

# Zebbron™ GC Column Selection Chart

**Polarity Scale**

The polarity scale is based on their McReynolds value, which provides a systematic approach to ranking GC stationary phases by polarity.

<b>5</b>	<p><b>ZB-1</b> Non-polar phase suited for true boiling point separations</p>  <p>100% Dimethylpolysiloxane</p>  <p>100% Dimethylpolysiloxane</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Essential oils</li> <li>Gases (refinery)</li> <li>Hydrocarbons</li> <li>MFC</li> <li>Natural gas odorants</li> <li>Oxygenates and GRDs</li> <li>Semi-volatiles</li> <li>Simulated distillation</li> <li>Sulfur compounds (light)</li> <li>Solvent impurities</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 360/370 °C (isothermal/TPGC)</p> <p>USP phase: G2</p> <p>Available lengths (meter): 10, 15, 30, 50, 60, 100</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.10-5.00*</p> <p><small>*Thicker films (&gt;1.0 µm df) are rated to 340/360 °C (isothermal/TPGC).</small></p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Low activity</li> <li>High efficiency</li> <li>Excellent resolving power of critical pairs in complex petrochemical samples</li> <li>Low bleed (MS certified)</li> </ul>
<b>5</b>	<p><b>ZB-1ms</b> Extremely low bleed column for non-polar compounds</p>  <p>100% Dimethylpolysiloxane</p>  <p>100% Dimethylpolysiloxane</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Drugs of abuse</li> <li>Amines</li> <li>Acids</li> <li>Polychlorinated biphenyls (EPA Method 1668)</li> <li>Flavors &amp; fragrances</li> <li>Diesel fuel</li> <li>Pesticides</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 360/370 °C (isothermal/TPGC)</p> <p>USP phase: G2</p> <p>Available lengths (meter): 10, 12, 15, 20, 25, 30, 60</p> <p>Internal diameters (mm): 0.10, 0.25, 0.20, 0.25, 0.32</p> <p>Film thickness (µm): 0.10-1.00</p> <p>Available with Guardian™ integrated guard columns</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Lowered bleed (MS certified) especially suited to high sensitivity work using GC/MS</li> <li>Extremely inert for active compounds such as drugs or pesticides</li> <li>Improved signal-to-noise ratio for better sensitivity and mass spectral integrity</li> <li>Identical selectivity to ZB-1</li> </ul>
<b>5</b>	<p><b>ZB-1HT INFERNO™</b> High temperature stability (430 °C) for non-polar compounds</p>  <p>100% Dimethylpolysiloxane</p>  <p>100% Dimethylpolysiloxane</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>High boiling petroleum products</li> <li>Simulated distillation methods</li> <li>Long-chained hydrocarbons</li> <li>Polymers / Plastics</li> <li>High molecular weight waxes</li> <li>Diesel fuel</li> <li>Motor oils</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 400/430 °C (isothermal/TPGC)</p> <p>USP phase: G2</p> <p>Available lengths (meter): 15, 20, 30</p> <p>Internal diameters (mm): 0.18, 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.10-0.25</p> <p>Available with Guardian™ integrated guard columns</p> <p><small>*0.53 mm ID columns are rated to 400 °C max operational temperature</small></p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Non-metal 100% dimethylpolysiloxane phase stable to 430 °C</li> <li>Low bleed (MS certified) especially suited to high sensitivity work using GC/MS</li> <li>Extremely inert for active compounds such as drugs or pesticides</li> <li>Rugged high temperature, polyimide coated, fused silica tubing</li> <li>Provides true boiling point separation for hydrocarbon distillation methods</li> <li>Low activity, provides good peak shape for acidic and basic samples</li> <li>Provides robust column performance for high temperature bake outs</li> </ul>
