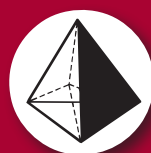


Polycyclic Aromatic Hydrocarbons (PAHs)



AccuStandard®



Polycyclic Aromatic Hydrocarbons (PAHs)

Polycyclic Aromatic Hydrocarbons (PAHs – also commonly called Polynuclear Aromatic Hydrocarbons) are compounds that are composed of multiple fused benzene rings. These compounds occur naturally in coal, crude oil, asphalt and gasoline. They are also formed by combustion of coal, oil, gas, wood, garbage and tobacco.

PAHs have been identified as endocrine disruptors, and have been linked to several types of cancers. They are persistent in the environment, and can bioaccumulate. These compounds are regulated by many different agencies around the world to protect human health and the environment.

Polycyclic Aromatic Hydrocarbons (PAHs) Compounds

| Compound Synonym | CAS Conc. | Matrix | Cat. No. | Unit | Compound Synonym | CAS. Conc. | Matrix | Cat. No. | Unit |
|----------------------------------|--------------|---------|-------------|----------|---|---------------|-----------|----------|--------|
| Acenaphthene | 83-32-9 | NEAT | H-108N | 100 mg | Dibenz[a,h]acridine | 226-36-8 | NEAT | H-172N | 10 mg |
| | 50 µg/mL | Toluene | H-108S | 1 mL | | 50 µg/mL | Toluene | H-172S | 1 mL |
| Acenaphthylene | 208-96-8 | NEAT | H-125N | 100 mg | Dibenz[a,j]acridine | 224-42-0 | NEAT | H-173N | 10 mg |
| | 50 µg/mL | Toluene | H-125S | 1 mL | | 50 µg/mL | Toluene | H-173S | 1 mL |
| Acridine | 260-94-6 | NEAT | H-187N | 100 mg | Dibenz[a,c]anthracene <i>1,2,3,4-Dibenzanthracene</i> | 215-58-7 | NEAT | H-134N | 10 mg |
| | 50 µg/mL | Toluene | H-187S | 1 mL | | 50 µg/mL | Toluene | H-134S | 1 mL |
| Anthanthrene | 191-26-4 | NEAT | H-109N | 10 mg | Dibenz[a,h]anthracene <i>1,2,5,6-Dibenzanthracene</i> | 53-70-3 | NEAT | H-135N | 10 mg |
| | 50 µg/mL | Toluene | H-109S | 1 mL | | 50 µg/mL | Toluene | H-135S | 1 mL |
| Anthracene | 120-12-7 | NEAT | H-110N | 100 mg | Dibenz[a,e]fluoranthene | 5385-75-1 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-110S | 1 mL | | 50 µg/mL | Toluene | H-247S | 1 mL |
| Azulene | 275-51-4 | NEAT | H-127N | 10 mg | Dibenz[a,e]pyrene <i>1,2,4,5-Dibenzopyrene</i> | 192-65-4 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-127S | 1 mL | | 50 µg/mL | Toluene | H-138S | 1 mL |
| Benz[a]anthracene | 56-55-3 | NEAT | H-100N | 10 mg | Dibenz[a,h]pyrene | 189-64-0 | NEAT | H-177N | 10 mg |
| <i>1,2-Benzanthracene</i> | 50 µg/mL | Toluene | H-100S | 1 mL | | 50 µg/mL | Toluene | H-177S | 1 mL |
| Benz[a]anthracene-7,12-dione | 2498-66-0 | NEAT | H-111N | 10 mg | Dibenz[a,i]pyrene | 189-55-9 | NEAT | H-178N | 5 mg |
| <i>1,2-Benzoanthraquinone</i> | 50 µg/mL | Toluene | H-111S | 1 mL | | 50 µg/mL | Toluene | H-178S | 1 mL |
| Benz[a]fluorene | 238-84-6 | ---- | ----- | ----- | Dibenz[a,l]pyrene | 191-30-0 | ---- | ----- | ----- |
| <i>1,2-Benzofluorene</i> | 50 µg/mL | Toluene | H-130S | 1 mL | | 50 µg/mL | Toluene | H-179S | 1 mL |
| Benz[a]pyrene (Ames grade) | 50-32-8 | NEAT | H-169N | 10 mg | 7H-Dibenzo[c,g]carbazole | 194-59-2 | ---- | ----- | ----- |
| <i>3,4-Benzopyrene</i> | 50 µg/mL | Toluene | H-169S | 1 mL | | 50 µg/mL | Toluene | H-176S | 1 mL |
| Benz[e]pyrene | 192-97-2 | NEAT | H-112N | 10 mg | Dibenzo-p-dioxin | 262-12-4 | NEAT | D-100N | 10 mg |
| 50 µg/mL | Toluene | H-112S | 1 mL | 50 µg/mL | | Isooctane | D-100S | 1 mL | |
| Benzo[b]anthracene | 92-24-0 | NEAT | H-159N | 10 mg | Dibenzofuran | 132-64-9 | NEAT | F-100N | 50 mg |
| <i>2,3-Benzanthracene</i> | 50 µg/mL | Toluene | H-159S | 1 mL | | 50 µg/mL | Isooctane | F-100S | 1 mL |
| Benzo[b]chrysene | 214-17-5 | NEAT | H-183N | 5 mg | Dibenzothiophene Diphenylene sulfide | 132-65-0 | NEAT | H-117N | 100 mg |
| 50 µg/mL | Toluene | H-183S | 1 mL | 50 µg/mL | | Toluene | H-117S | 1 mL | |
| Benzo[b]fluoranthene | 205-99-2 | NEAT | H-128N | 10 mg | Dibenz[a,l]pentacene <i>1,2,8,9-Dibenzpentacene</i> | 227-09-8 | ---- | ----- | ----- |
| <i>Benzo[e]acephenanthrylene</i> | 50 µg/mL | Toluene | H-128S | 1 mL | | 50 µg/mL | Toluene | H-139S | 1 mL |
| Benzo[j]fluoranthene | 205-82-3 | NEAT | H-171N | 10 mg | 9,10-Dihydroanthracene | 613-31-0 | NEAT | H-140N | 100 mg |
| 50 µg/mL | Toluene | H-171S | 1 mL | 50 µg/mL | | Toluene | H-140S | 1 mL | |
| Benzo[k]fluoranthene | 207-08-9 | NEAT | H-129N | 10 mg | 12,12A-Dihydro-3,9-dimethylbenz[a]anthracene | ---- | ---- | ----- | ----- |
| 50 µg/mL | Toluene | H-129S | 1 mL | 50 µg/mL | | Toluene | H-188S | 1 mL | |
| Benzo[b]fluorene | 243-17-4 | NEAT | H-180N | 10 mg | Diindeno[1,2,3-cd-1',2',3'-lm]perylene <i>Perilanthene</i> | 188-94-3 | ---- | ----- | ----- |
| <i>2,3-Benzofluorene</i> | 50 µg/mL | Toluene | H-180S | 1 mL | | 50 µg/mL | Toluene | H-141S | 1 mL |
| Benzo[g,h,i]perylene | 191-24-2 | NEAT | H-103N | 10 mg | 2,3-Dimethylantracene | 613-06-9 | NEAT | H-189N | 10 mg |
| <i>1,12-Benzoperylene</i> | 50 µg/mL | Toluene | H-103S | 1 mL | | 50 µg/mL | Toluene | H-189S | 1 mL |
| Benzo[c]phenanthrene | 195-19-7 | NEAT | H-244N | 10 mg | 9,10-Dimethylantracene | 781-43-1 | NEAT | H-190N | 10 mg |
| 50 µg/mL | Toluene | H-244S | 1 mL | 50 µg/mL | | Toluene | H-190S | 1 mL | |
| 2,3-Benzofuran | 271-89-6 | NEAT | H-237N | 10 mg | 3,9-Dimethylbenz[a]anthracene | 316-51-8 | ---- | ----- | ----- |
| 50 µg/mL | Toluene | H-237S | 1 mL | 50 µg/mL | | Toluene | H-191S | 1 mL | |
| 5,6-Benzoquinoline | 85-02-9 | NEAT | H-113N-10MG | 10 mg | 6,8-Dimethylbenz[a]anthracene | 317-64-6 | ---- | ----- | ----- |
| <i>Benzo[f]quinoline</i> | 50 µg/mL | Toluene | H-113S | 1 mL | | 50 µg/mL | Toluene | H-192S | 1 mL |
| 7,8-Benzoquinoline | 230-27-3 | NEAT | H-245N | 100 mg | 7,12-Dimethylbenz[a]anthracene | 57-97-6 | NEAT | H-174N | 10 mg |
| 50 µg/mL | Toluene | H-245S | 1 mL | 50 µg/mL | | Toluene | H-174S | 1 mL | |
| 2,2'-Binaphthyl | 612-78-2 | NEAT | H-239N | 50 mg | 7,10-Dimethylbenz[a]pyrene | 63104-33-6 | ---- | ----- | ----- |
| 50 µg/mL | Toluene | H-239S | 1 mL | 50 µg/mL | | Toluene | H-195S | 1 mL | |
| Biphenyl | 92-52-4 | NEAT | H-133N | 500 mg | 1,12-Dimethylbenzo[c]phenanthrene | 4076-43-1 | ---- | ----- | ----- |
| 50 µg/mL | Toluene | H-133S | 1 mL | 50 µg/mL | | Toluene | H-193S | 1 mL | |
| Carbazole | 86-74-8 | NEAT | H-114N | 100 mg | 5,8-Dimethylbenzo[c]phenanthrene | 54886-63-9 | ---- | ----- | ----- |
| 50 µg/mL | Toluene | H-114S | 1 mL | 50 µg/mL | | Toluene | H-194S | 1 mL | |
| Chrysene | 218-01-9 | NEAT | H-115N | 100 mg | 1,2-Dimethylnaphthalene | 573-98-8 | NEAT | H-197N | 10 mg |
| <i>Benzo[a]phenanthrene</i> | 50 µg/mL | Toluene | H-115S | 1 mL | | 50 µg/mL | Toluene | H-197S | 1 mL |
| Coronene | 191-07-1 | NEAT | H-116N | 5 mg | 1,3-Dimethylnaphthalene (96%) | 575-41-7 | NEAT | H-198N | 10 mg |
| 50 µg/mL | Toluene | H-116S | 1 mL | 50 µg/mL | | Toluene | H-198S | 1 mL | |
| Cyclopenta[c,d]pyrene | 27208-37-3 | ---- | ----- | ----- | 1,4-Dimethylnaphthalene (95%) | 571-58-4 | NEAT | H-199N | 10 mg |
| 50 µg/mL | Toluene | H-242S | 1 mL | 50 µg/mL | | Toluene | H-199S | 1 mL | |

