# Priority PAHs

## BMF 40 (Edition 2.1) – Priority PAHs

Polycyclic aromatic hydrocarbons (PAHs) occur in oil, coal and tar deposits, and are found as pollution in air, water and soil. PAH are amongst the most toxic compounds known to man. Several PAHs are proven to be carcinogenic, mutagenic and teratogenic. Due to their wide distribution and toxicity, it is considered important to monitor the levels of these compounds in food and in the environment.[1-2]

PAHs are by-products of burning fuel; both fossil fuel and biomass. Incomplete combustion - can occur in industrial processes, barbecuing, in fires and in cigarette smoke - can also lead to formation of PAHs. Fire-fighters and coal workers are considered among those most exposed. PAHs are also present in foodstuff, and the highest intake is shown to come from cereals, oils and fats. Smaller amounts come from vegetables and cooked meat.

The toxicity of the PAHs is highly structurally dependent; isomers may vary from nontoxic to very toxic, and the carcinogenicity is often related to PAHs with a “bay” or a “fjord” region. PAHs are quickly metabolized in the body to epoxydiols, which are considered the ultimate carcinogens. They can be monitored by elaborate methods such as the tetrol metabolites in hair samples.[3]

PAH compounds of particular toxicological and environmental concern are monitored using internationally recognized methods. The list of priority PAHs varies in different countries. In the United States the Environmental Protection Agency (EPA) has listed 16 priority PAHs based on those most abundant. The EU-list of 15+1 PAH is based on those considered most toxic in foodstuff. Those of highest concern in food are the sum of benzo[a]pyrene, benz[a]anthracene, benzo[b]fluoranthene, and chrysene.[4]

The European Chemical Agency (ECHA) are listing industrial compounds of very high concern (SVHC). Four PAHs are now on the SVHC list and one is on the candidate list. Benzo[ghi]perylene (candidate), chrysene and benzo[a]anthracene, were listed in 2018 due to their carcinogenic, persistent, bioaccumulative and toxic (PBT) and very persistent and very bioaccumulative (vPvB) properties.[5]

All of the high priority PAHs, as well as internal standards and several hydroxy-, keto- and nitro-metabolites are available from Chiron as solutions and as neat material. More than 100 mixes are available from Chiron.

The scope of BMF 40-Edition 2.0 is to list priority PAHs, their associated internal standards and ready-made mixes available. A complete list of available PAH mixes can be found in the Chiron product list. The metabolites (hydroxy- and nitro-) are listed in BMF 57 (www.chiron.no).


Literature:

1. https://www.atsdr.cdc.gov/csem/pah/docs/pah.pdf
2. Michael Brauer (2016) Poor air quality kills 5.5 million worldwide annually. Available at: http://www.healthdata.org/news-release/poor-air-quality-kills-55-million-worldwide-annually
3. Grova N *et al.* New insights into urine-based assessment of PAH-exposure from a rat model: Identification of relevant metabolites and influence of elimination kinetics. Environ. Pollut. 2017;228:484-95 and Grova N *et al.* Gas chromatography-tandem mass spectrometry analysis of 52 monohy droxylated metabolites of PAHs in hairs of rats after controlled exposure. Anal Bioanal Chem. 2013;405:8897-911.
4. http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1447765874610&uri=CELEX:32014R1327
5. https://echa.europa.eu/candidate-list-table


| Native Priority PAHs Mixes: | | | | | |
|---|---|---|---|---|---|
| **Catalogue No.** | **Description** | **Cas No.** | **16 EPA** | **EU 15+1** | **16 EPA + EU 15+1** |
| | | | S-4063*<br>16 EPA PAHs<br>PAH Mix 01 | S-4589<br>EU 15+1 PAHs<br>PAH Mix 58 | S-4985<br>16 EPA + EU 15+1<br>PAH Mix 108 |
| 0711.10 | Naphthalene | [91-20-3] | x | | x |
| 0732.12 | Acenaphthene | [83-32-9] | x | | x |
| 0002.12 | Acenaphthylene | [208-96-8] | x | | x |
| 0217.13 | Fluorene | [86-73-7] | x | | x |
| 0816.14 | Phenanthrene | [85-01-8] | x | | x |
| 1049.14 | Anthracene | [120-12-7] | x | | x |
| 0260.16 | Fluoranthene | [206-44-0] | x | | x |
| 0235.16 | Pyrene | [129-00-0] | x | | x |
| 0309.17 | Benzo[c]fluorene | [205-12-9] | | x | x |
| 0201.18 | Benz[a]anthracene | [56-55-3] | x | x | x |
| 0239.20 | Benzo[a]pyrene | [50-32-8] | x | x | x |
| 0263.20 | Benzo[b]fluoranthene | [205-99-2] | x | x | x |
| 0222.22 | Benzo[ghi]perylene | [191-24-2] | x | x | x |
| 0265.20 | Benzo[k]fluoranthene | [207-08-9] | x | x | x |
| 0212.18 | Chrysene | [218-01-9] | x | x | x |
| 0203.22 | Dibenz[a,h]anthracene | [53-70-3] | x | x | x |
| 0277.22 | Indeno[1,2,3-cd]pyrene | [193-39-5] | x | | x |
| 0296.19 | 5-Methylchrysene | [3697-24-3] | | x | x |
| 0264.20 | Benzo[j]fluoranthene | [205-82-3] | | x | x |
| 0035.18 | Cyclopenta[cd]pyrene | [27208-37-3] | | x | x |
| 0244.24 | Dibenzo[a,e]pyrene | [192-65-4] | | x | x |
| 0242.24 | Dibenzo[a,h]pyrene | [189-64-0] | | x | x |
| 0241.24 | Dibenzo[a,i]pyrene | [189-55-9] | | x | x |
| 0243.24 | Dibenzo[a,l]pyrene | [191-30-0] | | x | x |