<b>8</b>	<p><b>ZB-5</b> Versatile low polarity column for unknown samples</p>  <p>95% Dimethylpolysiloxane</p>  <p>5% Phenyl</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Alkaloids</li> <li>Drugs</li> <li>FAMES</li> <li>Halo-hydrocarbons</li> <li>Phenols</li> <li>Pesticides/Herbicides</li> <li>Residual solvents</li> <li>PCBS/Aroclors</li> <li>Solvent impurities</li> <li>Semi-volatiles</li> <li>Acids</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 360/370 °C (isothermal/TPGC)</p> <p>USP phase: G27</p> <p>Available lengths (meter): 15, 20, 30, 60</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.10-5.00*</p> <p>Available with Guardian™ integrated guard columns</p> <p><small>*Thicker films (&gt;1.0 µm df) are rated to 340/360 °C (isothermal/TPGC).</small></p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Versatile low polarity column</li> <li>Low bleed (MS certified) especially suited to high sensitivity work using GC/MS</li> <li>Extremely inert for active compounds such as drugs or pesticides</li> <li>Resistant to dirty samples - long column life</li> <li>Great column for unknown samples</li> </ul>
<b>8</b>	<p><b>ZB-5ms</b> Arylene phase for enhanced resolution of PAHs and multi-ring aromatic compounds</p>  <p>95% Dimethylpolysiloxane</p>  <p>5% Phenyl-Arylene</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Drugs</li> <li>Amines</li> <li>Phenols</li> <li>FAMES</li> <li>Halo-hydrocarbons</li> <li>Diols</li> <li>Polychlorinated hydrocarbons (PAHs)</li> <li>Polychlorinated biphenyls (PCBs) / Aroclors</li> <li>Acids</li> <li>Pesticides / Herbicides</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 325/350 °C (isothermal/TPGC)</p> <p>USP phase: G27</p> <p>Available lengths (meter): 10, 15, 20, 30, 60</p> <p>Internal diameters (mm): 0.10, 0.18, 0.25, 0.32, 0.52</p> <p>Film thickness (µm): 0.10-1.00</p> <p>Available with Guardian™ integrated guard columns</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Low bleed (MS certified) especially suited to high sensitivity work using GC/MS</li> <li>Extremely inert for active compounds such as drugs or pesticides</li> <li>Great column for unknown samples</li> <li>Enhanced resolution within 35 minutes</li> <li>Fully conditioned of PAHs and other multi-ring aromatic compounds</li> <li>The perfect choice for EPA Methods 525, 610, 625, 8100, and 8270</li> </ul>
<b>8</b>	<p><b>ZB-5MSI</b> Low bleed column with the same selectivity as the ZB-5</p>  <p>95% Dimethylpolysiloxane</p>  <p>5% Phenyl</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Drugs of Abuse</li> <li>Nitroamines</li> <li>Phenols</li> <li>FAMES</li> <li>Pesticides</li> <li>EPA Methods</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 360/370 °C (isothermal/TPGC)</p> <p>USP phase: G27</p> <p>Available lengths (meter): 15, 30, 60</p> <p>Internal diameters (mm): 0.25, 0.32</p> <p>Film thickness (µm): 0.25-0.50</p> <p>Available with Guardian™ integrated guard columns</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Highly inert - improved peak shape for acidic/basic compounds</li> <li>MS certified low-bleed levels provide maximum sensitivity</li> <li>Industry leading GC specifications ensure column-to-column performance</li> <li>ESD bonding results in phase stability and high temperature limits</li> <li>Traditional bonding chemistry provides the same selectivity as the ZB-5 columns</li> </ul>
<b>8</b>	<p><b>ZB-5HT INFERNO™</b> High temperature stability (430 °C) for high boiling compounds</p>  <p>95% Dimethylpolysiloxane</p>  <p>5% Phenyl</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>High boiling petroleum products</li> <li>Simulated distillation methods</li> <li>Polymers / Plastics</li> <li>High molecular weight waxes</li> <li>Triglycerides</li> <li>Diesel fuel</li> <li>Motor oils</li> <li>Surfactants</li> <li>Long-chained hydrocarbons</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 400/430 °C (isothermal/TPGC)</p> <p>USP phase: G27</p> <p>Available lengths (meter): 15, 20, 30</p> <p>Internal diameters (mm): 0.18, 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.10-0.25</p> <p>Available with Guardian™ integrated guard columns</p> <p><small>*0.53 mm ID columns are rated to 400 °C max operational temperature</small></p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Non-metal 5% - phenyl - 95% - dimethylpolysiloxane phase stable to 430 °C</li> <li>Individually tested for low bleed, MS certified</li> <li>Rugged high temperature, polyimide coated, fused silica tubing</li> <li>Provides true boiling point separation for hydrocarbon distillation methods</li> <li>Low activity, provides good peak shape for acidic and basic samples</li> <li>Provides robust column performance for high temperature bake outs</li> </ul>