Polycyclic Aromatic Hydrocarbons (PAHs)

Polycyclic Aromatic Hydrocarbons (PAHs) Compounds

| Compound Synonym | CAS Conc. | Matrix | Cat. No. | Unit | Compound Synonym | CAS. Conc. | Matrix | Cat. No. | Unit |
|--|--------------|---------|------------|--------|---------------------------------------|---------------|---------|------------|--------|
| 1,5-Dimethylnaphthalene | 571-61-9 | NEAT | H-200N | 10 mg | 4-Methylbenzo[c]phenanthrene | 4076-40-8 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-200S | 1 mL | | 50 µg/mL | Toluene | H-211S | 1 mL |
| 1,6-Dimethylnaphthalene | 575-43-9 | NEAT | H-201N | 10 mg | 5-Methylbenzo[c]phenanthrene | 652-04-0 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-201S | 1 mL | | 50 µg/mL | Toluene | H-212S | 1 mL |
| 1,8-Dimethylnaphthalene (95%) | 569-41-5 | NEAT | H-202N | 10 mg | 3-Methylcholanthrene | 56-49-5 | NEAT | H-170N | 10 mg |
| | 50 µg/mL | Toluene | H-202S | 1 mL | | 50 µg/mL | Toluene | H-170S | 1 mL |
| 2,6-Dimethylnaphthalene | 581-42-0 | NEAT | H-161N | 10 mg | 4-Methylchrysene | 3351-30-2 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-161S | 1 mL | | 50 µg/mL | Toluene | H-228S | 1 mL |
| 2,7-Dimethylnaphthalene | 582-16-1 | NEAT | H-203N | 10 mg | 5-Methylchrysene | 3697-24-3 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-203S | 1 mL | | 50 µg/mL | Toluene | H-243S | 1 mL |
| 3,6-Dimethylphenanthrene | 1576-67-6 | NEAT | H-142N-5MG | 5 mg | 6-Methylchrysene | 1705-85-7 | NEAT | H-175N | 10 mg |
| | 50 µg/mL | Toluene | H-142S | 1 mL | | 50 µg/mL | Toluene | H-175S | 1 mL |
| 9,10-Diphenylanthracene | 1499-10-1 | NEAT | H-185N | 100 mg | 2-Methylfluoranthene | 33543-31-6 | NEAT | H-182N-5MG | 5 mg |
| | 50 µg/mL | Toluene | H-185S | 1 mL | | 50 µg/mL | Toluene | H-182S | 1 mL |
| Dodecahydrotriphenylene | 1610-39-5 | NEAT | H-144N | 100 mg | 1-Methylnaphthalene | 90-12-0 | NEAT | H-001N | 100 mg |
| | 50 µg/mL | Toluene | H-144S | 1 mL | | 50 µg/mL | Toluene | H-001S | 1 mL |
| 6-Ethylchrysene | 2732-58-3 | NEAT | H-264N | 10 mg | 2-Methylnaphthalene | 91-57-6 | NEAT | H-002N | 100 mg |
| | ---- | ---- | ---- | ---- | | 50 µg/mL | Toluene | H-002S | 1 mL |
| Fluoranthene | 206-44-0 | NEAT | H-118N | 100 mg | 9-Methyl-9-phenylfluorene | 56849-83-3 | NEAT | H-204N | 10 mg |
| | 50 µg/mL | Toluene | H-118S | 1 mL | | 50 µg/mL | Toluene | H-204S | 1 mL |
| Fluorene | 86-73-7 | NEAT | H-146N | 100 mg | 1-Methylphenanthrene | 832-69-9 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-146S | 1 mL | | 50 µg/mL | Toluene | H-162S | 1 mL |
| Indan | 496-11-7 | NEAT | H-231N | 100 mg | 2-Methylphenanthrene | 2531-84-2 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-231S | 1 mL | | 50 µg/mL | Toluene | H-003S | 1 mL |
| Indene | 95-13-6 | NEAT | H-230N | 100 mg | 3-Methylphenanthro[3,4-c]phenanthrene | 83844-21-7 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-230S | 1 mL | | 50 µg/mL | Toluene | H-224S | 1 mL |
| Indeno[1,2,3-cd]pyrene o-Phenylene pyrene | 193-39-5 | NEAT | H-157N | 10 mg | 1-Methylpyrene | 2381-71-7 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-157S | 1 mL | | 50 µg/mL | Toluene | H-233S | 1 mL |
| Indole | 120-72-9 | NEAT | H-236N | 100 mg | 4,5-Methylenephenanthrene | 203-64-5 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-236S | 1 mL | | 50 µg/mL | Toluene | H-119S | 1 mL |
| Isoquinoline | 119-65-3 | NEAT | H-232N | 100 mg | Naphthalene | 91-20-3 | NEAT | H-152N | 100 mg |
| | 50 µg/mL | Toluene | H-232S | 1 mL | | 50 µg/mL | Toluene | H-152S | 1 mL |
| 1-Methylanthracene | 610-48-0 | NEAT | H-222N | 10 mg | Perylene | 198-55-0 | NEAT | H-121N | 10 mg |
| | 50 µg/mL | Toluene | H-222S | 1 mL | | 50 µg/mL | Toluene | H-121S | 1 mL |
| 2-Methylanthracene | 613-12-7 | NEAT | H-148N | 10 mg | Phenanthrene | 85-01-8 | NEAT | H-122N | 100 mg |
| | 50 µg/mL | Toluene | H-148S | 1 mL | | 50 µg/mL | Toluene | H-122S | 1 mL |
| 9-Methylanthracene | 779-02-2 | NEAT | H-149N | 10 mg | 9-Phenylanthracene | 602-55-1 | NEAT | H-156N | 100 mg |
| | 50 µg/mL | Toluene | H-149S | 1 mL | | 50 µg/mL | Toluene | H-156S | 1 mL |
| 1-Methylbenz[a]anthracene | 2498-77-3 | ---- | ----- | ---- | 1-Phenyl-naphthalene | 605-02-7 | NEAT | H-246N | 100 mg |
| | 50 µg/mL | Toluene | H-213S | 1 mL | | 50 µg/mL | Toluene | H-246S | 1 mL |
