Graduierung geschliffener Diamanten – Teil 2: Prüfverfahren

PAS

1048-2

Grading polished diamonds – Part 2: Test methods

Diamants taillés – Partie 2: Méthodes d'essai

Vorwort

Diese öffentlich verfügbare Spezifikation (PAS = Publicly Available Specification) beschreibt die Prüfverfahren zur Graduierung geschliffener Diamanten.

Die Spezifikation ist nur für natürliche, ungefasste, geschliffene Diamanten anwendbar.

Die PAS 1048 besteht aus 2 Teilen. In der PAS 1048-1 sind die Terminologie und Klassifizierung festgelegt.

Bei Anwendung der in dieser PAS getroffenen Festlegungen wird eine Vergleichbarkeit von natürlichen, ungefassten, geschliffenen Diamanten möglich.

Der Inhalt dieser PAS wurde von der International Jewellery Confederation of National Trade Organizations (CIBJO) erarbeitet.

Die Veröffentlichung der PAS hat die Stabsabteilung Technik in Zusammenarbeit mit dem Normenausschuss Feinmechanik und Optik im DIN Deutsches Institut für Normung e. V. betreut.

Für den Inhalt dieses Dokumentes ist allein der Verfasser verantwortlich.

Verfasser ist Rudolf Biehler, München.

Das Thema ist nicht Gegenstand eines nationalen, europäischen oder internationalen Normungsvorhabens.

Diese PAS wird nur in englischer Sprache veröffentlicht.

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Foreword

This Publicly Available Specification (PAS) describes the methods of grading polished diamonds.

This specification can only be used for natural unmounted polished diamonds.

PAS 1048 consist of 2 parts. PAS 1048-1 specifies the terminology and classification.

On application of the requirements stipulated in this PAS, a comparability of natural unmounted polished diamonds is possible.

The contents of this PAS was developed by the International Jewellery Confederation of National Trade Organizations (CIBJO).

The publication was supported by the Stabsabteilung Technik in cooperation with Standards Committee for Optics and Precision Mechanics within the German Standards Institute (DIN).

Only the author of this document is responsible for its contents. Author is Rudolf Biehler.

This subject is not part of a National, European or International standards project.

This PAS is published in English only.

Contents

1 Scope

These methods describe the grading of natural unmounted polished diamonds within the D to Z series and the grading criteria, other than for the colour of naturally coloured fancy diamond.

2 Terms and definitions

For the purposes of this part of PAS 1048, the terms and definitions given in PAS 1048-1 and the following apply.

2.1
first generation masterstone
diamond that has been selected by direct comparison with the relevant masterstone as specified in 6.1.1 of PAS 1048-1 and equal in hue, tone and saturation to the relevant original masterstone.

2.2
second generation masterstone
diamond that has been selected by direct comparison with the relevant first generation masterstone (3.1) and equal in hue, tone and saturation to the relevant first generation masterstone.

3 Identification

It shall be the responsibility of the examiner to establish that the stone under examination is a diamond before it is graded in accordance with 2.1 of PAS 1048-1 and be aware of the possibilities of the stone being a synthetic diamond, a treated diamond, or an assembled stone.

4 Weight and measurements

4.1 Weight

Maintain all balances used to establish the carat weight of diamonds to ensure accuracy. Prior to weighing, all diamonds shall be clean.

4.2 Measurements

Use instruments accurate in millimetres to two decimal places to measure the dimensions of a diamond. Measurement parameters are specified in 5.2 of PAS 1048-1. For round stones determin minimum and maximum diameters by making at least four measurements at differing points on the diameter of the diamond. Clearly establish minimum and maximum diameter measurements.

For stones other than rounds determine minimum and maximum diameters by making two measurements (or more if applicable) across the apparent length and width of the diamond. Clearly establish the length and width plus any other descriptive measurements.

For determining depth (total height) make measurements perpendicular to the table facet and record the established maximum Figure on the report.

5 Colour and fluorescence

5.1 Cleaning of masterstones

Prior to grading, clean each masterstone with an organic solvent. Masterstones with dirty girdles and encrusted diamonds shall be cleaned by appropriate means (e.g. by boiling in an acid).

Keep the masterstones clean.

5.2 Masterstones for colour

Use only round brilliant-cut diamonds for this purpose.

First generation masterstones shall be not smaller than 0,60 ct. Second generation masterstones shall be not smaller than 0,30 ct. Masterstones shall not have internal characteristics that are eye visible under normal or corrected to normal vision or otherwise affect colour or decrease the transparency when viewed through the pavilion. The fluorescence shall be not greater than the grade “Faint”. Finish shall be at least “Good”. Proportions shall be in the “A range”. All stones in a set shall be of similar weight and proportions, and the nature of the girdles shall be the same.

Masterstones shall be of the “yellow series” and shall be positioned preferably at the lower limit for each grade (maximum saturation).

The second generation of masterstones shall be the last generation that shall be used by Laboratories for the issuing of Test Reports.

5.3 Procedure

5.3.1 Precautions

Do not grade for colour immediately following grading for fluorescence.

Persons colour grading diamonds shall be aware of the “tiring factor” and limit the time spent grading according to their individual capabilities.