<b>9</b>	<p><b>ZB-XLB</b> Low polarity arylene column with bleed and sensitivity levels designed for MS detectors</p> <p>Proprietary</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Polychlorinated Biphenyls (PCBs)</li> <li>Pesticides</li> <li>Herbicides</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 340/360 °C (isothermal/TPGC)</p> <p>Available lengths (meter): 15, 20, 30, 60</p> <p>Internal diameters (mm): 0.18, 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.18-1.5</p> <p>Available with Guardian™ integrated guard columns</p> <p><small>*Thicker films (&gt;1.0 µm df) are rated to 320/340 °C (isothermal/TPGC).</small></p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Unique low polarity arylene column</li> <li>Engineered specifically for use with bleed sensitive detectors such as MS</li> <li>Provides alternative selectivity to standard 5-type phases</li> <li>Often used for confirmation of pesticide, PCB, or other environmental samples</li> <li>Good tool for sample screening to identify unknown contaminants</li> </ul>
<b>11</b>	<p><b>ZB-MultiResidue™-1</b> Novel phase designed for pesticides, herbicides, and insecticides</p> <p>Proprietary</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Organochlorine pesticides</li> <li>Organophosphorus pesticides</li> <li>Nitrogen containing pesticides</li> <li>Herbicides</li> <li>Insecticides</li> <li>Aroclors/PCBs</li> <li>Multi-pesticide residue method</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 320/340 °C (isothermal/TPGC)</p> <p>EPA Method: 8081A, 8141, 8151 Certified</p> <p>Available lengths (meter): 30</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.25-0.50</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Designed for the separation of all types of pesticides, herbicides, and insecticides</li> <li>Provides baseline resolution and confirmation of all 20 chlorinated pesticides regulated under EPA Method 8081 in &lt;10 min</li> <li>MS Certified phase provides low bleed performance for pesticide confirmation by MS</li> <li>Low activity, decreased breakdown of sensitive pesticides such as DDT</li> </ul>
<b>13</b>	<p><b>ZB-624</b> Optimized for separating volatile organic compounds (VOCs)</p>  <p>94% Dimethylpolysiloxane</p>  <p>6% Cyanopropylphenyl</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Volatile organic compounds (VOCs)</li> <li>Residual solvents in pharmaceutical products (VOCs)</li> <li>US EPA Methods 501.3, 502.2, 503, 524.2, 601, 602, 624, 8010, 8015, 8020, 8240, 8260, 8021</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -20 to 260 °C</p> <p>USP phase: G43</p> <p>Available lengths (meter): 20, 30, 60, 75, 105</p> <p>Internal diameters (mm): 0.18, 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 1.0, 1.4, 1.8, 3.0</p> <p>Available with Guardian™ integrated guard columns</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Formulated for low bleed</li> <li>Increased temperature limit speeds run times and re-equilibration</li> <li>Available in Fast GC dimensions</li> <li>Separate volatile organic flavor and fragrance additives and residual solvents in industrial or pharmaceutical products (VOCs)</li> </ul>