| 2-Methylbenz[a]anthracene | 2498-76-2 | ---- | ----- | ---- | 2-Phenyl-naphthalene | 612-94-2 | NEAT | H-158N | 5 mg |
| | 50 µg/mL | Toluene | H-214S | 1 mL | | 50 µg/mL | Toluene | H-158S | 1 mL |
| 3-Methylbenz[a]anthracene | 2498-75-1 | ---- | ----- | ---- | Picene | 213-46-7 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-215S | 1 mL | | 50 µg/mL | Toluene | H-184S | 1 mL |
| 4-Methylbenz[a]anthracene | 316-49-4 | ---- | ----- | ---- | Pyrene | 129-00-0 | NEAT | H-123N | 100 mg |
| | 50 µg/mL | Toluene | H-216S | 1 mL | | 50 µg/mL | Toluene | H-123S | 1 mL |
| 5-Methylbenz[a]anthracene | 2319-96-2 | ---- | ----- | ---- | Pyrrole | 109-97-7 | NEAT | H-229N | 100 mg |
| | 50 µg/mL | Toluene | H-217S | 1 mL | | 50 µg/mL | Toluene | H-229S | 1 mL |
| 6-Methylbenz[a]anthracene | 316-14-3 | ---- | ----- | ---- | Quinoline | 91-22-5 | NEAT | H-186N | 100 mg |
| | 50 µg/mL | Toluene | H-218S | 1 mL | | 50 µg/mL | Toluene | H-186S | 1 mL |
| 7-Methylbenz[a]anthracene | 2541-69-7 | ---- | ----- | ---- | 2,3,6,7-Tetraethylbiphenylene | ---- | NEAT | H-225N | 10 mg |
| | 50 µg/mL | Toluene | H-219S | 1 mL | | 50 µg/mL | Toluene | H-225S | 1 mL |
| 9-Methylbenz[a]anthracene | 2381-16-0 | ---- | ----- | ---- | 1,2,3,4-Tetrahydrofluoranthene | 20279-21-4 | NEAT | H-165N | 10 mg |
| | 50 µg/mL | Toluene | H-220S | 1 mL | | 50 µg/mL | Toluene | H-165S | 1 mL |
| 10-Methylbenz[a]anthracene | 2381-15-9 | ---- | ----- | ---- | Thianaphthene | 95-15-8 | NEAT | H-238N | 100 mg |
| | 50 µg/mL | Toluene | H-221S | 1 mL | | 50 µg/mL | Toluene | H-238S | 1 mL |
| 7-Methylbenz[a]pyrene | 63041-77-0 | NEAT | H-223N | 10 mg | Thianthrene | 92-85-3 | NEAT | H-241N | 100 mg |
| | 50 µg/mL | Toluene | H-223S | 1 mL | | ---- | ---- | ---- | ---- |
| 8-Methylbenz[a]pyrene | 63041-76-9 | ---- | ----- | ---- | 4,6,8-Trimethylazulene | 941-81-1 | NEAT | H-226N | 10 mg |
| | 50 µg/mL | Toluene | H-205S | 1 mL | | 50 µg/mL | Toluene | H-226S | 1 mL |
| 9-Methylbenz[a]pyrene | 70644-19-8 | ---- | ----- | ---- | 8,9,11-Trimethylbenz[a]anthracene | 74845-58-2 | ---- | ----- | ----- |
| | 50 µg/mL | Toluene | H-206S | 1 mL | | 50 µg/mL | Toluene | H-227S | 1 mL |
| 10-Methylbenz[a]pyrene | 63104-32-5 | ---- | ----- | ---- | 1,6,7-Trimethylnaphthalene | 2245-38-7 | NEAT | H-268N-5MG | 5 mg |
| | 50 µg/mL | Toluene | H-207S | 1 mL | | 50 µg/mL | Toluene | H-268S | 1 mL |
| 1-Methylbenzo[c]phenanthrene | 4076-39-5 | ---- | ----- | ---- | Triphenylene | 217-59-4 | NEAT | H-235N | 10 mg |
| | 50 µg/mL | Toluene | H-208S | 1 mL | | 50 µg/mL | Toluene | H-235S | 1 mL |
| 2-Methylbenzo[c]phenanthrene | 2606-85-1 | ---- | ----- | ---- | Truxene (95%) | 548-35-6 | NEAT | H-124N | 100 mg |
| | 50 µg/mL | Toluene | H-209S | 1 mL | | 50 µg/mL | Toluene | H-124S | 1 mL |
| 3-Methylbenzo[c]phenanthrene | 2381-19-3 | ---- | ----- | ---- | | | | | |
| | 50 µg/mL | Toluene | H-210S | 1 mL | | | | | |

Polycyclic Aromatic Hydrocarbons (PAHs)

PAH Sets

These Polycyclic Aromatic Hydrocarbon sets are used as reference standards for the predominant species found in ambient air samples. This library of standards was compiled as a working list used by the EPA based on their research and literature surveys. One set is offered as individual neat compounds, the other as individual solutions. The solution mix also contains all the compounds in one solution.

PAH Set, Individual Solutions, and Mix

PAH Solution Set

Z-013-SET 17 x 1 mL
Each at 0.2 mg/mL at stated solvent plus Z-013-17 Solution Mix

| Compound | Solvent | Cat. No. | Unit |
|------------------------|---------------------------------|----------|------|
| Acenaphthene | MeOH | Z-013-01 | 1 mL |
| Acenaphthylene | MeOH | Z-013-02 | 1 mL |
| Anthracene | MeOH | Z-013-03 | 1 mL |
| Benz[a]anthracene | CH ₂ Cl ₂ | Z-013-04 | 1 mL |
| Benz[a]pyrene | CH ₂ Cl ₂ | Z-013-05 | 1 mL |
| Benzo[b]fluoranthene | MeOH | Z-013-06 | 1 mL |
| Benzo[g,h,i]perylene | CH ₂ Cl ₂ | Z-013-07 | 1 mL |
| Benzo[k]fluoranthene | CH ₂ Cl ₂ | Z-013-08 | 1 mL |
| Chrysene | CH ₂ Cl ₂ | Z-013-09 | 1 mL |
| Dibenz[a,h]anthracene | CH ₂ Cl ₂ | Z-013-10 | 1 mL |
| Fluoranthene | CH ₂ Cl ₂ | Z-013-11 | 1 mL |
| Fluorene | MeOH | Z-013-12 | 1 mL |
| Indeno[1,2,3-cd]pyrene | MeOH | Z-013-13 | 1 mL |
| Naphthalene | MeOH | Z-013-14 | 1 mL |
| Phenanthrene (98%) | CH ₂ Cl ₂ | Z-013-15 | 1 mL |
| Pyrene | CH ₂ Cl ₂ | Z-013-16 | 1 mL |