5.3.2 Cleaning

Prior to grading, clean each submitted diamond with an organic solvent. Diamonds with dirty girdles and encrusted diamonds shall be cleaned by appropriate means (e.g. by boiling in an acid).

5.3.3 Comparisons

The colour of the diamond to be graded shall be determined by visual comparison with masterstones and shall be observed from the pavilion side between being almost parallel to the level of the girdle, to perpendicular with the pavilion facets (see Figure 1). Place the stone between two of the masterstones and move the stone until the correct position is found. Only view the diamond through the crown side to determine if it is a “coloured diamond”.

5.3.4 Round Stones

Round stones shall be examined in several directions within the rotation axis indicated in Figure 1. If different colours are observed, the predominant D to Z grade shall be conclusive.

5.3.5 Fancy Shapes

The colour of fancy-shaped diamonds shall be graded in the directions indicated in Figure 2. In the case of cuts with points or corners, these directions shall not be taken into account. If different colours are observed, the predominant D to Z grade shall be conclusive.

5.3.6 Colours

Colours like brownish, brownish-yellow, greyish, greyish yellow (in the D-Z grades) shall be graded as if they were within the same colour series as the masterstones. However, for grades M and below such stones shall also be evaluated in the face-up position for the description indicating the presence of these hues.

5.3.7 Lighting

Colour grading shall be carried out under an artificial light source with a stable light output and simulating illuminant D_{55} - D_{65}, in a light intensity of approximately 2200 lx.

NOTE A convenient artificial light source is a commercial tubular fluorescent lamp with colour temperature of 5500 K to 6500 K.

The masterstones and the stone to be graded shall be placed with the table down on a dull white background under the central area of the tube. Reflections and distractions from the environment shall be excluded.

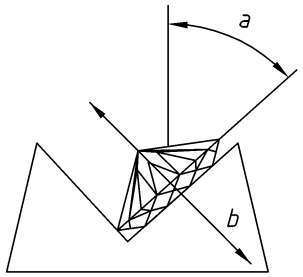
Prevent direct view of the light sources.

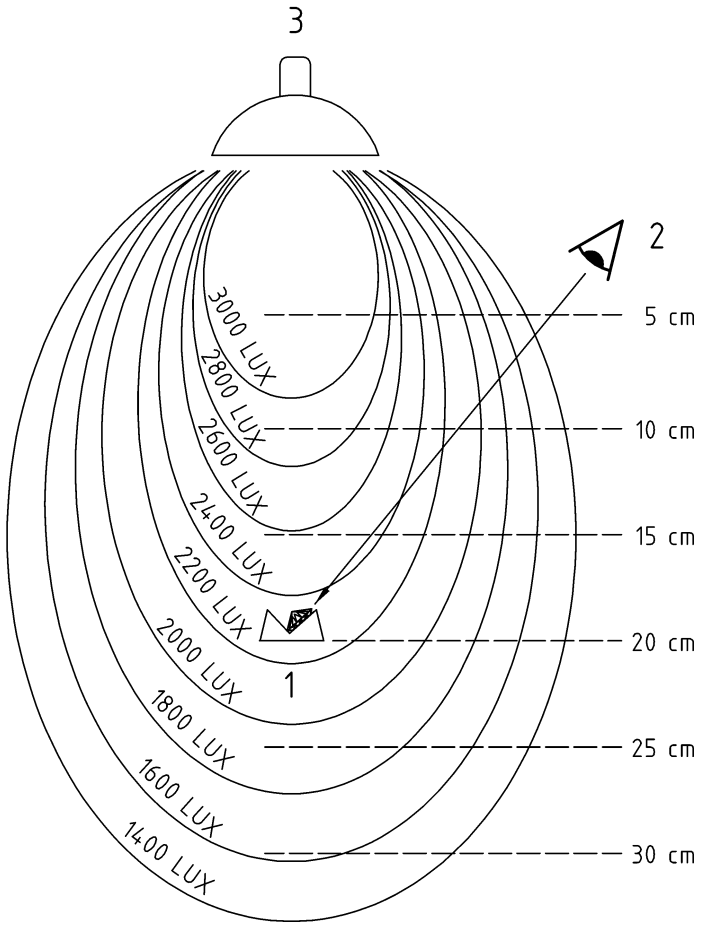
5.3.8 Positioning

The diamond being graded and the masterstones shall be placed directly below the light source. For an observer with normal eyesight the distance between the light source and the diamond being graded shall be approximately 20 cm and the light intensity at that point shall be approximately 2200 lx (Figure 1).

5.3.9 The Grade

The colour grade shall be given with one full colour grade or colour corresponding term in accordance with 6.1.1 and 6.2 of PAS 1048-1. Combined grades shall be used in accordance with Table 1 of PAS 1048-1.





