

Ask The Oracle

Questions - to be answered in the next issue

Q: Some textbooks, when dealing with crystallography, use a system comprising of four numbers with a bar over the third number enclosed within curly brackets to describe and identify crystal faces. For example, $\{1\ 0\ \bar{1}\ 0\}$ and $\{14\ 14\ \bar{2}\ 8\ 3\}$. I have also come across an alpha notation for example $\{h\ 0\ \bar{h}\ 1\}$ and symmetry classes described, for example, as $\bar{3}\ 2\ /m$. None of the text books that I have seen that use this system take the trouble to explain it. Can anyone in the Guild enlighten me on how this system works?

Q: I have been having some problems with stones exploding while I am faceting them, especially Tourmaline. Can someone please shed some light on why this might be happening and how to stop it?



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Answer by Steve Smith

Crystallographic Nomenclature

The numbers overscored $\bar{3}$ refers to the Crystal System of the mineral:

Triclinic 1, Monoclinic 2, Rectangular 222, Trigonal 3, Tetragonal 4, Hexagonal 6, Cubic 4(3) and refers to the system of classes that comprise the (No.) fold rotation axis or (No.) fold rotation – inversion axis.

The references to numbers and letters 3m refers to the crystal planes of minerals and 010, 100 referring to the crystal axis of the stone.

For further clarification look on the internet at:-

Remarks On Crystallographic Nomenclature.

M. A. Peacock (University of Toronto, Canada).

http://www.minsocam.org/ammin/AM35/AM35_882.pdf

The American Mineralogist, Volume 54, January - February 1969

Crystallographic Nomenclature and Twinning in the Humite Minerals

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http://www.minsocam.org/ammin/AM54/AM54_309.pdf

Also try: <http://webmineral.com/crystall.shtml>

Please note that a more comprehensive answer to this question will feature in the next issue.