PAH Solution Mix

Z-013-17 1 x 1 mL
0.2 mg/mL each in MeOH:CH₂Cl₂ (50:50) 16 comps.

| | |
|----------------------|------------------------|
| Acenaphthene | Chrysene |
| Acenaphthylene | Dibenz[a,h]anthracene |
| Anthracene | Fluoranthene |
| Benz[a]anthracene | Fluorene |
| Benz[a]pyrene | Indeno[1,2,3-cd]pyrene |
| Benzo[b]fluoranthene | Naphthalene |
| Benzo[g,h,i]perylene | Phenanthrene |
| Benzo[k]fluoranthene | Pyrene |

PAH Neat Sets

PAH Neat Set

Z-001-SET 20 x 5 mg

| | |
|------------------------------------|----------------------------|
| Acenaphthene | Chrysene |
| Anthracene | Coronene |
| Anthracene | Dibenzo[thiophene] |
| 1,2-Benzanthracene | Fluoranthene |
| Benz[a]anthracene-7,12-dione (95%) | 4,5-Methylenepheneanthrene |
| Benzo[g,h,i]perylene | Naphthalene |
| Benz[a]pyrene | Perylene |
| Benz[e]pyrene | Phenanthrene |
| 5,6-Benzoquinoline | Pyrene |
| Carbazole | Truxene (95%) |

PAH Neat Set

Z-013N-SET 16 x 10 mg

| | |
|----------------------|------------------------|
| Acenaphthene | Chrysene |
| Acenaphthylene | Dibenz[a,h]anthracene |
| Anthracene | Fluoranthene |
| Benz[a]anthracene | Fluorene |
| Benz[a]pyrene | Indeno[1,2,3-cd]pyrene |
| Benzo[b]fluoranthene | Naphthalene |
| Benzo[g,h,i]perylene | Phenanthrene |
| Benzo[k]fluoranthene | Pyrene |



Nitro-Polycyclic Aromatic Hydrocarbons

The atmosphere of most industrialized areas of the world contains Polynuclear Aromatic Polycyclic (PAHs) and Nitrogen Oxides (NOx)¹. Wherever these compounds exist together they react and form Nitro-PAHs, which are highly mutagenic.

Scientists have found Nitro-PAHs in diesel particulates², carbon black^{3,4} and ambient air particulates⁵. These compounds are the major contributors to the mutagenicity of the pollutants since the most common Nitro-PAH found, 1-Nitropyrene, is a potent mutagen.

AccuStandard has compiled an extensive inventory of Nitro substituted compounds including mono, di and tri Nitro-PAHs, Amino and Hydroxy substituted PAHs, Nitrotoluenes, Nitroanilines, and Nitrophenols. Most compounds are in both neat form and in solution.

Nitro-PAHs

| Compound <i>Synonym</i> | CAS Conc. | Matrix | Cat. No. | Unit | Compound <i>Synonym</i> | CAS Conc. | Matrix | Cat. No. | Unit |
|----------------------------|--------------|---------|----------|--------|----------------------------|--------------|---------|-------------|--------|
| 1-Amino-4-nitronaphthalene | 776-34-1 | NEAT | R-001N | 100 mg | 2-Nitrodibenzothiophene | 6639-36-7 | NEAT | R-010N | 5 mg |
| | 100 µg/mL | Toluene | R-001S | 1 mL | | 100 µg/mL | Toluene | R-010S | 1 mL |
| 2-Nitroanthracene | 3586-69-4 | NEAT | R-105N | 5 mg | 3-Nitrofluoranthene | 892-21-7 | NEAT | R-013N | 5 mg |
| | 100 µg/mL | Toluene | R-105S | 1 mL | | 100 µg/mL | Toluene | R-013S | 1 mL |
| 9-Nitroanthracene | 602-60-8 | NEAT | R-003N | 5 mg | 2-Nitrofluorene | 607-57-8 | NEAT | R-098N | 100 mg |
| | 100 µg/mL | Toluene | R-003S | 1 mL | | 100 µg/mL | Toluene | R-098S | 1 mL |
| 7-Nitrobenz[a]anthracene | 20268-51-3 | NEAT | R-097N | 5 mg | 5-Nitroacenaphthene | 602-87-9 | NEAT | R-115N | 5 mg |
| | 100 µg/mL | Toluene | R-097S | 1 mL | | 100 µg/mL | Toluene | R-115S | 1 mL |
| 6-Nitrobenz[a]pyrene | 63041-90-7 | ---- | ----- | ----- | 1-Nitronaphthalene | 86-57-7 | NEAT | R-016N | 100 mg |
| | 100 µg/mL | Toluene | R-004S | 1 mL | | 100 µg/mL | Toluene | R-016S | 1 mL |
| 2-Nitrobiphenyl | 86-00-0 | NEAT | R-005N | 100 mg | 2-Nitronaphthalene | 581-89-5 | NEAT | R-085N-10MG | 10 mg |
| | 100 µg/mL | Toluene | R-005S | 1 mL | | 100 µg/mL | Toluene | R-085S | 1 mL |
| 3-Nitrobiphenyl | 2113-58-8 | NEAT | R-006N | 100 mg | 3-Nitrophenanthrene | 17024-19-0 | ---- | ----- | ----- |
| | 100 µg/mL | Toluene | R-006S | 1 mL | | 100 µg/mL | Toluene | R-045S | 1 mL |
| 4-Nitrobiphenyl | 92-93-3 | NEAT | R-007N | 100 mg | 9-Nitrophenanthrene | 954-46-1 | NEAT | R-020N | 5 mg |
| | 100 µg/mL | Toluene | R-007S | 1 mL | | 100 µg/mL | Toluene | R-020S | 1 mL |
| 6-Nitrochrysene | 7496-02-8 | NEAT | R-008N | 5 mg | 1-Nitropyrene | 5522-43-0 | NEAT | R-022N | 5 mg |
| | 100 µg/mL | Toluene | R-008S | 1 mL | | 100 µg/mL | Toluene | R-022S | 1 mL |
| 3-Nitrodibenzofuran | 5410-97-9 | NEAT | R-009N | 5 mg | | | | | |
| | 100 µg/mL | Toluene | R-009S | 1 mL | | | | | |

Di- and Tri- Nitro-PAHs

| Compound <i>Synonym</i> | CAS Conc. | Matrix | Cat. No. | Unit | Compound <i>Synonym</i> | CAS Conc. | Matrix | Cat. No. | Unit |
|-----------------------------|--------------|---------|----------|--------|-----------------------------|--------------|---------|----------|--------|
| 9,10-Dinitroanthracene | 33685-60-8 | NEAT | R-024N | 5 mg | 1,5-Dinitronaphthalene | 605-71-0 | NEAT | R-030N | 100 mg |
| | 100 µg/mL | Toluene | R-024S | 1 mL | | 100 µg/mL | Toluene | R-030S | 1 mL |
| 2,2'-Dinitrobiphenyl | 2436-96-6 | NEAT | R-025N | 100 mg | 1,8-Dinitronaphthalene | 602-38-0 | NEAT | R-031N | 100 mg |
| | 100 µg/mL | Toluene | R-025S | 1 mL | | 100 µg/mL | Toluene | R-031S | 1 mL |
| 2,8-Dinitrodibenzothiophene | 109041-38-5 | NEAT | R-026N | 5 mg | 1,3-Dinitropyrene | 75321-20-9 | NEAT | R-094N | 5 mg |
| | 100 µg/mL | Toluene | R-026S | 1 mL | | 100 µg/mL | Toluene | R-094S | 1 mL |
| 2,7-Dinitrofluorene | 5405-53-8 | NEAT | R-027N | 100 mg | 1,6-Dinitropyrene | 42397-64-8 | NEAT | R-032N | 5 mg |
| | 100 µg/mL | Toluene | R-027S | 1 mL | | 100 µg/mL | Toluene | R-032S | 1 mL |
| 2,7-Dinitro-9-fluorenone | 31551-45-8 | NEAT | R-028N | 100 mg | 1,8-Dinitropyrene | 42397-65-9 | NEAT | R-099N | 5 mg |
| | 100 µg/mL | Toluene | R-028S | 1 mL | | 100 µg/mL | Toluene | R-099S | 1 mL |
| 1,3-Dinitronaphthalene | 606-37-1 | NEAT | R-029N | 100 mg | 2,4,7-Trinitro-9-fluorenone | 129-79-3 | ---- | ----- | ----- |
| | 100 µg/mL | Toluene | R-029S | 1 mL | | 100 µg/mL | Toluene | R-033S | 1 mL |

