The use of thin marble panels as facade cladding has increased substantially during the last few decades. However, during recent years reports of facade failure have increased dramatically. Facade cladding of marble has, in several cases, suffered from problems with permanent expansion bowing and loss of strength. Investigation of materials microstructure by means of image analysis has given useful information in the process of finding the mechanisms causing the failure. Two different marble types are investigated. Weather resistant marble types with xenoblastic microstructure having narrower inter granular spaces and more irregular borders than the other type with granoblastic microstructure. In the preparation process of thin sections of each of the marble types the grain boundaries are intensified by an etching process. The contact length between grains on a surface and the number of grains exposed on that surface are measured on the microscope images using image analysis by the program Adobe Photoshop 7.0 with Image Processing Toolkit 4.0. The parameters measured by the program on microscope images of thin sections of two marble types are used for calculation of the coefficient of irregularity for the microstructure. The etching method and the image analysis method used for analyzing microscope images work well and the procedure gives good results for the total length of the grain boundaries and the number of grains in the same section, which are used in further investigations.