<b>15</b>	<p><b>ZB-MultiResidue™-2</b> Novel phase designed for pesticides, herbicides, and insecticides analysis</p> <p>Proprietary</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Organochlorine pesticides</li> <li>Organophosphorus pesticides</li> <li>Nitrogen containing pesticides</li> <li>Herbicides</li> <li>Insecticides</li> <li>Aroclors/PCBs</li> <li>Multi-pesticide residue method</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -60 to 320/340 °C (isothermal/TPGC)</p> <p>EPA Method: 8081A, 8141, 8151 Certified</p> <p>Available length (meter): 30</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.20-0.50</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Designed for the separation of all types of pesticides, herbicides, and insecticides</li> <li>Provides baseline resolution and confirmation of all 20 chlorinated pesticides regulated under EPA Method 8081 in &lt;10 min</li> <li>MS Certified phase provides low bleed performance for pesticide confirmation by MS</li> <li>Low activity, decreased breakdown of sensitive pesticides such as DDT</li> </ul>
<b>18</b>	<p><b>ZB-35</b> Intermediate polarity column for high molecular weight analysis</p>  <p>65% Dimethylpolysiloxane</p>  <p>35% Phenyl</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Pesticides</li> <li>Aroclors</li> <li>Drugs of Abuse</li> <li>Amines</li> <li>Semi-volatiles</li> <li>Steroids</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -50 to 340/360 °C (isothermal/TPGC)</p> <p>USP phase: G42</p> <p>Available lengths (meter): 15, 30, 60</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.25-1.00</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Intermediate polarity column for high molecular weight analysis</li> <li>Inert to minimize analyte adsorption, improve efficiency, and reproducibility</li> <li>More rugged (longer column life) than other polar phases</li> <li>Excellent for trace analysis with bleed-sensitive detectors</li> <li>Often resolves compounds that co-elute on ZB-1 or ZB-5 phases</li> </ul>
<b>19</b>	<p><b>ZB-1701</b> Unique selectivity providing an alternate selectivity to phenyl phases with similar polarity</p>  <p>86% Dimethylpolysiloxane</p>  <p>14% Cyanopropylphenyl</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>PCBs</li> <li>Solvents</li> <li>Esters</li> <li>Phenols</li> <li>Pharmaceutical intermediates</li> <li>Drugs</li> <li>MS derivatized sugars</li> <li>Amines</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -20 to 280/300 °C (isothermal/TPGC)</p> <p>USP phase: G46</p> <p>Available lengths (meter): 15, 30, 60</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.25-1.00</p> <p><small>*Thicker films (&gt;1.0 µm df) are rated to 260/280 °C (isothermal/TPGC).</small></p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Intermediate polarity column</li> <li>Provides alternate selectivity to phenyl phases with similar polarity</li> <li>Unique selectivity - good column to screen in method development</li> <li>Enhanced stability and low activity</li> <li>Fast run and re-equilibration times for enhanced sample throughput and productivity</li> </ul>
<b>19</b>	<p><b>ZB-1701P</b> Specially tested to ensure good response for DDT and endrin</p>  <p>86% Dimethylpolysiloxane</p>  <p>14% Cyanopropylphenyl</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Organochlorine pesticides</li> <li>Aroclors</li> <li>Organophosphorus pesticides</li> <li>Nitrogen containing pesticides</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: -20 to 280/300 °C (isothermal/TPGC)</p> <p>EPA Method: 8081A Certified</p> <p>Available lengths (meter): 30</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.25-1.00</p> <p><small>*Thicker films (&gt;1.0 µm df) are rated to 260/280 °C (isothermal/TPGC).</small></p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Specialty tested to ensure good response for DDT and endrin</li> <li>Guaranteed column for pesticide analysis</li> </ul> <p><small>Note: Consider using ZB-MultiResidue 1 and 2 as a more rugged alternative for pesticide analysis.</small></p>