Nitro-Aromatics

| Compound <i>Synonym</i> | CAS Conc. | Matrix | Cat. No. | Unit | Compound <i>Synonym</i> | CAS Conc. | Matrix | Cat. No. | Unit |
|----------------------------|--------------|---------|----------|--------|--|--------------|---------|----------|--------|
| Nitrobenzene | 98-95-3 | NEAT | R-047N | 100 mg | 2,4-Dinitrophenol | 51-28-5 | ---- | ----- | ----- |
| | 100 µg/mL | Toluene | R-047S | 1 mL | | 100 µg/mL | Toluene | R-053S | 1 mL |
| 2-Nitrotoluene | 88-72-2 | NEAT | R-048N | 100 mg | 2-Nitroaniline | 88-74-4 | NEAT | R-054N | 100 mg |
| | 100 µg/mL | Toluene | R-048S | 1 mL | | 100 µg/mL | Toluene | R-054S | 1 mL |
| 2,4-Dinitrotoluene | 121-14-2 | NEAT | R-049N | 100 mg | 3-Nitroaniline | 99-09-2 | NEAT | R-055N | 100 mg |
| | 100 µg/mL | Toluene | R-049S | 1 mL | | 100 µg/mL | Toluene | R-055S | 1 mL |
| 2,6-Dinitrotoluene | 606-20-2 | NEAT | R-050N | 100 mg | 4-Nitroaniline | 100-01-6 | NEAT | R-056N | 100 mg |
| | 100 µg/mL | Toluene | R-050S | 1 mL | | 100 µg/mL | Toluene | R-056S | 1 mL |
| 2-Nitrophenol | 88-75-5 | NEAT | R-051N | 100 mg | 4,6-Dinitro-o-cresol 2-Methyl-4,6-dinitrophenol | 534-52-1 | NEAT | R-057N | 100 mg |
| | 100 µg/mL | Toluene | R-051S | 1 mL | | 100 µg/mL | Toluene | R-057S | 1 mL |
| 4-Nitrophenol | 100-02-7 | NEAT | R-052N | 100 mg | | | | | |
| | 100 µg/mL | Toluene | R-052S | 1 mL | | | | | |

PAH Derivatives continued on next page

References:

- (1) Nitrated PAHs. Edited by C.M. White, Published by Huethig 1985.
- (2) Analysis of Nitrated Polycyclic Aromatic Hydrocarbons in Diesel Particulates, D. Schuetzle et al., Anal. Chem., Vol. 54, pp. 265-71 (1982).
- (3) Mutagenic Activity in Photocopies, G. Lofroth et al., Science, Vol. 209, pp. 1037-9 (1980).
- (4) Nitropyrenes: Isolation, Identification and Reduction of Mutagenic Impurities in Carbon Black and Toners, H.S. Rosenkranz et al., Science, Vol. 290, pp. 1039-43 (1980).
- (5) Atmospheric Reactions of Polycyclic Aromatic Hydrocarbons: Facile Formation of Mutagenic Nitro Derivatives, J.N. Pitts, Jr. et al., Science, Vol. 202, pp. 515-8 (1978).

Polycyclic Aromatic Hydrocarbons (PAHs) Derivatives

Amino-PAHs

| Compound Synonym | CAS Conc. | Matrix | Cat. No. | Unit | Compound Synonym | CAS. Conc. | Matrix | Cat. No. | Unit |
|----------------------|--------------|---------|----------|-------|--|---------------|---------|----------|--------|
| 2-Acetamidofluorene | 53-96-3 | NEAT | R-058N | 10 mg | 2-Aminofluorene | 153-78-6 | NEAT | R-066N | 10 mg |
| | 100 µg/mL | Toluene | R-058S | 1 mL | | | Toluene | R-066S | 1 mL |
| 1-Aminoanthracene | 610-49-1 | NEAT | R-059N | 50 mg | 1-Aminonaphthalene | 134-32-7 | NEAT | R-067N | 50 mg |
| | 100 µg/mL | Toluene | R-059S | 1 mL | | | Toluene | R-067S | 1 mL |
| 2-Aminoanthracene | 613-13-8 | NEAT | R-060N | 50 mg | 2-Aminonaphthalene | 91-59-8 | NEAT | R-084N | 10 mg |
| | 100 µg/mL | Toluene | R-060S | 1 mL | | | Toluene | R-084S | 1 mL |
| 1-Aminoanthraquinone | 82-45-1 | NEAT | R-061N | 50 mg | 2,7-Diaminofluorene | 525-64-4 | NEAT | R-068N | 10 mg |
| | 100 µg/mL | Toluene | R-061S | 1 mL | | | Toluene | R-068S | 1 mL |
| 2-Aminoanthraquinone | 117-79-3 | NEAT | R-093N | 5 mg | 1,8-Diaminonaphthalene | 479-27-6 | NEAT | R-069N | 100 mg |
| | 100 µg/mL | Toluene | ---- | --- | | | Toluene | R-069S | 1 mL |
| 2-Aminobiphenyl | 90-41-5 | NEAT | R-062N | 10 mg | 1,2-Diphenylhydrazine | 122-66-7 | NEAT | R-070N | 100 mg |
| | 100 µg/mL | Toluene | R-062S | 1 mL | | | Toluene | R-070S | 1 mL |
| 4-Aminobiphenyl | 92-67-1 | NEAT | R-063N | 10 mg | N-Phenyl-1-naphthylamine | 90-30-2 | NEAT | R-071N | 50 mg |
| | 100 µg/mL | Toluene | R-063S | 1 mL | | | Toluene | R-071S | 1 mL |
| 6-Aminochrysene | 2642-98-0 | NEAT | R-065N | 10 mg | o-Tolidine † 3,3'-Dimethylbenzidine | 119-93-7 | NEAT | R-072N | 100 mg |
| | 100 µg/mL | Toluene | R-065S | 1 mL | | | Toluene | R-072S | 1 mL |

Hydroxy-PAHs

| Compound Synonym | CAS Conc. | Matrix | Cat. No. | Unit | Compound Synonym | CAS. Conc. | Matrix | Cat. No. | Unit |
|---------------------|--------------|---------|----------|-------|---------------------|---------------|---------|----------|-------|
| 6-Hydroxychrysene | 37515-51-8 | NEAT | R-095N | 10 mg | 1-Hydroxypyrene | 5315-79-7 | NEAT | R-096N | 10 mg |
| | 100 µg/mL | Toluene | R-095S | 1 mL | | | Toluene | R-096S | 1 mL |

