Accurate studies of the ground and low lying excited triplet pi-states of the covalently bonded alkaline earth metal carbides have been of interest to both theoreticians and experimentalists in the past few decades to understand their bonding. Diatomic beryllium carbide (BeC), which is valence iso-electronic with MgC, was probed by laser ablation and jet cooling techniques producing rotationally resolved data reported in a previous study.[1] Dynamically weighted MRCI calculations were used to construct adiabatic potential energy curves for the ground and the four lowest triplet pi-states up to 50,000 cm$^{-1}$. From these, diabatic potentials and couplings were obtained and used to compute vibronic levels for the four interacting states. Here we apply the same methodology to MgC and examine the similarities and differences between the two systems. Results show significantly different bonding characteristics for the pi-states of MgC when compared to BeC.