* The mixes S-4064, S-4065, and S-4560 are all renamed to S-4063, but with the indication of solvent of choice

**Abbreviations:**

| | | | |
|---|---|---|---|
| T | Toluene | N/A | Not available |
| IO | Isooctane | xxxx.yy-100-T | means: xxxx.yy is the catalogue No., 100 µg/mL, 1 x 1 mL in toluene |
| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

| Catalogue No. | Description |
|---|---|
| **Available formulations / Order numbers:**<br>16 EPA PAHs Mix: | |
| S-4063-100-5DC | 16 EPA Priority PAHs, PAH Mix 01 in dichloromethane |
| S-4063-100-10DC (previously named S-4560-100-10DC) | 16 EPA Priority PAHs, PAH Mix 01 in dichloromethane |
| S-4063-100-T | 16 EPA Priority PAHs, PAH Mix 01 in toluene |
| S-4063-100-Tx5 | 16 EPA Priority PAHs, PAH Mix 01 in toluene |
| S-4063-100-5T | 16 EPA Priority PAHs, PAH Mix 01 in toluene |
| S-4063-100-10T | 16 EPA Priority PAHs, PAH Mix 01 in toluene |
| S-4063-10-5CY (prev. S-4064-10-5CY) | 16 EPA Priority PAHs, PAH Mix 01 in cyclohexane |
| S-4063-10-CYx5 (prev. S-4064-10-CYx5) | 16 EPA Priority PAHs, PAH Mix 01 in cyclohexane |
| S-4063-100-CY (prev. S-4064-100-CY) | 16 EPA Priority PAHs, PAH Mix 01 in cyclohexane |
| S-4063-10-5AN (prev. S-4065-10-5AN) | 16 EPA Priority PAHs, PAH Mix 01 in acetonitrile |
| S-4063-10-ANx4 (prev. S-4065-10-ANx4) | 16 EPA Priority PAHs, PAH Mix 01 in acetonitrile |
| | |
| EU 15+1 PAHs Mix: | |
| S-4589-100-T | EU 15+1 PAHs, PAH Mix 58 in toluene |
| | |
| 16 EPA + EU 15+1 PAHs Mix (24 compounds): | |
| S-4985-100-T | 16 EPA PAHs + EU 15+1 PAHs, PAH Mix 108 in toluene |
| S-4985-100-Tx5 | 16 EPA PAHs + EU 15+1 PAHs, PAH Mix 108 in toluene |
| S-4985-100-Tx10 | 16 EPA PAHs + EU 15+1 PAHs, PAH Mix 108 in toluene |
| | |
| Available kits | |
| 1708.16-200-T-KIT | Single 16 EPA PAHs Kit, 200 µg/mL each in toluene |
| 1708.16-K-T-KIT | Single 16 EPA PAHs Kit, 1000 µg/mL each in toluene |
| 1708.16-10MG-KIT | Single 16 EPA PAHs Kit, 10 mg each (neat) |
| | |
| 9311.16-200-T-KIT | Single EU 15+1 PAHs, 200 µg/mL each in toluene |
| | |
| 13113.24-200-T-KIT | Single 16 EPA PAHs and EU 15+1 PAHs, 200 µg/mL each in toluene |
| | |
| Single natives: | |
| Available in most formulations: Please consult www.chiron.no or enquire a Chiron representative | |

**Abbreviations:**

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| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

| Internal Standards for Priority PAHs Mixes | | | | | |
|---|---|---|---|---|---|
| **Catalogue No.** | **Description** | **Cas No.** | **16 EPA** | **EU 15+1** | **16 EPA + EU 15+1** |
| PAH IS Mix No.<br>No. of Compounds | | | S-4513<br>PAH IS Mix 30<br>16 comps.<br><br>S-4405<br>PAH IS Mix 26<br>in benzene-d6<br>16 comps. | S-4522<br>PAH IS Mix 32<br>9 compounds | (please enquire) |
| 0978.10 | Naphthalene-d8 | [1146-65-2] | x | | |
| 1336.12 | Acenaphthylene-d8 | [93951-97-4] | x | | |
| 1524.12 | Acenaphthene-d10 | [15067-26-2] | x | | |
| 1530.13 | Fluorene-d10 | [81103-79-9] | x | | |
| 0389.14 | Phenanthrene-d10 | [1517-22-2] | x | | |
| 0390.14 | Anthracene-d10 | [1719-06-8] | x | | |
| 1337.16 | Fluoranthene-d10 | [93951-69-0] | x | | |
| 0329.16 | Pyrene-d10 | [1718-52-1] | x | | |
| | Benzo[c]fluorene-d | | | N/A | |
| 1024.18 | Chrysene-d12 | [1719-03-5] | x | X | |
| 1087.18 | Benz[a]anthracene-d12 | [1718-53-2] | x | X | |
| 1088.20 | Benzo[a]pyrene-d12 | [63466-71-7] | x | X | |
| 1348.20 | Benzo[b]fluoranthene-d12 | [93951-98-5] | x | X | |
| 1349.20 | Benzo[k]fluoranthene-d12 | [93952-01-3] | x | X | |
| 1089.22 | Benzo[ghi]perylene-d12 | [93951-66-7] | x | X | |
| 1330.22 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | X | |
| 1531.22 | Indeno[1,2,3-cd]pyrene-d12 | [203578-33-0] | x | X | |
| | 5-Methylchrysene-d | | | N/A | |
| | Benzo[j]fluoranthene-d | | | N/A | |
| | Cyclopenta[cd]pyrene-d | | | N/A | |
| | Dibenzo[a,e]pyrene-d | | | N/A | |
| | Dibenzo[a,h]pyrene-d | | | N/A | |
| 1529.24 | Dibenzo[a,i]pyrene-d14 | [158776-07-9] | | x | |
| | Dibenzo[a,l]pyrene-d | | | N/A | |