Amino-Aromatics

| Compound Synonym | CAS Conc. | Matrix | Cat. No. | Unit | Compound Synonym | CAS. Conc. | Matrix | Cat. No. | Unit |
|--|--------------|---------|----------|--------|--------------------------------------|---------------|---------|----------|--------|
| 2-Acetamidofluorene | 53-96-3 | NEAT | R-058N | 10 mg | 2,4-Diaminotoluene | 95-80-7 | NEAT | R-078N | 100 mg |
| | 100 µg/mL | Toluene | R-058S | 1 mL | | | Toluene | R-078S | 1 mL |
| 1-Aminoanthracene | 610-49-1 | NEAT | R-059N | 50 mg | 4-Dimethylaminoazobenzene | 60-11-7 | NEAT | R-079N | 10 mg |
| | 100 µg/mL | Toluene | R-059S | 1 mL | | | Toluene | R-079S | 1 mL |
| Benzidine † | 92-87-5 | NEAT | R-073N | 100 mg | 4,4'-Methylene bis(2-chloroaniline) | 101-14-4 | NEAT | R-080N | 50 mg |
| | 100 µg/mL | Toluene | R-073S | 1 mL | | | Toluene | R-080S | 1 mL |
| 3,3'-Diaminobenzidine † | 91-95-2 | NEAT | R-074N | 50 mg | N-Methyl-N'-nitro-N-nitrosoguanidine | 70-25-7 | NEAT | R-081N | 50 mg |
| | 100 µg/mL | Toluene | R-074S | 1 mL | | | Toluene | R-081S | 1 mL |
| 3,3'-Dichlorobenzidine † | 91-94-1 | NEAT | R-075N | 50 mg | N-Phenyl-2-naphthylamine | 135-88-6 | NEAT | R-082N | 10 mg |
| | 100 µg/mL | Toluene | R-075S | 1 mL | | | Toluene | R-082S | 1 mL |
| 3,3'-Dimethoxybenzidine † | 119-90-4 | NEAT | R-076N | 50 mg | s-Triazine | 290-87-9 | NEAT | R-083N | 10 mg |
| | 100 µg/mL | Toluene | R-076S | 1 mL | | | Toluene | R-083S | 1 mL |
| 4,4'-Diaminodiphenylmethane 4,4'-Methylenedianiline | 101-77-9 | NEAT | R-077N | 100 mg | | | | | |
| | 100 µg/mL | Toluene | R-077S | 1 mL | | | | | |

† Subject to oxidation

Nitrogen Containing Compounds

| Nitrogen Containing Compounds | | | | | | | | | |
|--------------------------------------|--------------|---------------------------------|-----------|--------|---------------------------------|---------------|---------|-----------------|--------|
| Compound Synonym | CAS Conc. | Matrix | Cat. No. | Unit | Compound Synonym | CAS. Conc. | Matrix | Cat. No. | Unit |
| Azobenzene | 103-33-3 | ---- | ----- | ----- | 2-Nitrobiphenyl | 86-00-0 | NEAT | R-005N | 100 mg |
| | 2 mg/mL | CH ₂ Cl ₂ | Z-014B-1 | 1 mL | | 100 µg/mL | Toluene | R-005S | 1 mL |
| 2-Chloronitrobenzene | 88-73-3 | NEAT | R-017N | 100 mg | 3-Nitrobiphenyl | 2113-58-8 | NEAT | R-006N | 100 mg |
| | 100 µg/mL | Toluene | R-017S | 1 mL | | 100 µg/mL | Toluene | R-006S | 1 mL |
| 4-Chloronitrobenzene | 100-00-5 | NEAT | R-018N | 100 mg | 4-Nitrobiphenyl | 92-93-3 | NEAT | R-007N | 100 mg |
| | 100 µg/mL | Toluene | R-018S | 1 mL | | 100 µg/mL | Toluene | R-007S | 1 mL |
| 2,3-Dichloronitrobenzene | 3209-22-1 | NEAT | R-086N | 100 mg | 2-Nitrophenol | 88-75-5 | NEAT | R-051N | 100 mg |
| | 100 µg/mL | Toluene | R-086S | 1 mL | | 100 µg/mL | Toluene | R-051S | 1 mL |
| 2,4-Dichloronitrobenzene | 611-06-3 | NEAT | R-087N | 100 mg | 4-Nitrophenol | 100-02-7 | NEAT | R-052N | 100 mg |
| | 100 µg/mL | Toluene | R-087S | 1 mL | | 100 µg/mL | Toluene | R-052S | 1 mL |
| 2,5-Dichloronitrobenzene | 89-61-2 | NEAT | R-088N | 100 mg | 2-Nitrotoluene | 88-72-2 | NEAT | R-048N | 100 mg |
| | 100 µg/mL | Toluene | R-088S | 1 mL | | 100 µg/mL | Toluene | R-048S | 1 mL |
| 2,2'-Dinitrobiphenyl | 2436-96-6 | NEAT | R-025N | 100 mg | Pyridine | 110-86-1 | ---- | ----- | ----- |
| | 100 µg/mL | Toluene | R-025S | 1 mL | | 100 µg/mL | MeOH | APP-9-186-M | 1 mL |
| 2,4-Dinitrophenol | 51-28-5 | ---- | ----- | ----- | | 2 mg/mL | MeOH | APP-9-186-M-20X | 1 mL |
| | 100 µg/mL | Toluene | R-053S | 1 mL | | 5 mg/mL | MeOH | AS-E0271 | 1 mL |
| 2,4-Dinitrotoluene | 121-14-2 | NEAT | R-049N | 100 mg | | 10 mg/mL | Water | M-8015B-5031-26 | 1 mL |
| | 100 µg/mL | Toluene | R-049S | 1 mL | 2,3,4,5-Tetrachloronitrobenzene | 879-39-0 | NEAT | R-091N | 100 mg |
| | 100 µg/mL | MeOH | APP-9-092 | 1 mL | 100 µg/mL | Toluene | R-091S | 1 mL | |
| 2,6-Dinitrotoluene | 5 mg/mL | MeOH | AS-E0033 | 1 mL | 2,3,5,6-Tetrachloronitrobenzene | 117-18-0 | NEAT | R-092N | 100 mg |
| | 606-20-2 | NEAT | R-050N | 100 mg | 100 µg/mL | Toluene | R-092S | 1 mL | |
| | 100 µg/mL | Toluene | R-050S | 1 mL | s-Triazine | 290-87-9 | NEAT | R-083N | 10 mg |
| | 100 µg/mL | MeOH | APP-9-093 | 1 mL | 100 µg/mL | Toluene | R-083S | 1 mL | |
| N-Methyl-N'-nitro-N-nitrosoguanidine | 5 mg/mL | MeOH | AS-E0034 | 1 mL | 2,3,4-Trichloronitrobenzene | 17700-09-3 | NEAT | R-089N | 100 mg |
| | 70-25-7 | NEAT | R-081N | 50 mg | 100 µg/mL | Toluene | R-089S | 1 mL | |
| | 100 µg/mL | Toluene | R-081S | 1 mL | 2,4,5-Trichloronitrobenzene | 89-69-0 | NEAT | R-090N | 100 mg |
| | | | | | 100 µg/mL | Toluene | R-090S | 1 mL | |



Polycyclic Aromatic Hydrocarbons

Priority Pollutants, Florida Methods

Priority Pollutants - Calibration of Capillary GC/MS

The EPA procedures call for fused silica capillary column analysis of priority pollutants. These mixes are used in calibrating this analytical system. These mixtures are highly concentrated to aid in the establishment of response factors.

