We consider the 2×2 parabolic systems

$$u^\varepsilon_t + A(u^\varepsilon) u^\varepsilon_x = \varepsilon u^\varepsilon_{xx}$$

on a domain $(t,\, x) \in]0,\, +\infty[\times]0,\, l[$ with Dirichlet boundary conditions imposed at $x = 0$ and at $x = l$. The matrix A is assumed to be in triangular form and strictly hyperbolic, and the boundary is not characteristic, i.e. the eigenvalues of A are different from 0.

We show that, if the initial and boundary data have sufficiently small total variation, then the solution u^ε exists for all $t \geq 0$ and depends Lipschitz continuously in L^1 on the initial and boundary data.

Moreover, as $\varepsilon \to 0^+$, the solutions $u^\varepsilon(t)$ converge in L^1 to a unique limit $u(t)$, which can be seen as the *vanishing viscosity solution* of the quasilinear hyperbolic system

$$u_t + A(u) u_x = 0, \quad x \in]0,\, l[.$$

This solution $u(t)$ depends Lipschitz continuously in L^1 w.r.t the initial and boundary data. We also characterize precisely in which sense the boundary data are assumed by the solution of the hyperbolic system.