The silica gel layer develops for at least up to 2 h of soaking (steps 1–3 of surface evolution). The amorphous CaP layer also develops at 2 h of soaking (step 4). At 14 h of soaking, the spectrum shows the HCA, which is crystallized. P5C2 forms crystallized HCA from 14 h of soaking (step 5 of the surface evolution).

The nucleation time of this layer determines the bioactivity. All the glasses have formed a layer of HCA on their surface. All of them can be considered bioactive. However, there are differences in the nucleation times of this layer.

The nucleation times of the HCA layer are summarized in Table 3.4.

TABLE 3.4 Nucleation Times of the HCA Layer

Glass Name	HCA Nucleation Time
Highest bioactive glasses (<10 h)	
P6A3	6 h
P6B3	
P6A1	8 h
P4A3	
Lowest bioactive glasses (>1 day)	
P1B5	2 days
P5B5	
P1C2	
P3B5	3 days
Medium bioactive glasses (10–16 h)	
P1C1	10 h
P4B3	
P2C1	12 h
P3C2	14 h
P5C2	
P4A1	
P2A3	
P2B3	
P3C1	16 h
P4C1	
P2A1	
45S5	12 h