

# SEATTLE FACETOR DESIGN

FACETING MATERIAL NOTES No. 5  
JANUARY 1979

Name: **CUBIC ZIRCONIA** Chemical Formula:  $ZrO_2$  (stabilized with Ca and rare earth metals)

Color: Colorless (but X-ray turns material yellow temporarily)

Transparency: Transparent

Luster: Adamantine

Refractive Index: 2.15

Birefringence: None

Crystal System: Isometric (Cubic)  $a = 5.129 \text{ \AA}$

Optical Character: Single (Critical angle 27.7 degrees)

Dispersion: 0.060 (very high)

Pleochroism: None

Specific Gravity: 5.4 - 5.7

Hardness: 8.5

Fashioning: preferred angles 40.8 P / 34.5 C with 53% table  
acceptable angles 43P / 20C , 42P / 26C, 41P / 18 C,  
40P / 21C , 39P / 24C, 36P / 20C,  
37P / 20C , 38P / 20C  
Polish on either ceramic or tin lap with 50,000 diamond.

Remarks: Most likely to be confused with diamond, however Cubic Zirconia has higher density (about 1.6 times); different wettability properties (more easily wetted than diamond); and lower heat conductivity than diamond.  
  
Not particularly heat sensitive. May have negative crystal inclusions which look like tiny gas bubbles in rows and clusters.

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## NOTES ON FACETING ANGLE TRANSLATION

Faceting angle translation by the "Tangent Ratio" method was presented in the November 1978 issue of SEATTLE FACETOR DESIGN and in the January 1979 issue of FACETS magazine. An application of "Tangent Ratio" translation was given in the December 1978 SEATTLE FACETOR DESIGN, where I attempted to show how the invariant appearance of the designs in PLAN VIEW is a desirable feature. In the discussion which follows Robert Long gives a more detailed comparison between the exact i.e. Tangent Ratio method and the more traditional approximate method (wherein one merely changes each angle on the new design by a constant amount)

Norman Steele