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Aggregates for road building from Apulia region quarries

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Apulia region is characterized by several quarries producing aggregates for road construction. A good knowledge of the technical behavior of aggregates is really important for the use. A laboratrory investigation has been developed in cooperation with Tecnoprove laboratory on 50 quarries from all over the Apulia region. Have been studied aggregates for road construction, avoiding weak rock quarry. The study has concerned unit weigth, compressive strength, wear and tear strength (Los Angeles test) and crushing strength. Tests have been made according to Italian rules for aggregates.Quarries from Foggia district were mainly located along the southern-western boundary of Gargano calcareous horst where back-reef limestone outcrop. Only two of the studied quarries were of alluvial deposits from the Appenine. The values of technical properties were quite interesting and also the variation coefficients have been really low witnessing that the material is quite homogeneous. Only a quarry, located really close to an important fault gave poor values. Quarries from Bari district dug limestone of the Mesozoic calcareous platform. The values of the compressive strength has been between 100 and 200 MPa, while the unit weight has beetween 26,5 and 25 kN/m3. Crushing coefficient values have been quite high. It due probably either to the corned shape of limestone aggregates or the fact that aggregates quarries are located where limestone are strongly tectonized. Quarries from Brindisi and Taranto districts even are oper in Mesozoic calcareous platform unit gave the worst values of compressive strength and other technical properties. The compressive strength was normally lower than 100 MPa. The Also crushing test and the Los Angeles test has given values quite poor. Compressive strength values of limestone are strongly variable, with an high coefficient of variation (more than 30%).Probably it is due to the fact that all the studied quarries are located along the boundary of the Apulian Mesozoic carbonatic platform where more severe are the effect of tectonics induced by the faults that have broken the platform. Quarries from Lecce district were dug in grey microcrystalline limestone. Although these limestone are strongly fissured and fractured the compressive strength value are quite high and also the results of Los Angeles tests and crushing strength tests are encouraging. Los Angeles tests has given values always lower than 25% with a minimum of 14.7%. For one of the quarry the medium values of the compressive strength has been higher that 300 MPa. Also the unit weight values have been quite high, normally higher that a 25 kN/m3.The study has shown that technical properties of the aggregates, manly calcareous, from different Apulian zone are really different. They are strongly conditioned by the tectonic more than by the lithology. Where the rock is strongly tectonized wear and tear and crushing strength decrease in a really strong way, much more than it was possible to suppose on the base of compressive strength. Compressive strength is quite variable from 50 and 300 MPa with a high value of variation coefficient. The highest values of strength have been obtained for dolomitic limestone of Southern Apulia (Salento), value really high for limestone.