The chronology of magma mixing and flank collapse events is still a matter of debate, although important for volcanic hazard assessments. We compare here K-Ar ages obtained from lava domes of Dominica, Martinique and Saint Lucia. Ages obtained on groundmass date the eruption as this phase crystallizes last during emplacement. Plagioclase crystals yielded apparent ages 2 to 3 times older than the groundmass due to a partial retention of inherited 40Ar, probably link to a xenocryst component. Such fraction depends on the diffusion parameters and on the residence time within the magma chamber. In order to account for the age difference, we have computed the residence time of plagioclase phenocrysts using available data on magma chamber temperature conditions prevailing in the Lesser Antilles (850–600°C), and possible inherited crystal initial ages (26 Ma-15 ka). Considering a 6 mm-large cylindrical geometry for plagioclase crystals, an initial coefficient of $8.714 \times 10^{-9}$ cm²/s, and an activation energy of 26440 cal/mol, we have obtained, using the Arrhenius relation, an argon diffusion coefficient of $D=5.97 \times 10^{-14}$ cm²/s. With such parameters, the age differences observed require residence times of less than a hundred years. This suggest that post-collapse volcanism studied here have been triggered by reservoir remobilization less than 100 years before being erupted, consistent with the calculations made for the current eruption of Soufriere Hills. Although it relies only on an inherited xenocrysts origin for the excess radiogenic 40Ar, our approach should help us to better constrain the timing between magmatic intrusion, mixing, flank collapse and eruptions.