A population with stable age distribution

A population with stable age distribution has a fecundity function that is zero except over a very narrow range centered at \( a_0 \). We model this by setting \( b(a) = B\delta(a - a_0) \) where \( B \) is a constant and \( \delta(x) \) is the Dirac delta function.

What conditions must the death rate \( \mu(a) \) satisfy in order for the population not to go extinct? (This condition will be in terms of \( B \) and \( a_0 \).)