**Abbreviations:**

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| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

| Available formulations / Order numbers: | |
|---|---|
| 16 EPA Mixes<br>Deuterium labelled 16 EPA priority PAHs Mixes | |
| S-4405-100-BD | Perdeuterated IS-All-in-one 16 EPA Priority PAHs in deuterated benzene |
| S-4513-100-5T | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-100-T | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-100-Tx10 | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-100-Tx5 | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-10-T | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-10-Tx10 | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-200-T | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-350-T | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-40-T | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-K-T | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |
| S-4513-K-Tx10 | Perdeuterated Internal Standard-All-in-one 16 EPA Priority PAHs in toluene |

| Deuterium labelled EU 15+1 PAHs Mixes | |
|---|---|
| S-4522-100-5T | Perdeuterated Internal Standard-All-in-one 9 of EU 15+1 priority PAHs in toluene |

## ISO 7981.1 and 7981.2: WHO PAHs in drinking water

| Catalogue No. | Description | Cas No. | Concentration |
|---|---|---|---|
| 6 Priority PAH's in aceonitrile: S-4062-ASS-5AN | | | |
| 0260.16 | Fluoranthrene | [206-44-0] | 10 µg/mL |
| 0277.22 | Indeno[1,2,3-cd]pyrene | [193-39-5] | 2 µg/mL |
| 0263.20 | Benzo[b]fluoranthene | [205-99-2] | 2 µg/mL |
| 0265.20 | Benzo[k]fluoranthene | [207-08-9] | 2 µg/mL |
| 0239.20 | Benzo[a]pyrene | [50-32-8] | 2 µg/mL |
| 0222.22 | Benzo[ghi]perylene | [191-24-2] | 2 µg/mL |

**Abbreviations:**

| | | | |
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| IO | Isooctane | xxxx.yy-100-T | means: xxxx.yy is the catalogue No., 100 µg/mL, 1 x 1 mL in toluene |
| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

| Single labelled PAH Internal Standards ($^{13}$C, Mono-F, and D): | | | | | |
|---|---|---|---|---|---|
| **Catalogue No.** | **Description** | **Cas No.** | **EPA** | **EU** | **Conc. / Solvent** |
| **NEW:** 13C labelled priority PAH internal standards | | | | | |
| 12081.10-100-NN | Naphthalene-13C6 | [287399-34-2] | x | | 100 µg/mL-NN |
| 12587.11-100-NN | Acenaphthylene-13C6 | [189811-56-1] | x | | 100 µg/mL-NN |
| 12588.11-100-NN | Acenaphthene-13C6 | [189811-57-2] | x | | 100 µg/mL-NN |
| 12731.13-100-NN | Fluorene-13C6 | [1189497-69-5] | x | | 100 µg/mL-NN |
| 12061.14-100-NN | Phenanthrene-13C6 | [1189955-53-0] | x | | 100 µg/mL-NN |
| 12054.14-100-NN | Phenanthrene-9,10-13C2 | [334973-64-7] | x | | 100 µg/mL -NN |
| 12589.14-100-T | Anthracene-13C6 (Ring A-13C6) | [189811-60-7] | x | | 100 µg/mL-T |
| 14117.16-100-NN | Pyrene-13C6 | N/A | x | | 100 µg/mL-NN |
| 12838.16-100-NN | Fluoranthene-13C6 (7,7a,8,9,10,10a-13C6) | [917378-10-0] (undef. p13C pos.) | x | | 100 µg/mL-NN |
| 12733.18-100-NN | Chrysene-13C6 (Ring A-13C6) | [1397177-72-8] | x | x | 100 µg/mL-NN |
| 12605.18-100-NN | Benz[a]anthracene-13C6 (Ring D-13C6) | [917378-11-1] (undef. labelling) | x | x | 100 µg/mL-NN |
| 12734.20-100-NN | Benzo[a]pyrene-13C4 (7,8,9,10-13C4) | N/A | x | x | 100 µg/mL-NN |
| 12736.20-100-NN | Benzo[b]fluoranthene-13C6 | N/A | x | x | 100 µg/mL-NN |
| 12841.20-100-NN | Benzo[k]fluoranthene-13C6 | [1397194-60-3] | x | x | 100 µg/mL-NN |
| 12790.22-100-NN | Dibenz[a,h]anthracene-13C12 (Ring A,D-13C12) | [53-70-3] (unl.) | x | x | 100 µg/mL-NN |
| 17839.22-100-NN | Benzo[ghi]perylene-13C6 | [917378-13-3] | x | x | 100 µg/mL-NN |
| 12840.22-100-NN | Indeno[1,2,3-cd]pyrene-13C6 | [362044-56-2] | x | | 100 µg/mL-NN |
| 12948.17 | Benzo[c]fluorene-13C6 | N/A | | x | N/A, Please enq. |
| 12946.18 | Cyclopenta[cd]pyrene-13C6 | N/A | | x | N/A, Please enq. |
| 12947.19 | 5-Methylchrysene-13C6 | [3697-24-3] (unl.) | | x | N/A, Please enq. |
| 12842.20 | Benzo[j]fluoranthene-13C6 | [205-82-3] (unl.) | | x | N/A, Please enq. |
| 12789.24 | Dibenzo[a,e]pyrene-13C6 | [192-65-4] (unl.) | | x | N/A, Please enq. |
| 12943.24 | Dibenzo[a,h]pyrene-13C6 | [189-64-0] (unl.) | | x | N/A, Please enq. |
| 12944.24 | Dibenzo[a,i]pyrene-13C6 | [189-55-9] (unl.) | | x | N/A, Please enq. |
| 12945.24 | Dibenzo[a,l]pyrene-13C6 | [191-30-0] | | x | N/A, Please enq. |