Key

1 Colour comparison
2 Naked eye
3 Light source
a Viewing angle
b Rotation axis

Figure 1 — Colour grading criteria

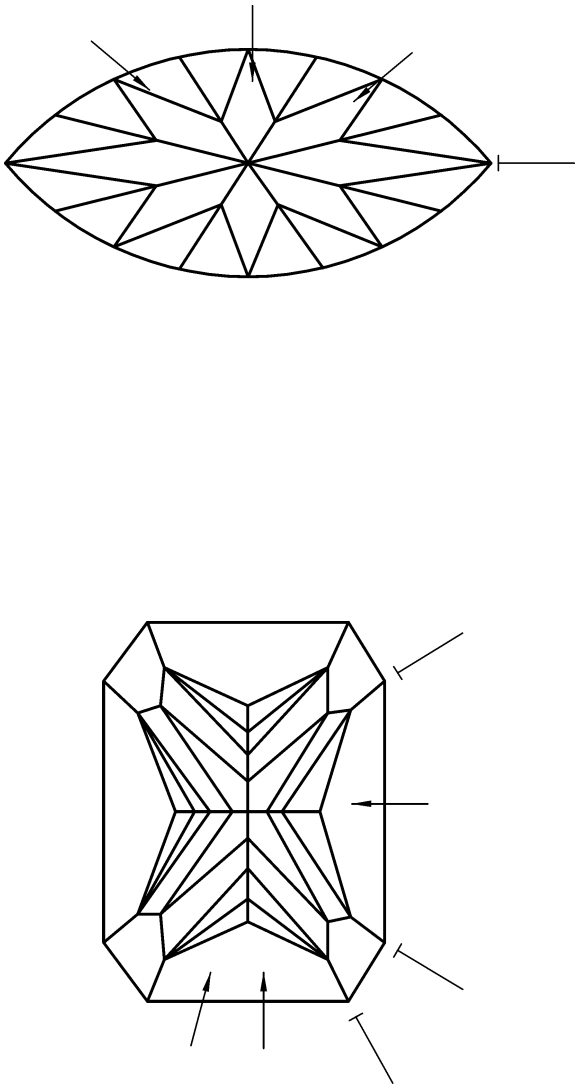
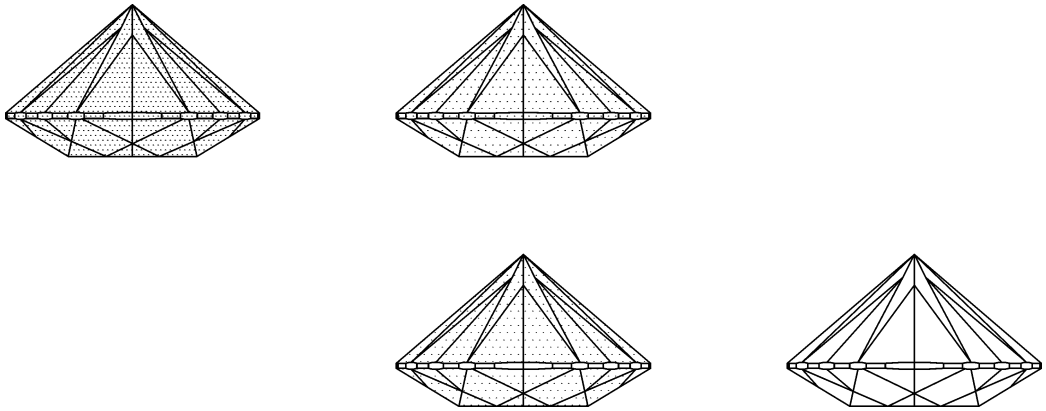


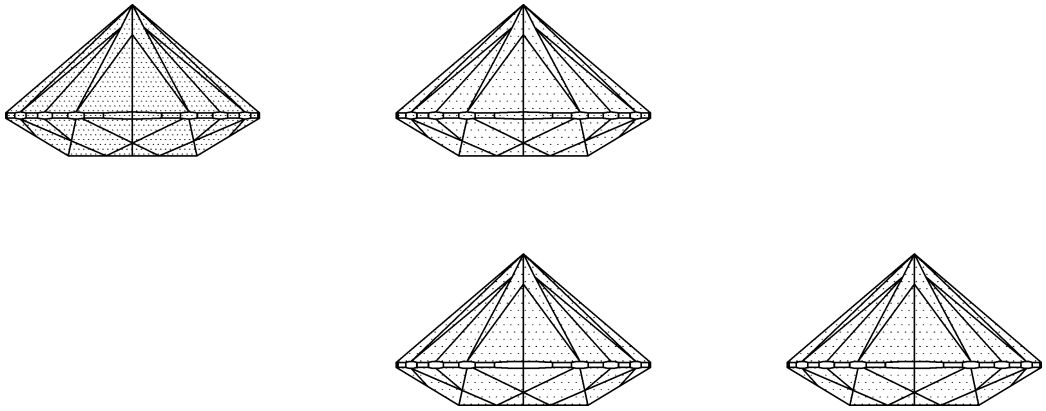
Figure 2 — Examples of colour grading directions and the directions in which colour grading shall not be made for fancy-cut diamonds within the D-Z range

