Radiopacity can facilitate diagnostic observations adjacent to resin composites. Study objectives: The aim of this study was to evaluate the radiopacity of the resin composites containing zirconia and barium glass as radiopaque fillers. Methods and material: Fifteen specimens of each material with thicknesses of 2 mm were prepared and radiographed alongside an aluminum stepwedge and human enamel and dentin. Three standard occlusal radiographs for each material were taken, with exposure time of 0.32 seconds and focus-film distance of 40 cm. Films were processed in an automatic device, and digitized using a desktop scanner. Mean gray values of the materials, stepwedge and enamel and dentine were measured using Image J software. The data were analysed using Analysis of Variance and Duncan multiple range tests. Results: The mean gray values of resin composites ranged from 21.31 to 76.37. Among the zirconia containing materials Enamel Plus HRI, Filtek Ultimate, Valux Plus and Z550 were presented more gray values than the barium glass containing composites Aelite LS Posterior, Clearfil Majesty Esthetic, Nanoceram Bright, Nexcomp, Reflexions, and enamel and dentin (p<0.05). All zirconia particle-containing resin composites, except Estelite Sigma Quick, demonstrated radiopacity values greater than 4 mm of the aluminum scale (p<0.05). Conclusion: The radiopacity values of the resin composite materials investigated varied depending on type and percentage of the radiopaque fillers incorporated.