**Abbreviations:**

| | | | |
|---|---|---|---|
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| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

| Single labelled PAH Internal Standards ($^{13}$C, Mono-F, and D): | | | | | |
|---|---|---|---|---|---|
| **Catalogue No.** | **Description** | **Cas No.** | **EPA** | **EU** | **Conc. / Solvent** |
| Mono-F Priority PAH internal standards: F-PAHs® | | | | | |
| 1313.10-10-IO | 1-Fluoronaphthalene | [321-38-0] | x | | 10 µg/mL-IO |
| 1313.10-100-IO | 1-Fluoronaphthalene | [321-38-0] | x | | 100 µg/mL-IO |
| 1313.10-100-IOx5 | 1-Fluoronaphthalene | [321-38-0] | x | | 100 µg/mL-IO |
| 1313.10-K-IO | 1-Fluoronaphthalene | [321-38-0] | x | | 1000 µg/mL-IO |
| 1313.10-100-AN | 1-Fluoronaphthalene | [321-38-0] | x | | 100 µg/mL-AN |
| 1313.10-100-ANx5 | 1-Fluoronaphthalene | [321-38-0] | x | | 100 µg/mL-ANx5 |
| 1313.10-10MG | 1-Fluoronaphthalene | [321-38-0] | x | | neat |
| 1313.10-1G | 1-Fluoronaphthalene | [321-38-0] | x | | neat |
| 1313.10-5G | 1-Fluoronaphthalene | [321-38-0] | x | | neat |
| 2364.11-100-IO | 2-Fluoro-6-methylnaphthalene | [324-42-5] | | AlkylPAH | 100 µg/mL-IO |
| 1314.12-10-T | 5-Fluoroacenaphthylene | [17521-01-6] | x | | 10 µg/mL-T |
| 1314.12-100-T | 5-Fluoroacenaphthylene | [17521-01-6] | x | | 100 µg/mL-T |
| 1314.12-100-Tx5 | 5-Fluoroacenaphthylene | [17521-01-6] | x | | 100 µg/mL-Tx5 |
| 1607.13-10MG | 4-Fluorodiphenylmethane | [587-79-1] | | | neat |
| 1607.13-100-T | 4-Fluorodiphenylmethane | [587-79-1] | | | 100 µg/mL-T |
| 1315.13-10-AN | 2-Fluorofluorene | [343-43-1] | x | | 10 µg/mL-AN |
| 1315.13-10-T | 2-Fluorofluorene | [343-43-1] | x | | 10 µg/mL-T |
| 1315.13-100-T | 2-Fluorofluorene | [343-43-1] | x | | 100 µg/mL-T |
| 1315.13-10MG | 2-Fluorofluorene | [343-43-1] | x | | neat |
| 1606.13-10MG | 2-Fluorodiphenylmethane | [3794-15-8] | | | neat |
| 1606.13-100-T | 2-Fluorodiphenylmethane | [3794-15-8] | | | 100 µg/mL-T |
| 1328.14-10-AN | 2-Fluorophenanthrene | [523-41-1] | x | | 10 µg/mL-AN |
| 1328.14-10-T | 2-Fluorophenanthrene | [523-41-1] | x | | 10 µg/mL-T |
| 1328.14-100-T | 2-Fluorophenanthrene | [523-41-1] | x | | 100 µg/mL-T |
| 1316.14-10-T | 3-Fluorophenanthrene | [440-40-4] | x | | 10 µg/mL-T |
| 1316.14-10-AN | 3-Fluorophenanthrene | [440-40-4] | x | | 10 µg/mL-AN |
| 1316.14-100-T | 3-Fluorophenanthrene | [440-40-4] | x | | 100 µg/mL-T |
| 8891.14-100-T | 4-Fluorophenanthrene | [521-66-4] | x | | 100 µg/mL-T |
| 2873.15-50-IO | 3-Fluoro-6-methylphenanthrene | [84194-33-2] | | | 50 µg/mL-IO |
| 1319.16-10-AN | 3-Fluorofluoranthene | [1691-66-3] | x | | 10 µg/mL-AN |
| 1319.16-10-T | 3-Fluorofluoranthene | [1691-66-3] | x | | 10 µg/mL-T |
| 1319.16-100-T | 3-Fluorofluoranthene | [1691-66-3] | x | | 100 µg/mL-T |
| 1319.16-100-Tx5 | 3-Fluorofluoranthene | [1691-66-3] | x | | 100 µg/mL-Tx5 |
| 1319.16-100-AN | 3-Fluorofluoranthene | [1691-66-3] | x | | 100 µg/mL-AN |

**Abbreviations:**

| | | | |
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| DB | Deuterated benzene | | |