5.3.10 Master-eye effect

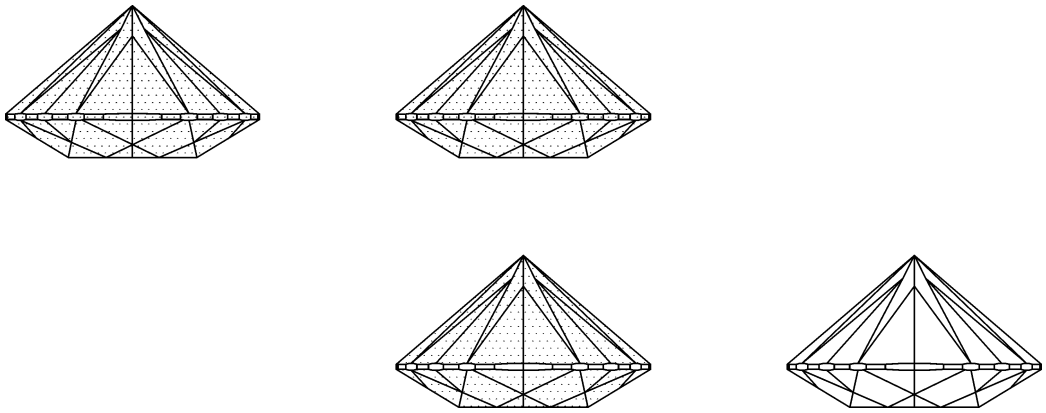
When comparing diamonds with a masterstone the master eye effect can occur (see Figure 3).



a) The stone appears darker on the left side of the master and appears equally lighter on the right, the stone is graded the same colour as the masterstone.



b) The stone appears darker on the left and the same as the masterstone on the right, the stone is graded darker than the masterstone.



c) The stone appears to be the same on the left side of the masterstone and lighter on the right, the stone is graded lighter than the masterstone.

Figure 3 — Master-eye effect

5.4 Description of fluorescence

5.4.1 Equipment and References

The fluorescence description of a diamond shall be recorded when the stone is observed under a long wave UV lamp (approximately 365 nm) that has an output of 4W to 8W.

The description shall be made by comparison with a series of masterstones that characterize the intensities “none” or “nil”, “faint” or “slight”, “medium”, and “strong” in accordance with 6.4 of PAS 1048-1.

Three masterstones shall be required to achieve the correct fluorescence description for each diamond (see 5.4.2).

The masterstones and the stone under examination shall be positioned on a matt black background.

5.4.2 Masterstones for fluorescence

The masterstones shall be positioned at the maximum intensity of fluorescence for the intensities, “none”, “faint”, and “medium” ,and have a blue type fluorescence. The weight of each masterstone shall be a minimum of 0,25 ct., and the shape shall be round.

5.4.3 Working conditions and methodology

The lighting conditions in the room used for comparing the fluorescence of a diamond against the fluorescence masterstones shall not have an effect upon the stone under examination or the masterstones. The stone under examination and the masterstones shall be positioned at a distance of approximately 10 cm from the UV source and examined from the pavilion side from being almost parallel to the level of the girdle to perpendicular with the pavilion facets, and an overall impression gained.

5.4.4 Fluorescence, other than blue

If the hue of the fluorescence is other than blue, the intensity shall be considered in relation to the masterstones.

NOTE The hue may also be registered.

6 Clarity

6.1 General

Clarity grading shall be determined in accordance with the example diagrams in 6.3.10, as well as with clause 7 of PAS 1048-1. The practical grading for clarity shall be made with the greatest caution and shall not be made under time pressure. Experience and regular practice shall be required to achieve accurate and consistent results. Before it is graded the stone shall be properly cleaned (5.3.2). A thorough examination through and on each of the diamond’s numerous facets, and along the entire girdle, shall be carried out.

6.2 Apparatus

The basic tool for clarity grading shall be the diamond loupe in accordance with 2.15 of PAS 1048-1. A microscope may be used to ‘find’ internal and external characteristics, but only those characteristics seen with the diamond loupe shall determine the grade.

NOTE The use of tweezers is suggested for holding a diamond.

6.3 Procedure

6.3.1 General

To determine the clarity grade of a diamond no factors other than visibility shall be taken into account.

NOTE Generally, inclusions observed through the crown of a diamond have a greater effect upon the clarity grade than those seen through the pavilion only.

6.3.2 Lighting

Clarity grading shall always be carried out under an artificial light source with a stable light output.

The light intensity at a distance of 20 cm shall be approximately 2200 lx (see Figure 4).

NOTE A convenient artificial light source is a commercial tubular fluorescent lamp with corrected colour temperature of 5500 K to 6500 K.

6.3.3 Distance

A diamond being graded shall be held under the lamp at a distance of between 5 cm and 10 cm. Reflections and distractions from the environment shall be excluded. To determine the visibility of internal and external characteristics with the naked eye the diamond shall be held at a distance from the lamp of approximately 30 cm, in a position that allows light to enter through the crown, and only minimally through the pavilion (see Figure 4).

6.3.4 Plotting

Plot clarity grading characteristics on a diagram that describes the crown and pavilion facet arrangement of the diamond being graded. Common shapes of various diamond cuts are specified in 8.2 of PAS 1048-1. The plot diagram on the report shall generally reflect the outline of the diamond combined with the facet distribution, without necessarily reflecting the ratios of length and width.

Place the diagram on the report with the crown and pavilion views orientated so that an identical point on the girdle of the two is positioned where they are closest to each other.

NOTE The purpose of plotting clarity characteristics on a report is only to describe the concluded grade.