PAH Mix

Z-014G 1 x 1 mL
Z-014G-PAK SAVE 5 x 1 mL
 2.0 mg/mL each in CH₂Cl₂: Benzene (50:50) 16 comps.

| | |
|----------------------|------------------------|
| Acenaphthene | Chrysene |
| Acenaphthylene | Dibenz[a,h]anthracene |
| Anthracene | Fluoranthene |
| Benz[a]anthracene | Fluorene |
| Benz[a]pyrene | Indeno[1,2,3-cd]pyrene |
| Benzo[b]fluoranthene | Naphthalene |
| Benzo[g,h,i]perylene | Phenanthrene |
| Benzo[k]fluoranthene | Pyrene |

PAH Mix

Z-014G-R 1 x 1 mL
Z-014G-R-PAK SAVE 5 x 1 mL
 2.0 mg/mL each in CH₂Cl₂: Benzene (50:50) 17 comps.

| | |
|----------------------|------------------------|
| Acenaphthene | Chrysene |
| Acenaphthylene | Dibenz[a,h]anthracene |
| Anthracene | Fluoranthene |
| Benz[a]anthracene | Fluorene |
| Benz[a]pyrene | Indeno[1,2,3-cd]pyrene |
| Benzo[b]fluoranthene | Naphthalene |
| Benzo[g,h,i]perylene | Phenanthrene |
| Benzo[k]fluoranthene | Pyrene |
| Carbazole | |

Expanded PAH Mix

Z-014G-FL 1 x 1 mL
 2.0 mg/mL each in CH₂Cl₂: Benzene (50:50) 18 comps.

| | |
|----------------------|------------------------|
| Acenaphthene | Dibenz[a,h]anthracene |
| Acenaphthylene | Fluoranthene |
| Anthracene | Fluorene |
| Benz[a]anthracene | Indeno[1,2,3-cd]pyrene |
| Benz[a]pyrene | Naphthalene |
| Benzo[b]fluoranthene | Phenanthrene |
| Benzo[g,h,i]perylene | Pyrene |
| Benzo[k]fluoranthene | 1-Methylnaphthalene |
| Chrysene | 2-Methylnaphthalene |

Florida Administrative Code PAHs by HPLC

Expanded PAH Mix

Z-014G-FL 1 x 1 mL
 2.0 mg/mL each in CH₂Cl₂: Benzene (50:50) 18 comps.

| | |
|----------------------|------------------------|
| Acenaphthene | Dibenz[a,h]anthracene |
| Acenaphthylene | Fluoranthene |
| Anthracene | Fluorene |
| Benz[a]anthracene | Indeno[1,2,3-cd]pyrene |
| Benz[a]pyrene | Naphthalene |
| Benzo[b]fluoranthene | Phenanthrene |
| Benzo[g,h,i]perylene | Pyrene |
| Benzo[k]fluoranthene | 1-Methylnaphthalene |
| Chrysene | 2-Methylnaphthalene |

Florida Administrative Code PAHs by HPLC (continued)

Performance Check Solution

M-610-QC-FL 1 x 1 mL
M-610-QC-FL-PAK SAVE 5 x 1 mL
 At stated conc. (mg/mL) in AcCN 18 comps.

| | | | |
|----------------------|-------|------------------------|------|
| Acenaphthene | 0.1 | Dibenz[a,h]anthracene | 0.01 |
| Acenaphthylene | 0.1 | Fluoranthene | 0.01 |
| Anthracene | 0.1 | Fluorene | 0.1 |
| Benz[a]anthracene | 0.01 | Indeno[1,2,3-cd]pyrene | 0.01 |
| Benz[a]pyrene | 0.01 | 1-Methyl naphthalene | 0.1 |
| Benzo[b]fluoranthene | 0.01 | 2-Methyl naphthalene | 0.1 |
| Benzo[g,h,i]perylene | 0.01 | Naphthalene | 0.1 |
| Benzo[k]fluoranthene | 0.005 | Phenanthrene | 0.1 |
| Chrysene | 0.01 | Pyrene | 0.01 |

Matrix Spiking Solution

M-610-MS 1 x 1 mL
M-610-MS-PAK SAVE 5 x 1 mL
 At stated conc. (mg/mL) in AcCN 6 comps.

| | | | |
|---------------------|-----|---------------------|-----|
| Benz[a]pyrene | 0.5 | 2-Methylnaphthalene | 5.0 |
| Chrysene | 0.5 | Phenanthrene | 0.5 |
| 1-Methylnaphthalene | 5.0 | Pyrene | 0.5 |

PAH Mix Additions

H-001S-002S-M-20X 1 x 1 mL
 1.0 mg/mL each in MeOH 2 comps.

| | |
|----------------------|----------------------|
| 1-Methyl naphthalene | 2-Methyl naphthalene |
|----------------------|----------------------|

Polynuclear Aromatic Hydrocarbons (HPLC)

M-8310-FL 1 x 1 mL
M-8310-FL-PAK SAVE 5 x 1 mL
 0.5 mg/mL each in AcCN 18 comps.

M-8310-FL-SET 18 x 1 mL
 Each at stated conc. in AcCN

| | | | |
|------------------------|-----------|--------------|------|
| Acenaphthene | 0.5 mg/mL | M-8310-FL-01 | 1 mL |
| Acenaphthylene | 0.5 mg/mL | M-8310-FL-02 | 1 mL |
| Anthracene | 0.5 mg/mL | M-8310-FL-03 | 1 mL |
| Benz[a]anthracene | 0.5 mg/mL | M-8310-FL-04 | 1 mL |
| Benz[a]pyrene | 0.5 mg/mL | M-8310-FL-05 | 1 mL |
| Benzo[b]fluoranthene | 0.5 mg/mL | M-8310-FL-06 | 1 mL |
| Benzo[g,h,i]perylene | 0.5 mg/mL | M-8310-FL-07 | 1 mL |
| Benzo[k]fluoranthene | 0.5 mg/mL | M-8310-FL-08 | 1 mL |
| Chrysene | 0.5 mg/mL | M-8310-FL-09 | 1 mL |
| Dibenz[a,h]anthracene | 0.5 mg/mL | M-8310-FL-10 | 1 mL |
| Fluoranthene | 0.5 mg/mL | M-8310-FL-11 | 1 mL |
| Fluorene | 0.5 mg/mL | M-8310-FL-12 | 1 mL |
| Indeno[1,2,3-cd]pyrene | 0.5 mg/mL | M-8310-FL-13 | 1 mL |
| 1-Methylnaphthalene | 0.5 mg/mL | M-8310-FL-14 | 1 mL |
| 2-Methylnaphthalene | 0.5 mg/mL | M-8310-FL-15 | 1 mL |
| Naphthalene | 0.5 mg/mL | M-8310-FL-16 | 1 mL |
| Phenanthrene | 0.5 mg/mL | M-8310-FL-17 | 1 mL |
| Pyrene | 0.5 mg/mL | M-8310-FL-18 | 1 mL |

Polynuclear Aromatic Hydrocarbons (HPLC)

M-8310-QC-ATI 1 x 1 mL
M-8310-QC-ATI-PAK SAVE 5 x 1 mL
 At stated conc. (µg/mL) in AcCN 18 comps.

| | | | |
|----------------------|------|------------------------|------|
| Acenaphthene | 1000 | Dibenz[a,h]anthracene | 200 |
| Acenaphthylene | 2000 | Fluoranthene | 200 |
| Anthracene | 100 | Fluorene | 200 |
| Benz[a]anthracene | 100 | Indeno[1,2,3-cd]pyrene | 100 |
| Benz[a]pyrene | 100 | 1-Methylnaphthalene | 1000 |
| Benzo[b]fluoranthene | 200 | 2-Methylnaphthalene | 1000 |
| Benzo[g,h,i]perylene | 200 | Naphthalene | 1000 |
| Benzo[k]fluoranthene | 100 | Phenanthrene | 100 |
| Chrysene | 100 | Pyrene | 100 |

Polycyclic Aromatic Hydrocarbons

EPA and Regional Methods

Method 550 + 550.1 PAHs by HPLC & Internal Standard

| M-550-QC | | 1 x 1 mL | |
|--|------|------------------------|------|
| At stated conc. ($\mu\text{g/mL}$) in AcCN | | | |
| Acenaphthene | 1000 | Chrysene | 50 |
| Acenaphthylene | 1000 | Dibenz[a,h]anthracene | 10 |
| Anthracene | 50 | Fluoranthene | 2.5 |
| Benz[a]anthracene | 1 | Fluorene | 100 |
| Benz[a]pyrene | 5 | Indeno[1,2,3-cd]pyrene | 10 |
| Benzo[b]fluoranthene | 1 | Naphthalene | 1000 |
| Benzo[g,h,i]perylene | 5 | Phenanthrene | 50 |
| Benzo[k]fluoranthene | 1 | Pyrene | 50 |

