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MgB₂; Al and C doping, σ -band filling and anisotropy reduction SABINA RUIZ-CHAVARRIA, PABLO DE LA MORA, Depto. de Fis., Fac. de Ciencias, UNAM, Mexico, GUSTAVO TAVIZON, Depto. de Fis. y Quim. Teorica, Fac. de Quimica, UNAM, Mexico — Al and C-MgB₂ doping adds an electron to the system for each atom. This extra electron fills up the σ -bands thus diminishing the number of σ -carriers; this has been the usual explanation for the T_c reduction. Nevertheless in this work we show that there is also a large reduction of anisotropy in the electrical conductivity due to the σ -carriers which should also have an effect on the T_c reduction. Al and C doping produce a different T_c pattern; this difference can be largely explained by the relative shift between the σ -bands and π -bands. After adjusting to this shift there is a small but visible difference, at low doping T_c in the Al compounds drops faster than in the C compounds, this can be directly related to the faster loss of conductivity anisotropy in the Al compounds.

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