| Single labelled PAH Internal Standards ($^{13}$C, Mono-F, and D) (Continued): | | | | | |
|---|---|---|---|---|---|
| **Catalogue No.** | **Description** | **Cas No.** | **EPA** | **EU** | **Conc. / Solvent** |
| Mono-F Priority PAH internal standards: F-PAHs® | | | | | |
| 1318.16-10-AN | 1-Fluoropyrene | [1691-65-2] | x | | 10 µg/mL-AN |
| 1318.16-10-T | 1-Fluoropyrene | [1691-65-2] | x | | 10 µg/mL-T |
| 1318.16-100-T | 1-Fluoropyrene | [1691-65-2] | x | | 100 µg/mL-T |
| 1900.18-10-AN | 1-Fluorochrysene | [1051914-84-1] | x | x | 10 µg/mL-AN |
| 1900.18-10-T | 1-Fluorochrysene | [1051914-84-1] | x | x | 10 µg/mL-T |
| 1900.18-100-T | 1-Fluorochrysene | [1051914-84-1] | x | x | 100 µg/mL-T |
| 1317.18-100-T | 3-Fluorochrysene | [36288-22-9] | x | x | 100 µg/mL-T |
| 1317.18-10-AN | 3-Fluorochrysene | [36288-22-9] | x | x | 10 µg/mL-AN |
| 1317.18-10-T | 3-Fluorochrysene | [36288-22-9] | x | x | 10 µg/mL-T |
| 2872.19-50-IO | 9-Fluoro-5-methylchrysene | [64977-48-6] | | x | 50 µg/mL-IO |
| 1322.20-10-AN | 9-Fluorobenzo[k]fluoranthene | [113600-15-0] | x | x | 10 µg/mL-AN |
| 1322.20-10-T | 9-Fluorobenzo[k]fluoranthene | [113600-15-0] | x | x | 10 µg/mL-T |
| 1322.20-100-T | 9-Fluorobenzo[k]fluoranthene | [113600-15-0] | x | x | 100 µg/mL-T |
| Deuterated priority PAH internal standards: | | | | | |
| 0978.10-K-IO | Naphthalene-d8 | [1146-65-2] | x | | 1000 µg/mL-IO |
| 0978.10-K-IOx5 | Naphthalene-d8 | [1146-65-2] | x | | 1000 µg/mL-IOx5 |
| 0978.10-K-IOx10 | Naphthalene-d8 | [1146-65-2] | x | | 1000 µg/mL-IOx10 |
| 0978.10-100-T | Naphthalene-d8 | [1146-65-2] | x | | 100 µg/mL-T |
| 0978.10-K-T | Naphthalene-d8 | [1146-65-2] | x | | 1000 µg/mL-T |
| 0978.10-K-Tx5 | Naphthalene-d8 | [1146-65-2] | x | | 1000 µg/mL-Tx5 |
| 0978.10-K-Tx10 | Naphthalene-d8 | [1146-65-2] | x | | 1000 µg/mL-Tx10 |
| 0978.10-10MG | Naphthalene-d8 | [1146-65-2] | x | | neat |
| 0978.10-1G | Naphthalene-d8 | [1146-65-2] | x | | neat |
| 0978.10-5G | Naphthalene-d8 | [1146-65-2] | x | | neat |
| 1336.12-K-T | Acenaphthylene-d8 | [93951-97-4] | x | | 1000 µg/mL-T |
| 1336.12-K-Tx5 | Acenaphthylene-d8 | [93951-97-4] | x | | 1000 µg/mL-Tx5 |
| 1336.12-K-Tx10 | Acenaphthylene-d8 | [93951-97-4] | x | | 1000 µg/mL-Tx10 |
| 1336.12-10MG | Acenaphthylene-d8 | [93951-97-4] | x | | neat |
| 1524.12-100-T | Acenaphthene-d10 | [15067-26-2] | x | | 100 µg/mL-T |
| 1524.12-100-Tx5 | Acenaphthene-d10 | [15067-26-2] | x | | 100 µg/mL-Tx5 |
| 1524.12-100-Tx10 | Acenaphthene-d10 | [15067-26-2] | x | | 100 µg/mL-Tx10 |
| 1524.12-K-T | Acenaphthene-d10 | [15067-26-2] | x | | 1000 µg/mL-T |

**Abbreviations:**

T Toluene
IO Isooctane
NN n-Nonane
DB Deuterated benzene

N/A Not available
xxxx.yy-100-T means: xxxx.yy is the catalogue No., 100 µg/mL, 1 x 1 mL in toluene
xxxx.yy-K-IO-5Tx5 means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane

| Deuterated priority PAH internal standards (Continued): | | | | | |
|---|---|---|---|---|---|
| 1524.12-K-Tx5 | Acenaphthene-d10 | [15067-26-2] | x | | 1000 µg/mL-Tx5 |
| 1524.12-K-Tx10 | Acenaphthene-d10 | [15067-26-2] | x | | 1000 µg/mL-Tx10 |
| 1524.12-10MG | Acenaphthene-d10 | [15067-26-2] | x | | neat |
| 1530.13-K-IO | Fluorene-d10 | [81103-79-9] | x | | 1000 µg/mL-IO |
| 1530.13-K-IOx5 | Fluorene-d10 | [81103-79-9] | x | | 1000 µg/mL-IOx5 |
| 1530.13-K-IOx10 | Fluorene-d10 | [81103-79-9] | x | | 1000 µg/mL-IOx10 |
| 1530.13-10MG | Fluorene-d10 | [81103-79-9] | x | | neat |
| 0389.14-100-T | Phenanthrene-d10 | [1517-22-2] | x | | 100 µg/mL-T |
| 0389.14-K-T | Phenanthrene-d10 | [1517-22-2] | x | | 1000 µg/mL-T |
| 0389.14-K-Tx5 | Phenanthrene-d10 | [1517-22-2] | x | | 1000 µg/mL-Tx5 |
| 0389.14-K-Tx10 | Phenanthrene-d10 | [1517-22-2] | x | | 1000 µg/mL-Tx10 |
| 0389.14-100-IO | Phenanthrene-d10 | [1517-22-2] | x | | 100 µg/mL-IO |
| 0389.14-K-IO | Phenanthrene-d10 | [1517-22-2] | x | | 1000 µg/mL-IO |
| 0389.14-K-IOx5 | Phenanthrene-d10 | [1517-22-2] | x | | 1000 µg/mL-IOx5 |
| 0389.14-K-IOx10 | Phenanthrene-d10 | [1517-22-2] | x | | 1000 µg/mL-IOx10 |
| 0389.14-10MG | Phenanthrene-d10 | [1517-22-2] | x | | neat |
| 0390.14-K-T | Anthracene-d10 | [1719-06-8] | x | | 1000 µg/mL-T |
| 0390.14-K-Tx5 | Anthracene-d10 | [1719-06-8] | x | | 1000 µg/mL-Tx5 |
| 0390.14-K-Tx10 | Anthracene-d10 | [1719-06-8] | x | | 1000 µg/mL-Tx10 |
| 0390.14-10MG | Anthracene-d10 | [1719-06-8] | x | | neat |
| 1337.16-K-T | Fluoranthene-d10 | [93951-69-0] | x | | 1000 µg/mL-T |
| 1337.16-K-Tx5 | Fluoranthene-d10 | [93951-69-0] | x | | 1000 µg/mL-Tx5 |
| 1337.16-K-Tx10 | Fluoranthene-d10 | [93951-69-0] | x | | 1000 µg/mL-Tx10 |
| 1337.16-10MG | Fluoranthene-d10 | [93951-69-0] | x | | neat |
| 0329.16-100-T | Pyrene-d10 | [1718-52-1} | x | | 100 µg/mL-T |
| 0329.16-100-Tx5 | Pyrene-d10 | [1718-52-1} | x | | 100 µg/mL-Tx5 |
| 0329.16-100-Tx10 | Pyrene-d10 | [1718-52-1} | x | | 100 µg/mL-Tx10 |
| 0329.16-200-T | Pyrene-d10 | [1718-52-1} | x | | 200 µg/mL-T |
| 0329.16-200-Tx5 | Pyrene-d10 | [1718-52-1} | x | | 200 µg/mL-Tx5 |
| 0329.16-200-Tx10 | Pyrene-d10 | [1718-52-1} | x | | 200 µg/mL-Tx10 |
| 0329.16-K-T | Pyrene-d10 | [1718-52-1} | x | | 1000 µg/mL-T |
| 0329.16-K-Tx5 | Pyrene-d10 | [1718-52-1} | x | | 1000 µg/mL-Tx5 |
| 0329.16-K-Tx10 | Pyrene-d10 | [1718-52-1} | x | | 1000 µg/mL-Tx10 |
| 0329.16-10MG | Pyrene-d10 | [1718-52-1} | x | | neat |
| 0329.16-250MG | Pyrene-d10 | [1718-52-1} | x | | neat |
| 1024.18-100-T | Chrysene-d12 | [1719-03-5] | x | x | 100 µg/mL-T |

