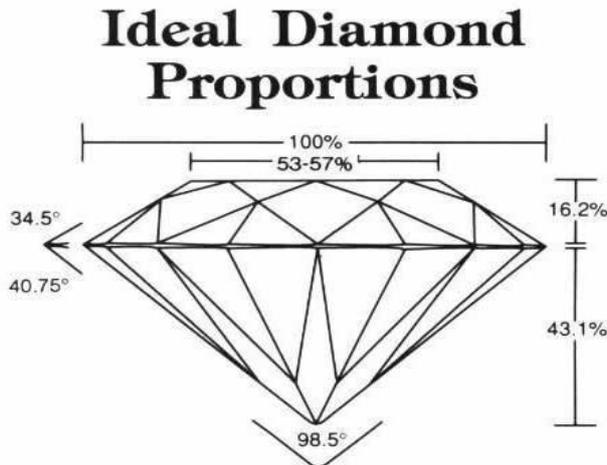


Diamond Grading- Art or Science?

Diamond grading is a very complex process, relying mainly on the “Art” of the grader, which invariably is based on solid “Science”. Pertinent details are described in the following that will support the previous statement how both the art and science are intertwined in the diamond grading procedure.

Diamond Grading Procedure

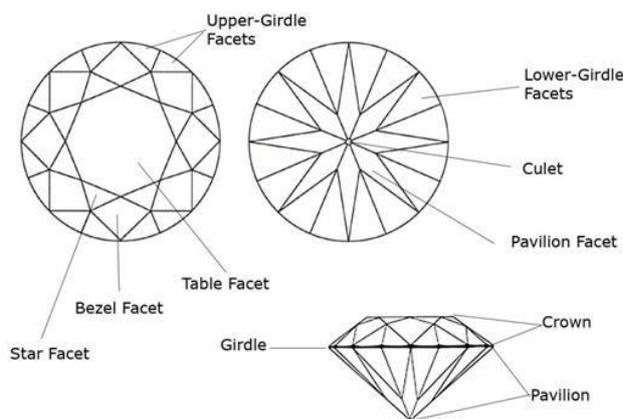


Universally, a diamond is graded based on the “4 C’s”, namely, **cut, clarity, color and carat weight**

Cut: in which fashion has the rough stone been faceted and importantly how near is the stone faceted to its ideal make. The light refraction, reflection and retention in a diamond due to the cut maximizes the visual appeal or the “beauty factor” of the diamond. In the cut grading of any diamond a couple of factors like the Table Percentage, Pavilion Depth, Crown Angle, Girdle Thickness and Finish Factors are observed (Fig.1). Typically an RBC cut diamond has 58 facets. Fig.2 shows some details of RBC cut diamond.

These cut factors are measured by a “skilled grader” on the scale given below using nothing but a 10x power lens *Fig. 1: Ideal Diamond Proportions* and his/her art or power of observation which again may vary from person to person, although they are based on SCIENCE.

- Excellent – The diamond’s visual appeal is maximized. The diamond has the best dimensions and proportions to ensure the best light return.
- Very Good – Most of the light that enters the diamond is properly reflected, creating a visually appealing stone with much brilliance and fire.
- Good – Much of the light that enters the diamond is reflected.
- Fair – A lot of light escapes from the diamond. Sparkle is low.
- Poor – The diamond is poorly cut. Most of the light escapes from the bottom and sides of the diamond and the gem may appear dull.



Marcell Tolkowsky, the father of the Modern Round Brilliant cut, in his book *Diamond Design* has explained in detail the importance of cutting the stone after studying the science behind the “brilliance” and “fire” of a diamond derived from complex physics based calculations. The grader only measures the nearness of the factors to the Ideal diamond cut prescribed by Tolkowsky, a perfect amalgamation of solid science and personal skill or art.

Fig.2: RBC cut parts of a diamond

Clarity: it is the relative clarity grade of a diamond based on its internal or external imperfections. The internal imperfections are called as Inclusions and the external imperfections are called as blemishes. The lesser your diamond has these inclusions or blemishes the better the grade and therefore better the value.

A grader generally observes the stone – face up using 10x magnification, records initial impressions, examining the stone from every direction and each facet individually to locate all the inclusions or blemishes, subsequently assigning them a grade from a scale starting from “Flawless” meaning an absolutely clean stone to the worst grade “I” meaning an included stone with inclusions/blemishes covering more than 25% of the stone.

The science behind assigning the grades is that the grader has to take into account the size, the number, the position, the nature & the relief of the inclusions/blemishes.

Singularly none of the points above can decide the clarity grade of any diamond, all 5 have to be considered in varying degree to ascertain a final grade. Some laboratories even go as far as to measure the size of each inclusion to decide the grade, basing their observations on sound Science and not entirely depending on the skill set of a grader.

Color: the grading of Natural color is the most subjective aspect of diamond grading, as it is based on the observational powers of the grader. Typically the grader is provided with a “master set” of diamonds with which he/she compares the diamond to be graded and assigns the color to that particular diamond. The assessment is based on the hue (the actual color of the diamond and any secondary colors), saturation (how strong or weak the color is), and tone (how light or dark the color is). In addition, graders will also take into account the “Fluorescence” of the diamond. The observation generally varies from person to person, therefore an odd number of graders observe the stone and the best result achieved is finalized as the final color assessment

Master set of diamonds are selected on the basis of scientific data. The master sets have to fulfill certain conditions set forth like

- The weight of the stones have to be more than 0.70 cts so that they can be easily compared with stones smaller than them (+0.20cts) and also a little bit bigger than them (+/- 1.00 to 1.50 cts) to get an accurate reading.
- The stones should be of a certain clarity grade (VS2 upwards) as the inclusions will then not interfere with the hue of color of the diamond.
- They should not have any fluorescence as we know that stones with even a little fluorescence tend to look whiter than they actually are when observed under light.

The lights under which color grading is done are also special tubes with temperature of 6500K providing pure white light.

Carat weight: there is absolutely no skill involved in this grading aspect and the measuring of the weight solely depends on science. There are complex mathematical formulae to determine the carat weight of the diamond even if you know the diameter of the stone. 1 carat of diamond is 0.200 grams. 5 carats make 1 gram. 100 cents make 1 carat.

GII grades diamonds/ jewelry using the combination of both Science and Art.

The grading laboratory is equipped with latest, state of the art instruments, Master sets for color, clarity grading and fluorescence for loose as well as studded diamonds. GII offers mobile jewelry

grading facilities. The graders are well trained with a combined experience of more than 50 years. The turnaround times of delivering both loose and studded diamonds are quicker. Separation between Natural and Synthetic Diamonds is also carried out using an inhouse developed instrument called as Q-CHK.

GII also provides class room lectures and hands on training as a part of curriculum of Diploma courses for Diamond grading.

References: www.giionline.com and GII Diamond Grading Manual.