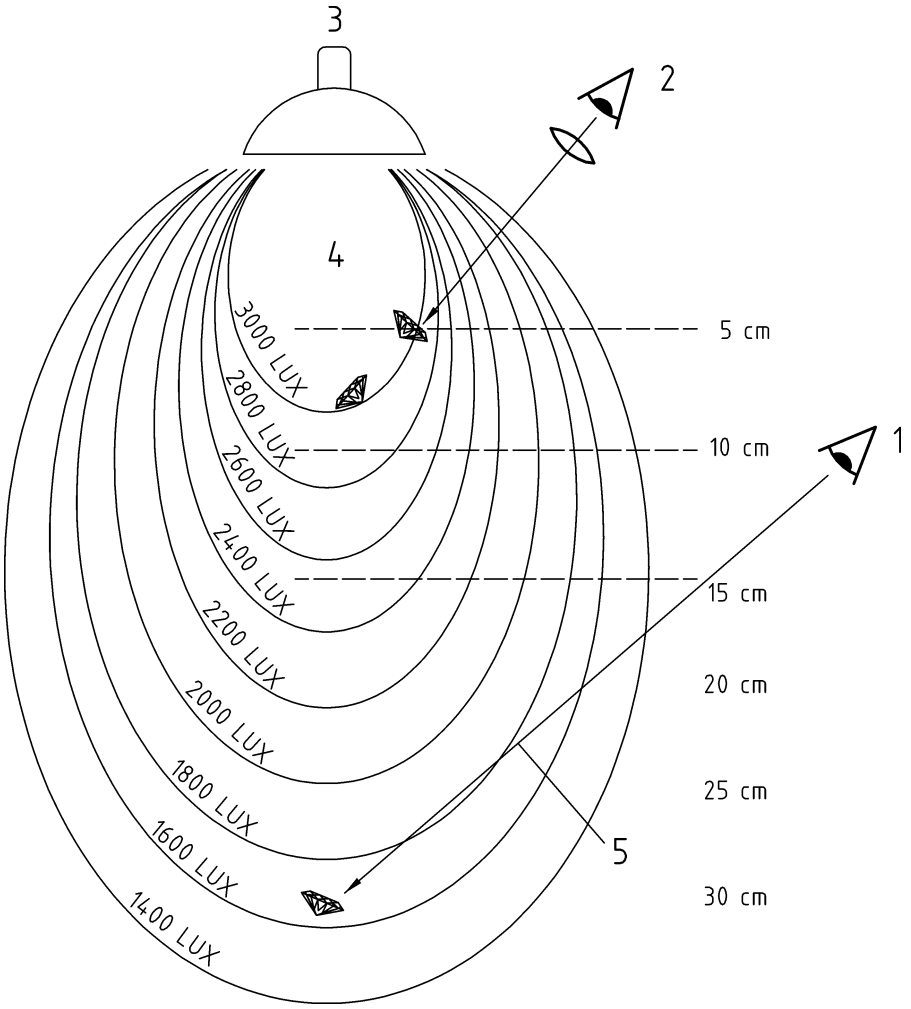
Plot internal and external characteristics placed on the report diagram as accurately as possible in terms of size, position and nature.

Plot internal characteristics in red (see Table 1). Plot external characteristics in green (see Table 2). Plot characteristics found to be in the crown and/or girdle portions of the diamond on the crown diagram, and those in the pavilion portion on the pavilion diagram. Plot any characteristics visible through the crown to the naked eye on the crown diagram. If a feather cuts the pavilion then it shall be plotted on the pavilion even if it is visible with the naked eye from the crown.

Plot reflecting or mirrored internal characteristics in their actual position only.

Accurately record in terms of position, size, and nature, all internal and external characteristics on work-sheets.

Plot external characteristics, that affect the symmetry grade on the report using the same plot diagram as that used to plot the clarity characteristics, or mention them in the comments section.



Key

1 Naked eye
2 Loupe
3 Light source
4 Clarity
5 Clarity transparency

Figure 4 — Clarity grading criteria

6.3.5 Plotting symbols

Use the following plotting symbols to record internal and external characteristics on reports and worksheets.

Table 1 — Internal characteristics

Key	1C[a] , 2P[b] Plot in red	1P[c] , 2C[d] Plot in red
pinpoint inclusion		
group of pinpoints		
crystal inclusion		
dark inclusion		
cloud		
cleavage		
bearded girdle		
laser drilling		
growth lines, graining, grain planes		
bruise		
cavity		
chip		
feather		
grain centre		
knot		
needle		

a located in crown as seen through the crown

b located in pavilion as seen through the pavilion

c located in pavilion as seen through the crown

d located in crown as seen through the pavilion

Table 2 — External characteristics

Key	1C[a] , 2P[b] Plot in green	1P[c] , 2C[d] Plot in green
bruting line		
pit or cavity		
scratch		
abraded facet-edge		
abraded culet		
pitted girdle		
nick		
polishing lines		
burn mark		
extra facet		
natural		
natural on girdle		
surface grain lines, knot lines		

a located on crown as seen through the crown

b located on pavilion as seen through the pavilion

c located on pavilion as seen through the crown

d located on crown as seen through the pavilion

6.3.6 Laser drill holes

Grade laser drill holes as internal characteristics.