**Abbreviations:**

| | | | |
|---|---|---|---|
| T | Toluene | N/A | Not available |
| IO | Isooctane | xxxx.yy-100-T | means: xxxx.yy is the catalogue No., 100 µg/mL, 1 x 1 mL in toluene |
| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

| Deuterated priority PAH internal standards (Continued): | | | | | |
|---|---|---|---|---|---|
| 1024.18-100-Tx5 | Chrysene-d12 | [1719-03-5] | x | x | 100 µg/mL-Tx5 |
| 1024.18-100-Tx10 | Chrysene-d12 | [1719-03-5] | x | x | 100 µg/mL-Tx10 |
| 1024.18-200-T | Chrysene-d12 | [1719-03-5] | x | x | 200 µg/mL-T |
| 1024.18-200-Tx5 | Chrysene-d12 | [1719-03-5] | x | x | 200 µg/mL-Tx5 |
| 1024.18-200-Tx10 | Chrysene-d12 | [1719-03-5] | x | x | 200 µg/mL-Tx10 |
| 1024.18-K-T | Chrysene-d12 | [1719-03-5] | x | x | 1000 µg/mL-T |
| 1024.18-K-Tx5 | Chrysene-d12 | [1719-03-5] | x | x | 1000 µg/mL-Tx5 |
| 1024.18-K-Tx10 | Chrysene-d12 | [1719-03-5] | x | x | 1000 µg/mL-Tx10 |
| 1024.18-2K-T | Chrysene-d12 | [1719-03-5] | x | x | 2000 µg/mL-T |
| 1024.18-10MG | Chrysene-d12 | [1719-03-5] | x | x | neat |
| 1024.18-1G | Chrysene-d12 | [1719-03-5] | x | x | neat |
| 1087.18-100-T | Benz[a]anthracene-d12 | [1718-53-2] | x | x | 100 µg/mL-T |
| 1087.18-100-Tx5 | Benz[a]anthracene-d12 | [1718-53-2] | x | x | 100 µg/mL-Tx5 |
| 1087.18-100-Tx10 | Benz[a]anthracene-d12 | [1718-53-2] | x | x | 100 µg/mL-Tx10 |
| 1087.18-K-T | Benz[a]anthracene-d12 | [1718-53-2] | x | x | 1000 µg/mL-T |
| 1087.18-K-Tx5 | Benz[a]anthracene-d12 | [1718-53-2] | x | x | 1000 µg/mL-Tx5 |
| 1087.18-K-Tx10 | Benz[a]anthracene-d12 | [1718-53-2] | x | x | 1000 µg/mL-Tx10 |
| 1087.18-10MG | Benz[a]anthracene-d12 | [1718-53-2] | x | x | neat |
| 1538.18-K-T | Triphenylene-d12 | [17777-56-9] | | | 1000 µg/mL-T |
| 1538.18-K-Tx5 | Triphenylene-d12 | [17777-56-9] | | | 1000 µg/mL-Tx5 |
| 1088.20-100-T | Benzo[a]pyrene-d12 | [63466-71-7] | x | x | 100 µg/mL-T |
| 1088.20-100-Tx5 | Benzo[a]pyrene-d12 | [63466-71-7] | x | x | 100 µg/mL-Tx5 |
| 1088.20-100-Tx10 | Benzo[a]pyrene-d12 | [63466-71-7] | x | x | 100 µg/mL-Tx10 |
| 1088.20-400-CY | Benzo[a]pyrene-d12 | [63466-71-7] | x | x | 400 µg/mL-CY |
| 1088.20-5MG | Benzo[a]pyrene-d12 | [63466-71-7] | x | x | neat |
| 1088.20-10MG | Benzo[a]pyrene-d12 | [63466-71-7] | x | x | neat |
| 1525.20-100-T | Benzo[e]pyrene-d12 | [205440-82-0] | | | 100 µg/mL-T |
| 1525.20-100-Tx5 | Benzo[e]pyrene-d12 | [205440-82-0] | | | 100 µg/mL-T |
| 1525.20-100-Tx10 | Benzo[e]pyrene-d12 | [205440-82-0] | | | 100 µg/mL-T |
| 1525.20-K-T | Benzo[e]pyrene-d12 | [205440-82-0] | | | 1000 µg/mL-T |
| 1348.20-100-T | Benzo[b]fluoranthene-d12 | [93951-98-5] | x | x | 100 µg/mL-T |
| 1348.20-100-Tx5 | Benzo[b]fluoranthene-d12 | [93951-98-5] | x | x | 100 µg/mL-T |
| 1348.20-100-Tx10 | Benzo[b]fluoranthene-d12 | [93951-98-5] | x | x | 100 µg/mL-T |
| 1348.20-K-T | Benzo[b]fluoranthene-d12 | [93951-98-5] | x | x | 1000 µg/mL-T |
| 1348.20-10MG | Benzo[b]fluoranthene-d12 | [93951-98-5] | x | x | neat |
| 1349.20-100-T | Benzo[k]fluoranthene-d12 | [93952-01-3] | x | x | 100 µg/mL-T |

