The optical spectrum of diatomic OsC has been investigated for the first time, with transitions recorded in the range from 17,390 to 22,990 cm$^{-1}$. The ground state was found to be $X^3\Delta_3$, deriving from the $4\delta^316\sigma$ electronic configuration. Six bands were rotationally resolved and analyzed to obtain ground and excited state rotational constants and bond lengths. Spectra for six OsC isotopomers, $^{192}Os^{12}C$ (40.3%), $^{190}Os^{12}C$ (26%), $^{188}Os^{12}C$ (16%), $^{186}Os^{12}C$ (13.1%), $^{187}Os^{12}C$ (1.9%) and $^{186}Os^{12}C$ (1.6%), were recorded and rotationally analyzed. Four bands were found to originate from the $X^3\Delta_3$ ground state, giving $B''_0 = 0.533492(33)$ cm$^{-1}$ and $r''_0 = 1.67267(5)$ Å for the $^{192}Os^{12}C$ isotopomer (1σ error limits); two of these the 0-0 $\leftrightarrow X^3\Delta_3$ and 1-0 [19.1] 2 $\leftrightarrow X^3\Delta_3$ bands, form a vibrational progression with $\Delta G_{1/2} = 953.019$ cm$^{-1}$. The remaining two bands were identified as originating from an $\Omega'' = 0$ level that remains populated in the supersonic expansion. We believe that this level corresponds to the low-lying $^3\Sigma_{0}^{+}$ state, which derives from the $4\delta^216\sigma^2$ electronic configuration. The OsC molecule differs from the isovalent RuC molecule in having an $X^3\Delta_3$ ground state, rather than the $X^1\Sigma^+$ ground state found in RuC. This difference in electronic structure is due to the relativistic stabilization of the 6s orbital in Os, an effect which favors occupation of the 6s$^-$ like $16\sigma$ orbital. The relativistic stabilization also lowers the energy of the $4\delta^216\sigma^2$, $^3\Sigma^-$ term, allowing this term to remain populated in the supersonically cooled molecular beam.