The collision-induced, near-infrared O\textsubscript{2} continuum band overlapping the weak \(a^1\Delta_g \rightarrow X^3\Sigma_g^-\), \(v = 0 \rightarrow 0\), 1.27 \(\mu\)m discrete band of O\textsubscript{2} has been investigated in O\textsubscript{2}/CO\textsubscript{2} mixtures at room temperature (\(T = 296\) K) for total densities from 1.8 to 9.3 times that of an ideal gas under standard conditions (\(T = 273.15\) K and \(P = 101.325\) kPa), i.e., from 1.8 to 9.3 amagats. Absorption spectra were recorded at 0.5 cm\(^{-1}\) resolution using a Fourier-transform spectrometer and an 84-m pathlength. A least-squares analysis of the integrated band strength, \(S_{\text{tot}} = S_{\text{O}_2\rho_{\text{CO}_2}} + S_{\text{O}_2\rho_{\text{O}_2\rho_{\text{O}_2}}} + S_{\text{O}_2\rho_{\text{CO}_2} \rho_{\text{O}_2} \rho_{\text{CO}_2}}\), as a function of the carbon dioxide density, \(\rho_{\text{CO}_2}\), and the oxygen density, \(\rho_{\text{O}_2}\), yields \(S_{\text{O}_2\rho_{\text{CO}_2}} = 2.95(40) \times 10^{-43}\) cm\(^{-2}\) molecule/(cm\(^3\))\(^{-2}\) [i.e., \(2.13(29) \times 10^{-4}\) cm\(^{-2}\) amagat\(^{-2}\)]. The \(S_{\text{O}_2\rho_{\text{CO}_2}}\) coefficient is approximately three times greater than the corresponding \(S_{\text{O}_2\rho_{\text{N}_2}}\) coefficient determined from studies of O\textsubscript{2}/N\textsubscript{2} mixtures, illustrating the efficiency of large electric multipolar moments in inducing continuum absorption in the 1.27 \(\mu\)m band of O\textsubscript{2}. A similar large enhancement of the O\textsubscript{2} continuum absorption by CO\textsubscript{2} is observed for the \(v = 1 \rightarrow 0\), O\textsubscript{2} vibrational fundamental. The results support the calculations by Brown and Tipping, which demonstrate the importance of water, with its large electric dipole moment, in enhancing the collision-induced absorption bands of O\textsubscript{2} and N\textsubscript{2} in the atmosphere. We suggest that the apparent inability of radiative-transfer models to accurately account for the increased atmospheric absorption present when water-vapor levels increase may be due in part to the neglect of the intensity enhancement of a number of continuum bands and of the far wings of discrete bands by water-vapor collisions.