**Abbreviations:**

| | | | |
|---|---|---|---|
| T | Toluene | N/A | Not available |
| IO | Isooctane | xxxx.yy-100-T | means: xxxx.yy is the catalogue No., 100 µg/mL, 1 x 1 mL in toluene |
| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

| Deuterated priority PAH internal standards (Continued): | | | | | |
|---|---|---|---|---|---|
| 1349.20-100-Tx5 | Benzo[k]fluoranthene-d12 | [93952-01-3] | x | x | 100 µg/mL-T |
| 1349.20-100-Tx10 | Benzo[k]fluoranthene-d12 | [93952-01-3] | x | x | 100 µg/mL-T |
| 1349.20-10MG | Benzo[k]fluoranthene-d12 | [93952-01-3] | x | x | neat |
| 1534.20-K-T | Perylene-d12 | [1520-96-3] | | | 1000 µg/mL-T |
| 1534.20-K-Tx5 | Perylene-d12 | [1520-96-3] | | | 1000 µg/mL-Tx5 |
| 1534.20-K-Tx10 | Perylene-d12 | [1520-96-3] | | | 1000 µg/mL-Tx10 |
| 1534.20-10MG | Perylene-d12 | [1520-96-3] | | | neat |
| 1089.22-100-T | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 100 µg/mL-T |
| 1089.22-100-Tx5 | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 100 µg/mL-Tx5 |
| 1089.22-100-Tx10 | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 100 µg/mL-Tx10 |
| 1089.22-200-T | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 200 µg/mL-T |
| 1089.22-200-Tx5 | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 200 µg/mL-Tx5 |
| 1089.22-200-Tx10 | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 200 µg/mL-Tx10 |
| 1089.22-K-T | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 1000 µg/mL-T |
| 1089.22-K-Tx5 | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 1000 µg/mL-Tx5 |
| 1089.22-K-Tx10 | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | 1000 µg/mL-Tx10 |
| 1089.22-10MG | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | neat |
| 1089.22-50MG | Benzo[ghi]perylene-d12 | [93951-66-7] | x | x | neat |
| 0327.22-100-Tx5 | Indeno[1,2,3-cd]fluoranthene-d12 | [210487-06-2] | | | 100 µg/mL-Tx5 |
| 1531.22-100-T | Indeno[1,2,3-cd]pyrene-d12 | [203578-33-0] | x | x | 100 µg/mL-T |
| 1531.22-100-Tx5 | Indeno[1,2,3-cd]pyrene-d12 | [203578-33-0] | x | x | 100 µg/mL-Tx5 |
| 1531.22-100-Tx10 | Indeno[1,2,3-cd]pyrene-d12 | [203578-33-0] | x | x | 100 µg/mL-Tx10 |
| 1531.22-K-T | Indeno[1,2,3-cd]pyrene-d12 | [203578-33-0] | x | x | 1000 µg/mL-T |
| 1531.22-K-Tx5 | Indeno[1,2,3-cd]pyrene-d12 | [203578-33-0] | x | x | 1000 µg/mL-Tx5 |
| 1531.22-K-Tx10 | Indeno[1,2,3-cd]pyrene-d12 | [203578-33-0] | x | x | 1000 µg/mL-Tx 10 |
| 1531.22-5MG | Indeno[1,2,3-cd]pyrene-d12 | [203578-33-0] | x | x | neat |
| 1330.22-100-IO | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-IO |
| 1330.22-100-IOx5 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-IOx5 |
| 1330.22-100-IOx10 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-IOx10 |
| 1330.22-100-T | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-T |
| 1330.22-100-Tx5 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-Tx5 |
| 1330.22-100-Tx10 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-Tx10 |
| 1330.22-200-T | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 200 µg/mL-T |
| 1330.22-200-Tx5 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 200 µg/mL-Tx5 |
| 1330.22-200-Tx10 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 200 µg/mL-Tx10 |
| 1330.22-5MG | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | neat |

