

Mohs Hardness Scale

The Mohs hardness scale for minerals has been used since 1822. It simply consists of 10 minerals arranged in order from 1 to 10. Diamond is rated as the hardest and is indexed as 10; talc as the softest with index number 1. Each mineral in the scale will scratch all those below it as follows:

Diamond	10
Corundum	9
Topaz	8
Quartz	7
Orthoclase (Feldspar)	6
Apatite	5
Fluorite	4
Calcite	3
Gypsum	2
Talc	1

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The steps are not of equal value and the difference in hardness between 9 and 10 is much greater than between 1 and 2. The hardness is determined by finding which of the standard minerals the test material will scratch or not scratch; the hardness will lie between two points on the scale - the first point being the mineral which is scratched and the next point being the mineral which is not scratched. Some examples of the hardness of common metals in the Mohs scale are copper between 2 and 3 and tool steel between 7 and 8. This is a simple test, but is not exactly quantitative and the standards are purely arbitrary numbers.

The materials engineer and metallurgist find little use for the Mohs scale, but it is possible to sub-divide the scale and some derived methods are still commonly used today. The file test is useful as a rapid and portable qualitative test for hardened steels, where convention hardness testers are not available or practical. Files can be tempered back to give a range of known hardness and then used in a similar fashion to the Mohs method to evaluate hardness.