<b>24</b>	<p><b>ZB-50</b> High polarity column capable of high-temperature bake-out to remove contaminants</p>  <p>50% Phenyl</p>  <p>50% Dimethylpolysiloxane</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Drugs of abuse</li> <li>Pesticides</li> <li>Aroclors</li> <li>Cholesterols</li> <li>Triglycerides</li> <li>Steroids</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: 40 to 320/340 °C (isothermal/TPGC)</p> <p>USP phase: G3</p> <p>Available lengths (meter): 15, 30, 60</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.15-1.00</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>High polarity column capable of high-temperature bake-out to remove contaminants</li> <li>Inert to minimize analyte adsorption, improve efficiency, and reproducibility</li> <li>More rugged (longer column life) than other polar phases</li> <li>Excellent for trace analysis with bleed-sensitive detectors</li> <li>Often resolves compounds that co-elute on ZB-1 or ZB-5</li> <li>Great for drug screening and environmental compounds</li> </ul>
<b>52</b>	<p><b>ZB-WAX<sup>PLUS</sup></b> 100% aqueous stable with high retention of alcohols and other chlorinated solvents</p>  <p>100% Polyethylene Glycol</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Alkaloids</li> <li>Aldehydes</li> <li>Aromatics</li> <li>Essential oils</li> <li>Flavors &amp; fragrances</li> <li>Glycols</li> <li>Pharmaceuticals</li> <li>MS</li> <li>Solvents</li> <li>Styrene</li> <li>Xylene isomers</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: 20 to 250/260 °C (isothermal/TPGC)</p> <p>USP phase: G16</p> <p>Available lengths (meter): 10, 15, 20, 30, 60</p> <p>Internal diameters (mm): 0.10, 0.18, 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.10-1.00</p> <p><small>*Thicker films (&gt;1.0 µm df) are rated to 230/240 °C (isothermal/TPGC).</small></p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>100% aqueous stable</li> <li>Extremely inert for acidic compounds</li> <li>Enhanced selectivity for low boiling solvents</li> <li>High retention of alcohols and other chlorinated solvents</li> <li>Increased efficiency at 20 °C</li> <li>Bonded, solvent insoluble</li> </ul>
<b>57</b>	<p><b>ZB-WAX</b> Bonded, solvent insoluble phase excellent for separating polar complex mixtures</p>  <p>100% Polyethylene Glycol</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Alcohols</li> <li>Aldehydes</li> <li>Aromatics</li> <li>Essential oils</li> <li>Flavors &amp; fragrances</li> <li>Glycols</li> <li>Pharmaceutical</li> <li>MS</li> <li>Solvents</li> <li>Styrene</li> <li>Xylene isomers</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: 40 to 250/260 °C (isothermal/TPGC)</p> <p>USP phase: G16</p> <p>Available lengths (meter): 10, 15, 20, 30, 60</p> <p>Internal diameters (mm): 0.10, 0.18, 0.25, 0.32, 0.53</p> <p>Film thickness (µm): 0.10-1.00</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>Low bleed, MS certified</li> <li>Highly stable, long lifetime</li> <li>Low activity for amines</li> <li>Excellent chromatography of polar complex mixtures</li> <li>Widely used for profiling and "fingerprinting"</li> <li>Bonded, solvent insoluble</li> </ul>
<b>58</b>	<p><b>ZB-FFAP</b> Provides better peak shape for underivatized acids</p>  <p>Nitroterephthalic Acid Modified Polyethylene Glycol</p>  <p>Polyethylene Glycol</p> 	<p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>Acrylates</li> <li>Alcohols</li> <li>Aldehydes</li> <li>Free fatty acids</li> <li>Alkanes</li> <li>Organic Acids</li> <li>Phenols</li> <li>Weakly Free Acids</li> </ul>	<p><b>Specifications:</b></p> <p>Temperature limits: 40 to 250/260 °C (isothermal/TPGC)</p> <p>USP phase: G35</p> <p>Available lengths (meter): 15, 30, 50, 60</p> <p>Internal diameters (mm): 0.25, 0.32, 0.53</p> <p>Film Thickness (µm): 0.25-1.00</p>	<p><b>Benefits:</b></p> <ul style="list-style-type: none"> <li>High polarity column</li> <li>Provides better peak shape for underivatized acids</li> <li>Bonded, solvent insoluble</li> <li>Replaces OV-351</li> </ul>