**Abbreviations:**

T Toluene
IO Isooctane
NN n-Nonane
DB Deuterated benzene

N/A Not available
xxxx.yy-100-T means: xxxx.yy is the catalogue No., 100 µg/mL, 1 x 1 mL in toluene
xxxx.yy-K-IO-5Tx5 means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane

| Deuterated priority PAH internal standards (Continued): | | | | | |
|---|---|---|---|---|---|
| 1330.22-100-IO | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-IO |
| 1330.22-100-IOx5 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-IOx5 |
| 1330.22-100-IOx10 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-IOx10 |
| 1330.22-100-T | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-T |
| 1330.22-100-Tx5 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-Tx5 |
| 1330.22-100-Tx10 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 100 µg/mL-Tx10 |
| 1330.22-200-T | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 200 µg/mL-T |
| 1330.22-200-Tx5 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 200 µg/mL-Tx5 |
| 1330.22-200-Tx10 | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | 200 µg/mL-Tx10 |
| 1330.22-5MG | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | neat |
| 1330.22-10MG | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | neat |
| 1330.22-100MG | Dibenz[a,h]anthracene-d14 | [13250-98-1] | x | x | neat |
| 1526.24-100-T | Coronene-d12 | [16083-32-2] | | | 100 µg/mL-T |
| 1526.24-100-Tx5 | Coronene-d12 | [16083-32-2] | | | 100 µg/mL-Tx5 |
| 1526.24-100-Tx10 | Coronene-d12 | [16083-32-2] | | | 100 µg/mL-Tx10 |
| 1526.24-K-DC | Coronene-d12 | [16083-32-2] | | | 1000 µg/mL-DC |
| 1526.24-K-DCx5 | Coronene-d12 | [16083-32-2] | | | 1000 µg/mL-DCx5 |
| 1526.24-K-DCx10 | Coronene-d12 | [16083-32-2] | | | 1000 µg/mL-DCx10 |
| 1526.24-10MG | Coronene-d12 | [16083-32-2] | | | neat |
| 1526.24-25MG | Coronene-d12 | [16083-32-2] | | | neat |
| 1526.24-50MG | Coronene-d12 | [16083-32-2] | | | neat |
| 1529.24-100-T | Dibenzo[a,i]pyrene-d14 | [158776-07-9] | | x | 100 µg/mL-T |
| 1529.24-100-Tx5 | Dibenzo[a,i]pyrene-d14 | [158776-07-9] | | x | 100 µg/mL-Tx5 |
| 1529.24-100-Tx10 | Dibenzo[a,i]pyrene-d14 | [158776-07-9] | | x | 100 µg/mL-Tx10 |
| 1529.24-K-T | Dibenzo[a,i]pyrene-d14 | [158776-07-9] | | x | 1000 µg/mL-T |
| 1529.24-10MG | Dibenzo[a,i]pyrene-d14 | [158776-07-9] | | x | neat |

**Abbreviations:**

| | | | |
|---|---|---|---|
| T | Toluene | N/A | Not available |
| IO | Isooctane | xxxx.yy-100-T | means: xxxx.yy is the catalogue No., 100 µg/mL, 1 x 1 mL in toluene |
| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

| PAHs on the SVHC list (Substances of very high concern): ECHA-REACH | | | | |
|---|---|---|---|---|
| **Catalogue No.** | **Description** | **Cas No.** | **Inclusion date in SVHC** | **Properties** |
| **0222.22** | **Benzo[ghi]perylene** | **[191-24-2]** | **On the candidate list** | Carcinogenic, **p**ersistent, **b**ioaccumulative, and **t**oxic (PBT) and **v**ery **p**ersistent and **v**ery **b**ioaccumulative (vPvB) properties |
| 1089.22 | Benzo[ghi]perylene-d12 | [93951-66-7] | | |
| 17839.22 | Benzo[ghi]perylene-13C6 | [917378-13-3] | | |
| **0201.18** | **Benz[a]anthracene** | **[56-55-3]** | **15/01/18** | Carcinogenic, **p**ersistent, **b**ioaccumulative, and **t**oxic (PBT) and **v**ery **p**ersistent and **v**ery **b**ioaccumulative (vPvB) properties |
| 12605.18 | Benz[a]anthracene-13C6 (Ring D-13C6) | [917378-11-1] (undefined labelling) | | |
| 1087.18 | Benz[a]anthracene-d12 | [1718-53-2] | | |
| **0212.18** | **Chrysene** | **[218-01-9]** | **15/01/18** | Carcinogenic, **p**ersistent, **b**ioaccumulative, and **t**oxic (PBT) and **v**ery **p**ersistent and **v**ery **b**ioaccumulative (vPvB) properties |
| 12733.18 | Chrysene-13C6 (Ring A-13C6) | [1397177-72-8] | | |
| 1024.18 | Chrysene-d12 | 1719-03-5 | | |
| **0239.20** | **Benzo[a]pyrene** | **[50-32-8]** | **20/06/16** | Carcinogenic, **p**ersistent, **b**ioaccumulative, and **t**oxic (PBT) and **v**ery **p**ersistent and **v**ery **b**ioaccumulative (vPvB) properties |
| 12734.20 | Benzo[a]pyrene-13C4 | N/A | | |
| 1525.20 | Benzo[e]pyrene-d12 | [205440-82-0] | | |
| **1049.14** | **Anthracene** | **[120-12-7]** | **28/10/08** | Carcinogenic, **p**ersistent, **b**ioaccumulative, and **t**oxic (PBT) and **v**ery **p**ersistent and **v**ery **b**ioaccumulative (vPvB) properties |
| 12589.14-100-T | Anthracene-13C6 (Ring A-13C6) | [189811-60-7] | | |
| 0390.14-K-Tx5 | Anthracene-d10 | [1719-06-8] | | |

**Abbreviations:**

| | | | |
|---|---|---|---|
| T | Toluene | N/A | Not available |
| IO | Isooctane | xxxx.yy-100-T | means: xxxx.yy is the catalogue No., 100 µg/mL, 1 x 1 mL in toluene |
| NN | n-Nonane | xxxx.yy-K-IO-5Tx5 | means: xxxx.yy is the catalogue No., 1000 µg/mL, 5 x 5 mL in isooctane |
| DB | Deuterated benzene | | |

*For ordering and information about prices and delivery in your country, please contact your* **local distributor:**