6.3.7 Surface grain lines

For the effect of surface grain lines on the final grade see Table 3a, as well as A.2.3 of PAS 1048-1.

Table 3a — Surface graining visibility the effect upon the clarity grade and comments

Visibility 10 x	Option 1	Option 2
not found or very hard to find	LC	FL
hard to find	LC minor surface grain lines[a]	IF minor surface grain lines[a]
fairly easy to find	LC surface grain lines are present[a]	IF surface grain lines are present[a]
easy to find	To be regarded as internal graining	

[a] Comment only to be mentioned with LC and FL, and the most important description alone shall be mentioned.

6.3.8 Internal graining

In the instances of loupe clean grade stones, when minor internal graining which is not reflective, white, or coloured is observed, the remark “minor graining present” shall be made in the comments section, (see Table 3b).

In the instances of loupe clean grade stones when internal graining which is not reflective, white, or coloured is observed, the remark “graining present” shall be made in the comments section (see Table 3b).

Table 3b — Graining visibility, the effect upon the clarity grade, and comments

Visibility 10 x	Option 1	Option 2
not found or very hard to find, not reflective, white, coloured	LC	FL
hard to find not reflective, white, coloured	LC minor graining present[a]	FL minor graining present[a]
fairly easy to find, hardly or not reflective, white, coloured	LC graining present[a]	FL graining present[a]
easy to find, reflective, white, coloured	VVS1 ↗ Structural phenomena influencing clarity grade	VVS1 ↗ Structural phenomena influencing clarity grade

[a] Comment only to be mentioned with LC and FL, and the most important description alone shall be mentioned.

When internal graining is at least fairly easy to find with 10 × magnification the following remark “Structural phenomena influencing clarity grade” shall be made in the comments section. (see Table 3b).

6.3.9 General

Grade all those clarity characteristics specified Annex A of PAS 1048-1 in accordance with 7.1 and 7.2 of PAS 1048-1.

6.3.10 Clarity Examples

The grading of internal or external characteristics specified in 7.2 of PAS 1048-1 shall be explained through the following examples. When comparing the following examples with a diamond being graded, the transparency, colour, and brightness of the diamonds internal or external characteristics shall be taken into

account. The following diagrams are based upon observations made with diamonds weighing approximately 1 ct and shall be used in conjunction with the grade descriptions given in 7.2 of PAS 1048 -1.

The example diagrams that follow are artistic impressions of observations made for individual diamonds, and shall not be confused with report plotting requirements, (see 6.3.4 and 6.3.5).

For the example diagrams given here from VVS to I3/P3, extra facets and naturals are included either as identification characteristics or expressions of polish and / or symmetry deviations. Graders are reminded that the purpose of plotting clarity characteristics on a report is only to describe the concluded grade.

6.3.10.1 Flawless (Fl) or Loupe Clean (LC)

FL diamonds shall be free from internal characteristics/inclusions and external characteristics/blemishes when examined under 10 × magnification. LC diamonds shall be free from internal characteristics/inclusions when examined under 10 × magnification.

