>	5-Methyl-2-furancarboxaldehyde	620-02-0	110	23.07	0.002
C <sub>7</sub> H <sub>14</sub> O	n-Heptanal	111-71-7	114	23.07	0.101
C <sub>7</sub> H <sub>6</sub> O	Benzaldehyde	100-52-7	106	24.06	0.038
C <sub>8</sub> H <sub>16</sub> O	2-Ethylhexanal	123-05-7	128	25.78	0.024
C <sub>8</sub> H <sub>16</sub> O	n-Octanal	124-13-0	128	26.78	0.026
C <sub>9</sub> H <sub>18</sub> O	n-Nonanal	124-19-6	142	30.36	0.006
C <sub>6</sub> H <sub>6</sub> O <sub>3</sub>	5-Hydroxymethylfurfural	67-47-0	126	30.91	0.004
C <sub>10</sub> H <sub>20</sub> O	n-Decanal	112-31-2	156	33.22	0.050
C <sub>11</sub> H <sub>22</sub> O	n-Undecanal	112-44-7	170	37.02	0.014
C <sub>12</sub> H <sub>24</sub> O	n-Dodecanal	112-54-9	184	42.00	0.042
C <sub>13</sub> H <sub>26</sub> O	n-Tridecanal	10486-19-8	198	50.93	0.008
C <sub>14</sub> H <sub>28</sub> O	n-Tetradecanal	124-25-4	212	64.18	0.044

#### *Ketones*

C <sub>3</sub> H <sub>6</sub> O	Acetone	67-64-1	58	7.68	0.341
C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	2,3-Butanedione	431-03-8	86	10.59	0.001
C <sub>4</sub> H <sub>8</sub> O	2-Butanone	78-93-3	72	10.71	0.013
C <sub>5</sub> H <sub>10</sub> O	2-Pentanone	107-87-9	86	14.42	0.016
C <sub>5</sub> H <sub>8</sub> O	Cyclopentanone	120-92-3	84	16.90	0.002
C <sub>6</sub> H <sub>12</sub> O	2-Hexanone	591-78-6	100	18.69	0.009

