

## Tests of Drills during Drilling Holes into Alloy Wheels

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**This article is interested about drilling the holes to the alloy wheels. Tested were drills to drilling holes for screws and service holes. For screw holes was tested the three-stage drill with inserts from polycrystalline diamond. Drilled are two different diameters and the transition spherical or conical surface. The service holes were drilled with cemented carbide drill available from Mapal labeled Mega-drill-Alu-180. During test, was modified the geometry of the drill and we watched what will be the effect of applied modification. Tested was seven variants of regrounding the drill. We evaluate the surface roughness, but also if the drill has the right position and not be pushed away from its axis. Finally was tested drill with three edges. This drill bit is from company Mapal labeled Tritan.**

**Keywords:** drilling, drill, alloy wheels, aluminum alloy

### References

- [1] KLOŠÍK, R. (2014). *Racionalizace výroby vybraných součástí: diplomová práce*. Ostrava: VŠB – Technická univerzita Ostrava, Fakulta strojní, Katedra obrábění a montáže, 50 s.
- [2] CemeCon, CC AluSpeed®. Dostupné z: <http://www.cemecon.cz/povlakovani/cc-aluspeed.aspx>
- [3] *Značková maziva CZ*. Dostupné z: <http://www.znackovamaziva.cz/e-shop/prumyslove-oleje/prumysl/rezne-kapaliny/s-toolway-s-465-20l/>
- [4] GRAEVE, I., HIRSCH, J. *Wrought Aluminium Alloys. European aluminium association*. Dostupné z: <http://aluminium.matter.org.uk/content/html/eng/default.asp?catid=214&pageid>
- [5] ANTON, H. (2008). *Materiály pro řezné nástroje*. MM publishing, s. r. o. s. 235. ISBN 978-80-254-2250-2
- [6] MAPAL. *Tritan – Drill*. Dostupné z: <http://www.mapal.com/cz/novinky/novinky-a-udalosti/tritan-drill/>
- [7] CROMODORA WHEELS s. r. o. Dostupné z: <http://iszp.kr-moravskoslezsky.cz/assets/temata/ippc/files/cromodora---zarizeni-na-vyrobu-litych-hlinikovych-kol.pdf>
- [8] MAPAL. *Mega-Drill Alu*. Dostupné z: [http://www.mapal.com/fileadmin/00\\_PDFDateien/Kataloge/en/MAPAL\\_Competence\\_Solid\\_carbide\\_tools\\_en.pdf](http://www.mapal.com/fileadmin/00_PDFDateien/Kataloge/en/MAPAL_Competence_Solid_carbide_tools_en.pdf)
- [9] ČEP, R., JANÁSEK, A., MARTINICKÝ B., SADÍLEK M. (2011) Cutting tool life tests of ceramic inserts for car engine sleeves. *Tehnicki vjesnik/Technical Gazette*, No.2, Vol. 18, p. 203 – 209, 06/2011
- [10] SADÍLEK, M., ČEP, R.; BUDAK, I., SOKOVIC, M. (2011) Aspects of Using Tool Axis Inclination Angle, *Strojnícký vestník - Journal of Mechanical Engineering*, vol. 57, no. 9, p. 681-688.
- [11] SADÍLEK, M., ČEP, R., SADÍLKOVÁ, Z., VALÍČEK, J., PETŘKOVSKÁ, L. (2013) Increasing tool life in turning with variable depth of cut. *Materiali in tehnologije/Materials and technology*. vol. 47, no.2, pp.199-203, ISSN:1580-2949.
- [12] JURKO, J., ZAJAC, J., ČEP R. (2006). *Top trendy v obrábění 2. část – Nástrojové materiály*. Žilina: MEDIA/ST Žilina, 193 s. ISBN 80-968954-2-7.
- [13] VASILKO, K. (2007). *Analytická teória trieskového obrábania*. Prešov: COFIN Prešov, 338 s. ISBN 978-80-8073-759-7.
- [14] BRYCHTA, J., ČEP, R., SADÍLEK, M., PETŘKOVSKÁ, L., NOVÁKOVÁ, J. (2007). *Nové směry v progresivním obrábění*. Ostrava: VŠB-TU Ostrava, Dostupné z: <http://www.elearn.vsb.cz/archivcd/FS/NSPO>
- [15] BRYCHTA, J., ČEP, R., NOVÁKOVÁ, J., PETŘKOVSKÁ, L. *Technologie II - 2. díl*. Ostrava: VŠB – Technická univerzita Ostrava. 2008. s. 150. ISBN 978-80-248-1822-1
- [16] VASILKO, K., SIMKULET, V. (2012). Phenomenon of Twist Drill. *Manufacturing Technology*, Vol. 12, No. 13, pp. 281-285. ISSN 1213-2489.

- [17] NOVAK, M. (2012). Surface with High Precision of Roughness after Grinding. *Manufacturing Technology*, Vol. 12, No. 12, pp. 66-70. ISSN 1213-2489.
- [18] MANKOVA, I., VRABEL, M., KOVAC, P. Artificial Neural Network Application for Surface Roughness Prediction when Drilling Nickel Based Alloy. *Manufacturing Technology*, Vol. 12, No. 2, pp. 281-285. ISSN 1213-2489.

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