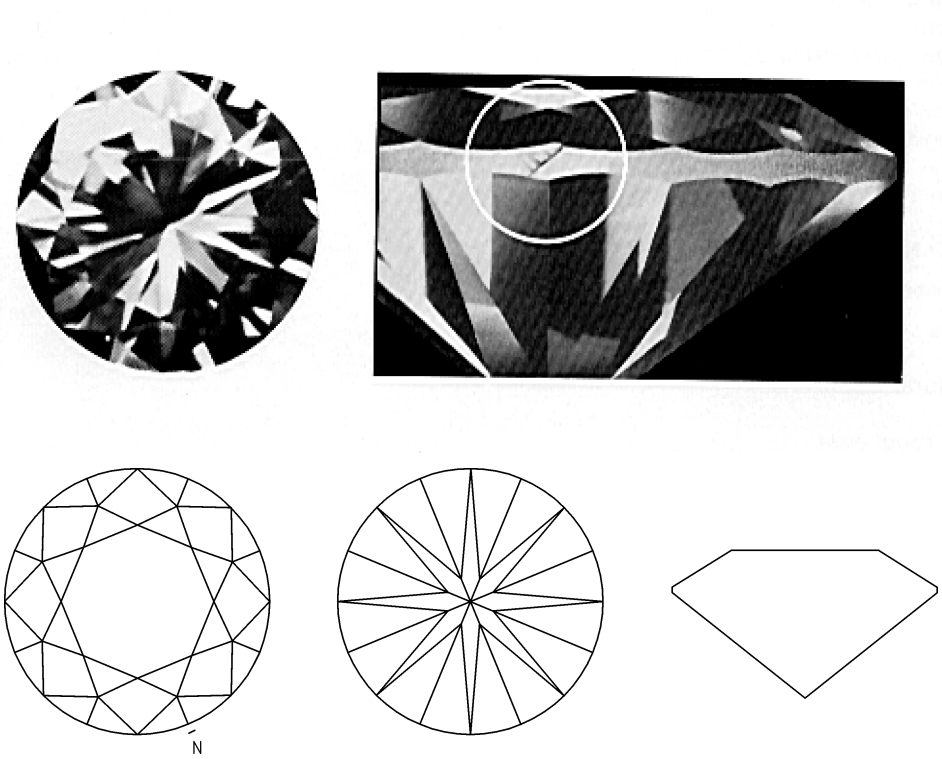


Figure 5 — A minor natural

6.3.10.2 The Clarity Grade Flawless (Fl), or Loupe Clean (LC) (example diagrams)

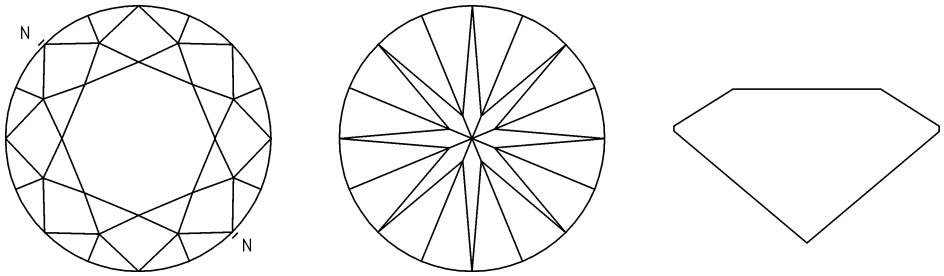


Figure 6 — Minor naturals

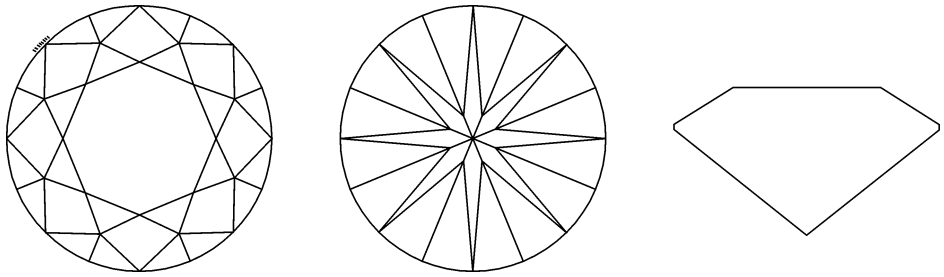


Figure 7 — Minor pitted girdle

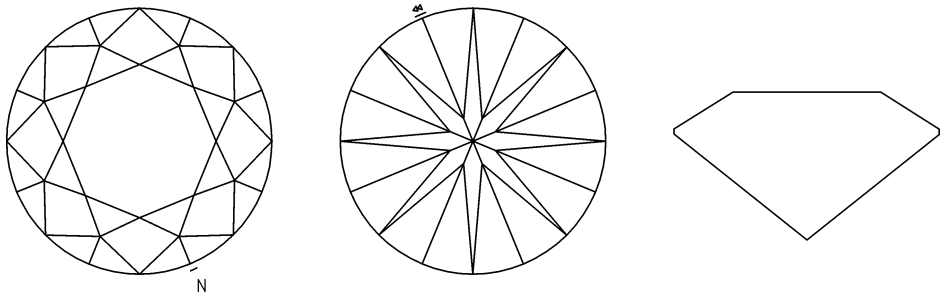


Figure 8 — Minor naturals, one with trigons

6.3.10.3 Internally Flawless (IF) or Loupe Clean (LC)

If diamonds shall be free from internal characteristics/inclusions and only possess external characteristics/ blemishes when examined under 10 × magnification. LC diamonds shall be free from internal characteristics/ inclusions when examined under 10 × magnification.

