

## Calculate the ligand density of a bonded phase of an HPLC column - How To

The ligand density can be calculated using the Berendsen-de Galan equation:

$$\alpha = 10^6 \%C / (10^2 MW_{\text{carbon}} nC - \%C MW_{\text{ligand}}) SBET$$

where  $\alpha$  is the ligand density ( $\mu\text{mol}/\text{m}^2$ ),  $\%C$  is the percent carbon (%),  $MW_{\text{carbon}}$  is the molecular weight of carbon (g/mol),  $nC$  is the number of carbon atoms per bonded ligand,  $MW_{\text{ligand}}$  is the molecular weight of the organic bonded ligand (g/mol), and  $SBET$  is the specific surface area of silica material ( $\text{m}^2/\text{g}$ ).

For example, the ligand density of the Cogent UDC-Cholesterol™ stationary phase comes out to approximately  $1.5 \mu\text{mol}/\text{m}^2$  using this equation.

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