

WHAT IS GOOD CUT AND HOW GOOD IS IT?

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The expression “precision cut” becomes very popular nowadays. Let’s try to clarify what it means for different market players and how much one cut is more precise than another. I used to hear different definitions. In one of our previous issues there was an opinion of a famous cutter that quality of cut is mostly defined by quality of polish. I cannot disagree with this sentence, but let me just concretize this a bit.



Fig. 1 Scapolite 58

Starting to grade by loupe and lighting

Somebody says that precision cut is made by automatic machines – under same design, same size and with same defects. Other people characterize so more or less symmetrical gemstones with small window (!), average polish, but – rare and quite valuable. Somebody else tells that precision cut should be innovative, containing concave facets and even elements of carving; more complicated design – more precise is the cut. Finally, some experts believe that precision cut is anything different from standard shapes. How is it possible to join these opinions to one point?

Let's start with the definition. According to the meaning of this sentence, the main thing is that **precision cut** should be **precise**. Only precise. Not innovative, not artistic, not valuable – just precise. It means that gemstone should not have faceting defects – I mean **noticeable defects**. Two questions appear here: what does “faceting defects” mean and how much it could be noticeable?

To answer the first question, let's imagine that our gemstone has “ideal cut” – without tiniest deviation, and let's take it not only as a whole, but as a complex of separate design elements – **pattern points**, such as **facets, edges, meetpoints** (where four or more facets join together) and **pairs of symmetrical facets** (according to initial faceting design). Each pattern point of the real stone could differ from ideal model. For example, facet surface could have scratches, pits, unevenness, cracks and so on. Edges could be not straight, chipped, rounded – i.e. not sharp, reflecting light. Meetpoints could be not points, but extra edges. Finally, equal facets – for example, main facets in standard diamond cut – could

differ in size or shape as well. Unlike optical effects, such as **window** or **light extinction** is a separate story.

As for level of noticeability, it could be logical to divide these defects (or deviations from ideal model) into a few categories. Really, a tiniest scratch, hardly visible even with 10-times magnification, should less influence the cut quality evaluation than scratch well visible through the loupe, moreover – if scratch is very deep and visible even by naked eye. Almost invisible chip on the girdle is not so important as lost piece of half a millimeter size. 10-times loupe could be used as an instrument for examination on existence of such defects.

One more important moment. The level of noticeability of faceting defects (especially on facets and meetpoints) depends on lighting. For example, tiniest polishing scratches (“cat's hair”) are quite visible under light of spot source – as LED or incandescent lamp – and totally invisible under diffuse light of gemological lamp. To examine precision cut we have to use such lighting, where defects are the most visible – of course, an expert needs some knowledge and experience how to look and how to direct light.

Some experience of cut quality grading has already been used on technical faceting competitions provided by Faceters Guilds in different countries – such as United States, England, Australia, Thailand. Competition rules and judging criteria differ in details for these countries, but not so much – cut perfection is judged by 100-points scale; same examination for facets, edges, meetpoints and symmetry. But these rules and criteria should be adapted to the market conditions if we want to use them for cut grading in general.



Fig. 2 Mystery of Universe Topaz - 321

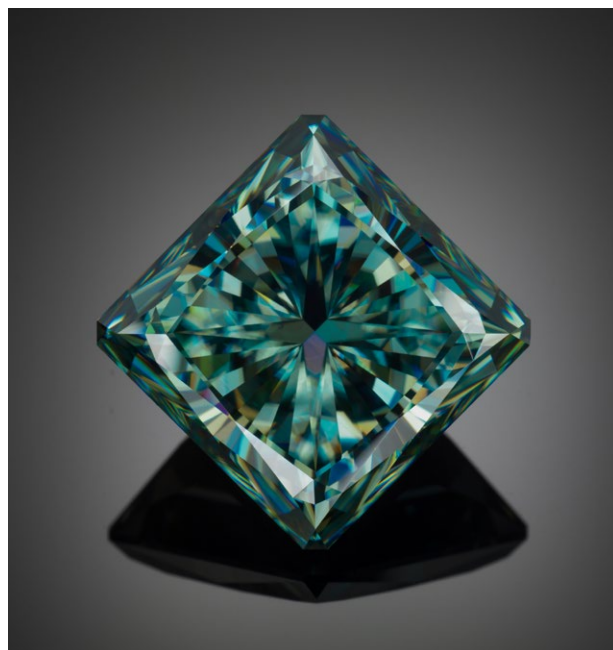


Fig. 3 Moissanite

I have represented such cut grading system recently in collaboration with GIT and AIGS.