Internal Standard

| M-550-IS | 1 x 1 mL |
|-----------------------|----------|
| 0.1 mg/mL in AcCN | |
| 4,4'-Difluorobiphenyl | |

Method 610 PAHs by GC/FID or HPLC

| M-610 | 1 x 1 mL |
|---|----------|
| 0.1 mg/mL each in MeOH:CH ₂ Cl ₂ (50:50) | |
| M-610A | 1 x 1 mL |
| At stated conc. in MeOH:CH ₂ Cl ₂ (50:50) | |
| M-610-QC | 1 x 1 mL |
| At stated conc. in AcCN | |

| Compound | M-610A | M-610-QC |
|------------------------|-----------|-------------|
| Acenaphthene | 1.0 mg/mL | 0.1 mg/mL |
| Acenaphthylene | 2.0 mg/mL | 0.1 mg/mL |
| Anthracene | 0.1 mg/mL | 0.1 mg/mL |
| Benz[a]anthracene | 0.1 mg/mL | 0.01 mg/mL |
| Benz[a]pyrene | 0.1 mg/mL | 0.01 mg/mL |
| Benzo[b]fluoranthene | 0.2 mg/mL | 0.01 mg/mL |
| Benzo[g,h,i]perylene | 0.2 mg/mL | 0.01 mg/mL |
| Benzo[k]fluoranthene | 0.1 mg/mL | 0.005 mg/mL |
| Chrysene | 0.1 mg/mL | 0.01 mg/mL |
| Dibenz[a,h]anthracene | 0.2 mg/mL | 0.01 mg/mL |
| Fluoranthene | 0.2 mg/mL | 0.01 mg/mL |
| Fluorene | 0.2 mg/mL | 0.1 mg/mL |
| Indeno[1,2,3-cd]pyrene | 0.1 mg/mL | 0.01 mg/mL |
| Naphthalene | 1.0 mg/mL | 0.1 mg/mL |
| Phenanthrene | 0.1 mg/mL | 0.1 mg/mL |
| Pyrene | 0.1 mg/mL | 0.01 mg/mL |

Matrix Spiking Solution

| M-610-MS | 1 x 1 mL | |
|---------------------------------|---------------|---------------------|
| M-610-MS-PAK | SAVE 5 x 1 mL | |
| At stated conc. (mg/mL) in AcCN | | |
| Benz[a]pyrene | 0.5 | 2-Methylnaphthalene |
| Chrysene | 0.5 | Phenanthrene |
| 1-Methylnaphthalene | 5.0 | Pyrene |

Method 8272 PAHs by GC/MS

PAH Mix

| M-8272 | 1 x 1 mL | |
|--|----------|-------------------|
| At stated conc. (mg/mL) in CH ₂ Cl ₂ | | |
| Naphthalene | 42 | Anthracene |
| 1-Methylnaphthalene | 24 | Phenanthrene |
| 2-Methylnaphthalene | 20 | Fluoranthene |
| Acenaphthylene | 9 | Pyrene |
| Acenaphthene | 11 | Benz(a)anthracene |
| Fluorene | 7.6 | Chrysene |

Internal Standard - Deuterated Analogs

| M-8272-IS | 1 x 1 mL | |
|-------------------------------------|----------|------------------------------|
| At stated conc. (mg/mL) in Acetone | | |
| Naphthalene-d ₈ | 5 | Phenanthrene-d ₁₀ |
| 1-Methylnaphthalene-d ₁₀ | 6 | Fluoranthene-d ₁₀ |
| Acenaphthene-d ₁₀ | 1.2 | Perylene-d ₁₂ |
| Fluorene-d ₁₀ | 1.2 | Chrysene-d ₁₂ |

Method 8310 PAHs by HPLC

PAH Mix

| M-8310 | 1 x 1 mL | |
|------------------------|------------------------|--|
| M-8310-PAK | SAVE 5 x 1 mL | |
| 0.5 mg/mL each in AcCN | | |
| Acenaphthene | Chrysene | |
| Acenaphthylene | Dibenz[a,h]anthracene | |
| Anthracene | Fluoranthene | |
| Benz[a]anthracene | Fluorene | |
| Benz[a]pyrene | Indeno[1,2,3-cd]pyrene | |
| Benzo[b]fluoranthene | Naphthalene | |
| Benzo[g,h,i]perylene | Phenanthrene | |
| Benzo[k]fluoranthene | Pyrene | |

PAH Quality Control Calibration Mixture

| M-610-QC | 1 x 1 mL | |
|---------------------------------|----------|------------------------|
| At stated conc. (mg/mL) in AcCN | | |
| Acenaphthene | 0.1 | Chrysene |
| Acenaphthylene | 0.1 | Dibenz[a,h]anthracene |
| Anthracene | 0.1 | Fluoranthene |
| Benz[a]anthracene | 0.01 | Fluorene |
| Benz[a]pyrene | 0.01 | Indeno[1,2,3-cd]pyrene |
| Benzo[b]fluoranthene | 0.01 | Naphthalene |
| Benzo[g,h,i]perylene | 0.01 | Phenanthrene |
| Benzo[k]fluoranthene | 0.005 | Pyrene |

Surrogate Standard

| M-8310-SS | 1 x 1 mL | |
|---------------------------|---------------|--|
| M-8310-SS-PAK | SAVE 5 x 1 mL | |
| 0.1 mg/mL in Acetonitrile | | |
| Decafluorobiphenyl | | |

Internal Standard Post Supercritical Fluid Extraction

| M-8310-SFE-IS-100X | 1 x 1 mL | |
|------------------------------|---------------|--|
| M-8310-SFE-IS-100X-PAK | SAVE 5 x 1 mL | |
| 20 mg/mL in AcCN:THF (50:50) | | |
| Biphenyl | | |

Regional Methods PAHs by HPLC

PAH Mix (Quebec Ministry of Environmental)

| H-QME-01 | 1 x 1 mL | |
|---|--------------------------------|--|
| 500 $\mu\text{g/mL}$ each in CH ₂ Cl ₂ :Benzene (50:50) | | |
| Acenaphthene | Dibenz[a,h]anthracene | |
| Acenaphthylene | Dibenz[a,h]pyrene | |
| Anthracene | Dibenz[a,i]pyrene | |
| Benz[a]anthracene | Dibenz[a,l]pyrene | |
| Benzo[b]fluoranthene | 7,12-Dimethylbenz[a]anthracene | |
| Benzo[j]fluoranthene | Fluoranthene | |
| Benzo[k]fluoranthene | Fluorene | |
| Benzo[g,h,i]perylene | Indeno[1,2,3-cd]pyrene | |
| Benzo[c]phenanthrene | 3-Methylcholanthrene | |
| Benz[a]pyrene | Naphthalene | |
| Benz[e]pyrene | Phenanthrene | |
| Chrysene | Pyrene | |

DIN-38407-17 Nitroaromatic Compounds

Examination of water, wastewater and sludge for the determination of selected nitroaromatic compounds by Gas-Liquid Chromatography

| DIN38407-17 | 1 x 1 mL | |
|-----------------------------------|----------------------------|--|
| 500 $\mu\text{g/mL}$ each in MeOH | | |
| Nitrobenzene | 3,4-Dinitrotoluene | |
| 2-Nitrotoluene | 2-Amino-6-nitrotoluene | |
| 4-Nitrotoluene | 4-Amino-2-nitrotoluene | |
| 1,3-Dinitrobenzene | 4-Amino-2,6-dinitrotoluene | |
| 2,6-Dinitrotoluene | 2-Amino-4,6-dinitrotoluene | |
| 2,4-Dinitrotoluene | 2,4,6-Trinitrotoluene | |



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