

Development of a New Bonded Abrasive Diamond Tool

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In the development of a bonded abrasive diamond tool, it was studied that the wettability of Cu-Ag solder on carbon steel plate, gel density, maximum temperature, and holding time. The test results were evaluated by “JIS Z 3191 Method of wetting test for brazing filler metals”. From the experimental results, the best conditions for producing the new diamond tool are as follows: Cu-Ag solder, 80-20(mass%); gel density, 0.2(mass%); maximum temperature, 1163 K; and holding time at maximum temperature, 300 s. A diamond jigsaw was constructed by using these processes and demonstrated that the new diamond tool could cut a brick. In addition, the degree of vacuum is important during fabrication; therefore, vacuum equipment with sufficient capacity is required for producing these tools.

Key Words : diamond tool, bonded abrasive, titanium hydride, partial pressure, wettability