Fireside corrosion is a key problem when using biomass fuels in power plants. A possible solution is to apply corrosion resistant coatings. The present paper studies the corrosion and interdiffusion behaviour of a Ni-Al diffusion coating on austenitic stainless steel (TP347H). Ni-Al coatings were prepared by electrolytic deposition of nickel followed by pack aluminizing performed at 650°C. A uniform and dense Ni-Al coating with an outer layer of Ni2Al3 and an inner Ni layer was formed. Samples were exposed to 560°C for 168h in an atmosphere simulating biomass combustion. This resulted in localized corrosion attack. Interdiffusion was studied by isothermal heat treatment in static air at 650°C or 700°C for up to 3000h. The Ni2Al3 gradually transformed into NiAl and Ni3Al during the interdiffusion process. Porosity developed at the interface between the Ni-Al coating and the Ni layer and expanded with time at both temperatures.