

Thin Layer Chromatography (TLC) System Descriptions and Visualizations

System, Plate, and Visualization Descriptions

| | |
|--------------|---|
| TLC 1 | <p>Chloroform:acetone (1:1) Silica Gel Plates (Q5, Quantum Ind.) <i>Visualization:</i></p> <ul style="list-style-type: none"> • LSD <ul style="list-style-type: none"> - UV light (long or short wave) - PDMAB/hydrochloric acid - acidified iodoplatinate |
| TLC 2 | <p>Acetone:ammonia saturated chloroform (9:1) Silica Gel 60 F-254 Merck Plates <i>Visualization:</i></p> <ul style="list-style-type: none"> • LSD <ul style="list-style-type: none"> - UV light (long or short wave) - PDMAB/hydrochloric acid - acidified iodoplatinate - 4 hours exposure to fluorescent lighting or sunlight |
| TLC 3 | <p>Toluene:acetone:ethanol:concentrated ammonia (45:45:7:3) Activated silica gel G plates 250µm thick <i>Visualization:</i></p> <ul style="list-style-type: none"> • Heroin <ul style="list-style-type: none"> - UV light, usually at 254 nm if there is fluorescent additive in the silica gel - Dragendorff spray reagent - acidified iodoplatinate spray • Opium <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Morphine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Codeine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Papaverine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Noscapine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray |
| TLC 4 | <p>Ethyl acetate:methanol:strong ammonia solution (17:2:1)</p> |

| | |
|---------------------|--|
| | <p>Activated silica gel G plates 250µm thick</p> <p><i>Visualization:</i></p> <ul style="list-style-type: none"> • Heroin <ul style="list-style-type: none"> - UV light, usually at 254 nm if there is fluorescent additive in the silica gel - Dragendorff spray reagent - acidified iodoplatinate spray • Phenobarbital <ul style="list-style-type: none"> - UV light at 254 nm both before and after exposure to ammonia vapor, if there is fluorescent additive in the silica gel • Opium <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Morphine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Codeine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Papaverine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Noscapine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray |
| <p>TLC 5</p> | <p>Methanol:concentrated ammonia (100:1.5)</p> <p>Activated Silica gel G plates 250µm thick (washed with 0.1 M potassium hydroxide in methanol)</p> <p><i>Visualization:</i></p> <ul style="list-style-type: none"> • Methaqualone <ul style="list-style-type: none"> - acidified iodoplatinate solution - Dragendorff spray • Methamphetamine <ul style="list-style-type: none"> - acidified iodoplatinate solution - acidified potassium permanganate solution • Heroin <ul style="list-style-type: none"> - UV light, usually at 254 nm if there is a fluorescent additive in the silica gel - Dragendorff spray reagent - acidified iodoplatinate spray • Oxycodone <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray - marquis • Ketamine |

| | |
|-------|---|
| | <ul style="list-style-type: none"> - acidified iodoplatinate spray • Phentermine <ul style="list-style-type: none"> - acidified iodoplatinate spray • MDMA <ul style="list-style-type: none"> - acidified potassium permanganate solution • Opium <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Morphine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Codeine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Papaverine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray • Noscapine <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray |
| TLC 6 | <p>Chloroform:methanol (9:1) Silica Gel G Plates 250µm thick (washed with 0.1 M potassium hydroxide in methanol) <i>Visualization:</i></p> <ul style="list-style-type: none"> • Methaqualone <ul style="list-style-type: none"> - acidified iodoplatinate solution - Dragendorff spray • Methamphetamine <ul style="list-style-type: none"> - acidified iodoplatinate solution - acidified potassium permanganate solution • Oxycodone <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray - marquis • Ketamine <ul style="list-style-type: none"> - acidified iodoplatinate spray • Phentermine <ul style="list-style-type: none"> - acidified iodoplatinate spray • MDMA <ul style="list-style-type: none"> - acidified potassium permanganate solution |
| TLC 7 | <p>Chloroform:acetone (4:1) Silica Gel G Plates 250µm thick</p> |