C <sub>7</sub> H <sub>14</sub> O	2-Heptanone	110-43-0	114	22.77	0.020
C <sub>8</sub> H <sub>14</sub> O	6-Methyl-5-hepten-2-one	110-93-0	126	26.00	0.016
C <sub>8</sub> H <sub>16</sub> O	2-Octanone	111-13-7	128	26.53	0.019
C <sub>9</sub> H <sub>18</sub> O	2-Nonanone	821-55-6	142	30.01	0.034
C <sub>10</sub> H <sub>20</sub> O	2-Decanone	693-54-9	156	32.89	0.031
C <sub>8</sub> H <sub>4</sub> O <sub>3</sub>	Phthalic anhydride	85-44-9	148	36.09	0.092
C <sub>11</sub> H <sub>22</sub> O	2-Undecanone	112-12-9	170	36.85	0.019
C <sub>12</sub> H <sub>24</sub> O	2-Dodecanone	6175-49-1	184	41.55	0.049
C <sub>13</sub> H <sub>26</sub> O	2-Tridecanone	593-08-8	198	50.73	0.013
C <sub>14</sub> H <sub>28</sub> O	2-Tetradecanone	2345-27-9	212	60.90	0.028
C <sub>15</sub> H <sub>30</sub> O	2-Pentadecanone	2345-28-0	226	82.85	0.027
<i>Carboxylic acids</i>					
C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	Acetic acid	64-19-7	60	11.31	0.131
C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	n-Propanoic acid	79-09-4	74	15.37	0.014
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	n-Butanoic acid	107-92-6	88	19.04	0.050
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	3-Methylbutanoic acid	503-74-2	102	22.10	0.009
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	n-Pentanoic acid	109-52-4	102	23.02	0.035
C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	n-Hexanoic acid	142-62-1	116	26.51	0.072
C <sub>7</sub> H <sub>14</sub> O <sub>2</sub>	n-Heptanoic acid	111-14-8	130	29.93	0.031
C <sub>8</sub> H <sub>16</sub> O <sub>2</sub>	n-Octanoic acid	124-07-2	144	33.01	0.075
C <sub>9</sub> H <sub>18</sub> O <sub>2</sub>	n-Nonanoic acid	112-05-0	158	36.49	0.047
C <sub>10</sub> H <sub>20</sub> O <sub>2</sub>	n-Decanoic acid	334-48-5	172	41.60	0.096
C <sub>11</sub> H <sub>22</sub> O <sub>2</sub>	n-Undecanoic acid	112-37-8	186	49.76	0.037
C <sub>12</sub> H <sub>24</sub> O <sub>2</sub>	n-Dodecanoic acid	143-07-7	200	62.22	0.075
<b>Sulfonated compounds</b>					
H <sub>2</sub> S	Hydrogen sulfide	7783-06-4	34	2.83	0.042
COS	Carbonyl sulfide	463-58-1	60	3.50	0.073
O <sub>2</sub> S	Sulfur dioxide	7446-09-5	64	4.76	0.218
CH <sub>4</sub> S	Methanethiol	74-93-1	48	5.51	0.093
CS <sub>2</sub>	Carbon disulfide	75-15-0	76	7.79	0.025
C <sub>2</sub> H <sub>6</sub> S	Dimethyl sulfide	75-18-3	62	7.76	1.585
C <sub>2</sub> H <sub>6</sub> S <sub>2</sub>	Dimethyl disulfide	624-92-0	94	15.27	0.005
C <sub>10</sub> H <sub>16</sub> S	2-Hexylthiophene	18794-77-9	168	35.04	0.002
<b>Nitrogenated compounds</b>					
N <sub>2</sub>	Nitrogen	7727-37-9	28	1.68	1.057
H <sub>3</sub> N	Ammonia	7664-41-7	17	3.01	0.046
C <sub>2</sub> H <sub>3</sub> N	2H-Azirine	157-16-4	41	6.93	0.394
CH <sub>3</sub> NO	Formamide	75-12-7	45	7.76	0.436
C <sub>3</sub> H <sub>5</sub> N	Propanenitrile	107-12-0	55	9.53	0.030
C <sub>4</sub> H <sub>5</sub> N	Pyrrole	109-97-7	67	14.57	0.004
C <sub>5</sub> H <sub>5</sub> N	Pyridine	110-86-1	79	15.75	0.020
C <sub>5</sub> H <sub>9</sub> N	Pentanenitrile	110-59-8	83	17.55	0.002
C <sub>6</sub> H <sub>9</sub> N	2,3-Dimethyl-1H-pyrrole	600-28-2	95	18.85	0.001
C <sub>6</sub> H <sub>11</sub> NO	6-Methyl-2-piperidinone	4775-98-8	113	21.73	0.002
C <sub>7</sub> H <sub>5</sub> N	Benzonitrile	100-47-0	103	24.88	0.094
C <sub>7</sub> H <sub>13</sub> N	Heptanonitrile	629-08-3	111	25.76	0.012
C <sub>4</sub> H <sub>5</sub> NO <sub>2</sub>	Succinimide	123-56-8	99	29.04	0.008
C <sub>8</sub> H <sub>5</sub> NO <sub>2</sub>	Phthalimide	85-41-6	147	43.66	0.013

C <sub>9</sub> H <sub>11</sub> NO	Phenylpropanamide	102-93-2	149	57.42	0.010
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**Inorganic compounds**

*Oxides*

H <sub>2</sub> O	Water	7732-18-5	18	3.26	17.953
CO <sub>2</sub>	Carbon dioxide	124-38-9	44	1.92	72.462

Note: <sup>1</sup>CAS – unique numerical identifier of chemical compounds included in the register Chemical Abstracts Service (<https://www.cas.org>); <sup>2</sup>MW – nominal mass; <sup>3</sup>RT – retention time; <sup>4</sup>A – normalized area (the area ratio of the individual gas mixture components to the summ of the areas of all the components in the chromatogram).