Score calculation

Method is quite simple – gemstone is taken as combination of design elements (**pattern points**), which are above mentioned facets, edges, meetpoints and pairs of facets with the same shape and size according to symmetry of chosen design. If some **pattern point** has defect (chip on edge, scratch on facet and so on), the **error points** are put into special spreadsheet – according to defect size (or, rather to say, it's **noticeability**):

- a) barely visible with 10-times loupe;
- b) well visible through the loupe and barely visible by naked eye;
- c) well visible by naked eye.

Each category of error points has specific weight for final score calculation: 25%, 50% and 100% accordingly. But just pattern points with defects should be calculated – not defects itself. For example, if there are two or more scratches on one facet, just one error point should be added with weight of the biggest defect. When all pattern points having these or that defects are analyzed and tabulated, the spreadsheet calculates the final result of cut grading by 100-points scale with 4 digits after comma.

I can add that just final score says not so much for non-professionals. For better understanding all possible results were classified and divided into three classes, each of them has three sub-classes as well. Sub-classes of two lower classes marked by numbers (for example, **Commercial-I** or **Quality-III**). But each sub-class of highest (**Elite**) class has its own name – **Elite Premium**, **Elite Extra** and **Elite Ideal**. To be included into **Elite** class, gemstone not only should have score of 95 or higher, but also should not have obvious defects (C category). And **Elite Ideal** sub-class has to cover only gemstones of more than 99 points of 100 and without any defect of B and C categories. "Windowed" stones should also be excluded from **Elite** class.

Why do we need such strict and highly precise testing? Why not to use well-known GIA grading system (symmetry/ proportions/finish grade)? Somebody can say: "Anyway, eye can not recognize faceting defects visible just through the loupe and also not clear – why we need to calculate them?" Let me start with the last question.



Fig. 4 Kunzite 700



Fig. 5 CZ 31

Perfection can be perceived at a sub-conscious level

One time – to be exact, 11 years ago – I cut a stone for the US Faceters Guild competition. I showed that stone to one friend of mine and he asked me to cut the same stone for him. Okay, I did. But, as this stone was the second, it was cut a bit more precisely: some facets were polished a bit better; some meetpoints were a bit more perfect... If I would grade these stones today according to my methodic, it could be about 98 and 99 accordingly. Difference is so small, meaning the whole ocean of commercial cut even below 70. But... I specially showed both stones to many people – non-professionals, as a rule, and without loupe, of



Fig. 6 Kunzite 161_68



Fig. 7 Green-Quartz 73_71

course. Almost all of them – almost all! – agreed that they liked the second one more than the first, although both stones are the same with micro-deviations in precision – not more than 1 point from 100! Nobody could explain why, just told that they like the second stone more – by feeling only.

It brought me to amazing discovery. Our eye is the perfect

optical instrument, it sees tiniest details. However, our mind, to prevent overloading by “unneeded” information, sets some limit of sensitivity, above which these details are not recognized – on consciousness level. But they are moving to another level – sub-consciousness – and give mentioned feelings. Less imperfections – more harmonic gemstone is seen, because sense of harmony and striving to ideal is hidden inside each of us initially.

There are many fans of beauty and perfection in the world. People are ready to pay huge money for art-objects carrying feelings through harmony and perfection of Nature or human body with fantastic precision. There are such fans among gem-lovers also, although many of them still don't realize, how perfect gems could be. Our task – for gemologists, appraisers, dealers and cutters – is to express this perfection in numbers.

Current systems are not adequate to grade cut grading

What can we see on the market today? It is declared that gemstone value is defined by the four “C”: Color, Clarity, Carat weight and Cut. But, in fact, the fourth “C” does not work now. Almost nobody (excluding, maybe, just *Spanish Gemological Institute*) includes cut details into certificate, just sometimes mentioning the shape – round, oval, cushion and so on. But – first – **shape** of gemstone is not value-defining factor. And, second, the presented systems of cut grading give quite complicated imagination about precision. Really, what is five gradations – from **poor** to **excellent**? Each gradation is not a point, but an interval and huge interval, meaning amazing diversity of cut. And “**proportions**” as definition is difficult to use for colored stones, because optimal shape depends on jewelry design.

But more and more precise cut appears on the market with development of faceting equipment. Less and less difference in perfection between jewelry items, which are made with microscope, and gemstones, which are cut with 3-5-times loupe – in the best case. Masters are raising, who have the experience of technical faceting competition and know how precise cut could be in reality. And – the most important – buyers come, who start to ask “complicated” questions about precision cut. These first messengers of change still don't mean the fact, like first drops are not the storm, but they indicate it. And, if we want to be ready to answer these questions tomorrow – properly and substantiated, – already today we need simple, reliable and accurate instrument for evaluation of the fourth “C” – cut quality. What seems to be exotic and eccentric today, will be possible tomorrow, and common – after tomorrow. Such a way evolution is going. Such a way history is created.