| | |
|---------------|---|
| | <p><i>Visualization:</i></p> <ul style="list-style-type: none"> • Amobarbital <ul style="list-style-type: none"> - acidified potassium permanganate - mercurous nitrate spray • Secobarbital <ul style="list-style-type: none"> - acidified potassium permanganate - mercurous nitrate spray • Methaqualone <ul style="list-style-type: none"> - acidified iodoplatinate solution - Dragendorff spray • Phenobarbital <ul style="list-style-type: none"> - UV light at 254 nm both before and after exposure to ammonia vapor, if there is fluorescent additive in the silica gel • Diazepam <ul style="list-style-type: none"> - acidified iodoplatinate solution • Flunitrazepam <ul style="list-style-type: none"> - acidified iodoplatinate solution |
| TLC 8 | <p>Methanol:ethyl acetate:ammonia hydroxide (6:3:1) Silica Gel 60 F-254 precoated plates</p> <p><i>Visualization:</i></p> <ul style="list-style-type: none"> • Amphetamine: <ul style="list-style-type: none"> - develop with 1% ninhydrin in methanol (heat at 100°C 2-3 minutes) |
| TLC 9 | <p>Toluene:diethylamine (19:1) Silica Gel 60 F-254 precoated plates</p> <p><i>Visualization:</i></p> <ul style="list-style-type: none"> • Marijuana <ul style="list-style-type: none"> - fast blue 2B salt |
| TLC 10 | <p>Hexane:ethyl ether (4:1) Silica Gel 60 F-254 precoated plates</p> <p><i>Visualization:</i></p> <ul style="list-style-type: none"> • Marijuana <ul style="list-style-type: none"> - fast blue 2B salt |
| TLC 11 | <p>Chloroform: methanol (9:1) Silica gel GHL plates 250µm thick</p> <p><i>Visualization:</i></p> <ul style="list-style-type: none"> • Diazepam <ul style="list-style-type: none"> - acidified iodoplatinate solution • Flunitrazepam <ul style="list-style-type: none"> - acidified iodoplatinate solution • Phencyclidine <ul style="list-style-type: none"> - acidified iodoplatinate solution - Dragendorff spray |

| | |
|----------------------|---|
| <p>TLC 12</p> | <p>Ethyl Acetate Silica gel G plates 250µm <i>Visualization:</i></p> <ul style="list-style-type: none"> • Amobarbital <ul style="list-style-type: none"> - acidified potassium permanganate - mercurous nitrate spray • Secobarbital <ul style="list-style-type: none"> - acidified potassium permanganate - mercurous nitrate spray |
| <p>TLC 13</p> | <p>Butyl ether:ethyl ether:diethylamine (9:9:2) Silica gel GF plates 250µm <i>Visualization:</i></p> <ul style="list-style-type: none"> • Cocaine <ul style="list-style-type: none"> - iodoplatinate solution - 0.5% <i>p</i>-dimethylaminobenzaldehyde (PDMAB) • Heroin <ul style="list-style-type: none"> - iodoplatinate solution • Marijuana <ul style="list-style-type: none"> - fast blue 2B salt • Hydrocodone <ul style="list-style-type: none"> - acidified iodoplatinate spray |
| <p>TLC 14</p> | <p>Dioxane:chloroform:ethyl acetate (12:5:2:1) Silica gel GF plates 250µm <i>Visualization:</i></p> <ul style="list-style-type: none"> • Cocaine <ul style="list-style-type: none"> - iodoplatinate solution - 0.5% <i>p</i>-dimethylaminobenzaldehyde (PDMAB) • Hydrocodone <ul style="list-style-type: none"> - acidified iodoplatinate spray |
| <p>TLC 15</p> | <p>Xylene:diethylamine (19:1) Silica gel GF plates 250µm <i>Visualization:</i></p> <ul style="list-style-type: none"> • Cocaine <ul style="list-style-type: none"> - iodoplatinate solution - 0.5% <i>p</i>-dimethylaminobenzaldehyde (PDMAB) • Hydrocodone <ul style="list-style-type: none"> - acidified iodoplatinate spray |
| <p>TLC 16</p> | <p>Chloroform:acetone (9:1) Silica gel GF plates 250µm <i>Visualization:</i></p> <ul style="list-style-type: none"> • Phencyclidine <ul style="list-style-type: none"> - acidified iodoplatinate spray |

| | |
|---------------|--|
| | - Dragendorff spray |
| TLC 17 | <p>Chloroform saturated methanol with ammonia (18:1) Silica gel GF plates 250µm <i>Visualization:</i></p> <ul style="list-style-type: none"> • Phencyclidine <ul style="list-style-type: none"> - acidified iodoplatinate spray - Dragendorff spray |
| TLC 18 | <p>Cyclohexane: toluene: diethylamine (75:15:10) Silica gel G plates 250µm <i>Visualization:</i></p> <ul style="list-style-type: none"> • Oxycodone <ul style="list-style-type: none"> - Dragendorff spray reagent - acidified iodoplatinate spray - marquis • Dimethyltryptamine <ul style="list-style-type: none"> - Van Urk's reagent |
| TLC 19 | <p>Methanol: water (90:10) Partisil® C-18 200µm <i>Visualization:</i></p> <ul style="list-style-type: none"> • Testosterone and its esters <ul style="list-style-type: none"> - sulfuric acid: ethanol (1:9) - heated 105° - 110° C, 5 minutes |