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## **Influence of Humidity and Configuration on the Durability of Phenolic Bounded Cut-Off Wheels**

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Cut-off wheels are heterogeneous materials which consist of abrasive grains, fillers and a resin matrix. Every single component in a separating tool accomplishes a special requirement in the cutting process of materials. Beside the configuration, the bonding of the grains and the matrix (interphase) is an important point for the durability of cut-off wheels. The connection of the grains should be so good, that the grain do not break out of the matrix until the point on which it is not longer able to cut. Therefore, the quality of the separating tools is influenced by all components in a high degree.

Cut-off wheels in dry cut applications take up humidity when they are stored under regular conditions. The moisture uptake leads to an unintentional reduction of the durability. Therefore the humidity can have an influence on the interphase and the mechanical properties of the resin. The interdependencies between the moisture uptake and the durability reduction are shown by means of mechanical, thermo analytical and microscopical investigations of the single components and systems. The verification of the results is done by tests with cut-off wheels. In this investigation cut-off wheels with a phenolic matrix and a varying configuration of fillers are investigated.