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ABSTRACT

The object of the present invention is to provide a surface treatment solution for finely processing a glass substrate containing multiple ingredients as the one used for the construction of liquid crystal-based or organic electroluminescence-based flat panel display devices, without invoking crystal precipitation and surface roughness.

An etching solution of the invention contains, in addition to hydrofluoric acid (HF) and ammonium fluoride (NH_4F), at least one acid whose dissociation constant is larger than that of HF. The concentration of the acid in the solution is adjusted as follows. If such an acid-added etching solution with the concentration x of the acid varied is applied to a silicon oxide film heated to a temperature proper to etching, and the etching rate f(x) [Å/min] is plotted as a function of the concentration x of the acid in the solution, and it is found that f(x) takes a maximum $f(x_1)$ when $x = x_1$, and a minimum $f(x_2)$ when $x = x_2$ ($x_1 < x_2$), the concentration x of the acid in the solution is adjusted to be $x > x_1$.

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