

Granites of historic buildings in southeastern Brazil

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The southeastern region of Brazil, guard important collection of Brazilian cultural heritage built with the use of stone materials. From the geological point of view, this region consists of a considerable volume of granitic rocks, where the oldest ones (> 2.0 Ga) may present gneissic structure and the new ones (< 600 Ma) typical granitic textures. Macroscopic analysis of these rocks allows the identification of the presence of isotropic granites, with granulation varying from thin to medium, sometimes with presence of megacrystals, and grayish-whitish colorations in buildings in Minas Gerais and São Paulo states, while in Rio de Janeiro state predominates augen gneissic type and stains that vary from gray to greenish. In Minas Gerais gneisses were used in built heritage only in the construction of its new capital at the end of the 19th century. In historical buildings in cities of Rio de Janeiro state, especially in the city of Rio de Janeiro, built between the middle of the 18th and the end of the 19th century, two types of gneisses stand out. The first one, identified as Phacoidal Gneiss, is an augen-gneiss with megacrystals of microcline in a matrix constituted by biotite, garnet and quartz. Santa Cruz dos Militares Church is an example of this application. The second one, identified as Leptinite, is a fine-grained, well-developed foliation and consists of garnet, biotite, quartz and feldspars. The facade of Candelária Church is a good example. In Minas Gerais, despite the great volume and diversity of granitic materials, these were little used in their historical buildings, which date from the 18th century to the middle of the 19th century. The types applied are isotropic, with a strong predominance of felsic minerals on mafic (biotite), with or without garnet. As example for these applications may be cited ornamental elements from the frontispieces of Conceição Church in Prados. In several other buildings and towns in Minas Gerais state, as in the case of Conceição Church in Conselheiro Lafaiete, fine and whitish biotite granites, with or without garnet, were used in doorstep and window-cases or as structural elements. The historical buildings of São Paulo state, especially for the city of São Paulo, date from the end of the 19th century to the middle of the 20th, been mainly used two types of granites of grayish-whitish coloration. Itaquera Granite presents fine granulation and is constituted by oligoclase, microcline, biotite and quartz. It was used in the Obelisk of Memory and at the base of the Municipal Theater of São Paulo. The second type, known as Mauá Granite, is constituted by feldspars, quartz and biotite, with typical microcline phenocrysts oriented by magmatic flow. It was used in the construction of the Monument to the Entries. The examples cited here confirm the importance of granitic rocks to the construction of historical buildings in southeastern Brazil.