MICROSOLV

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:

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

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

For example, the ligand density of the Cogent UDC-Cholesterol™ stationary phase comes out to approximately 1.5 μmol/m^2 using this equation.