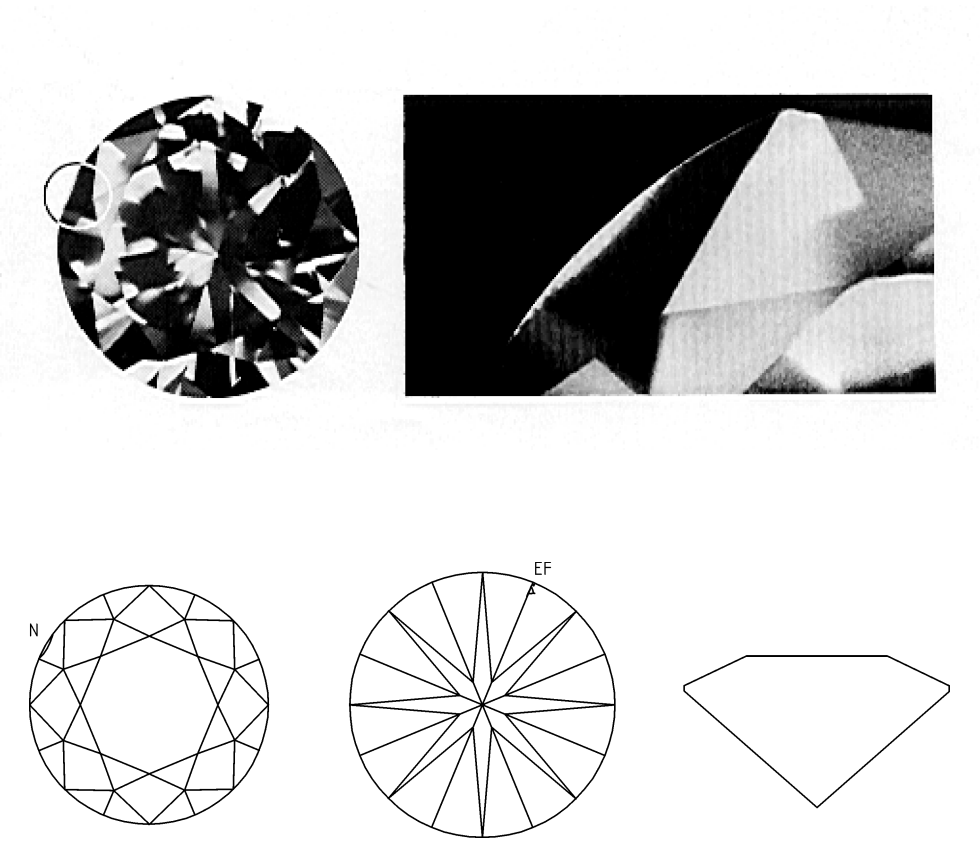


Figure 9 — A natural and a minor extra facet

6.3.10.4 The Clarity Grade Internally Flawless (IF), or Loupe Clean (LC) (example diagrams)

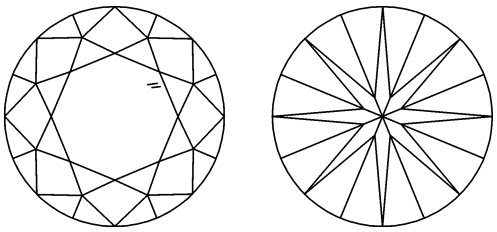


Figure 10 — Minor scratches

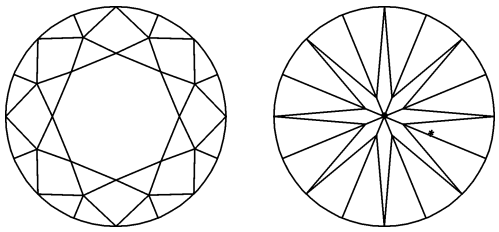


Figure 11 — A minor pit and slightly rough culet

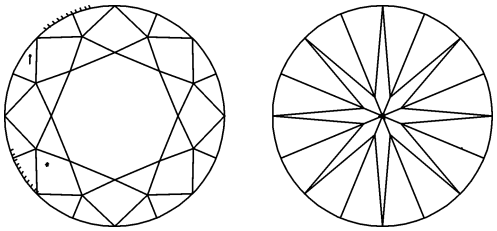


Figure 12 — A minor scratch, pitted girdle and slightly abraded culet

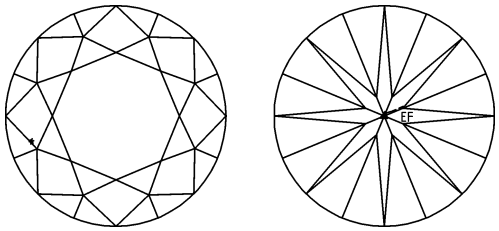


Figure 13 — A minor pit, a minor extra facet and a slightly a rough culet

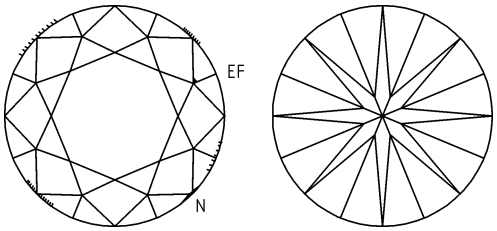


Figure 14 — A natural, pitted girdle and a minor extra facet

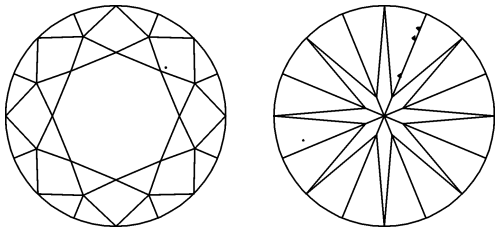


Figure 15 — Minor pits

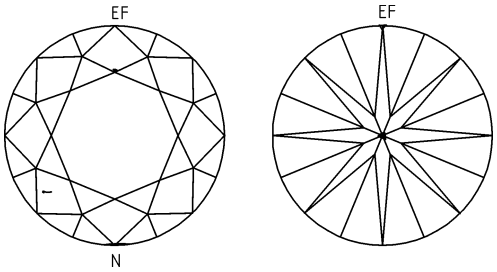


Figure 16 — A minor scratch, minor extra facets, a small natural and a slightly rough culet

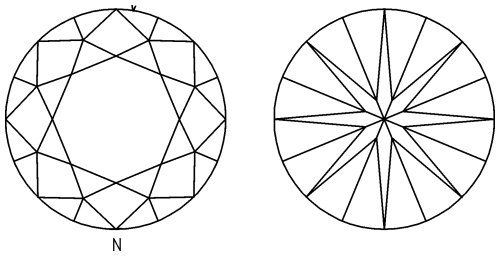


Figure 17 — A minor girdle nick and a small natural

6.3.10.5 VVS1 (Very Very Slightly Included/Very Very Small Inclusions)

VVS1 diamonds shall contain minute internal characteristics/inclusions which shall be extremely difficult to observe when examined under 10 × magnification.

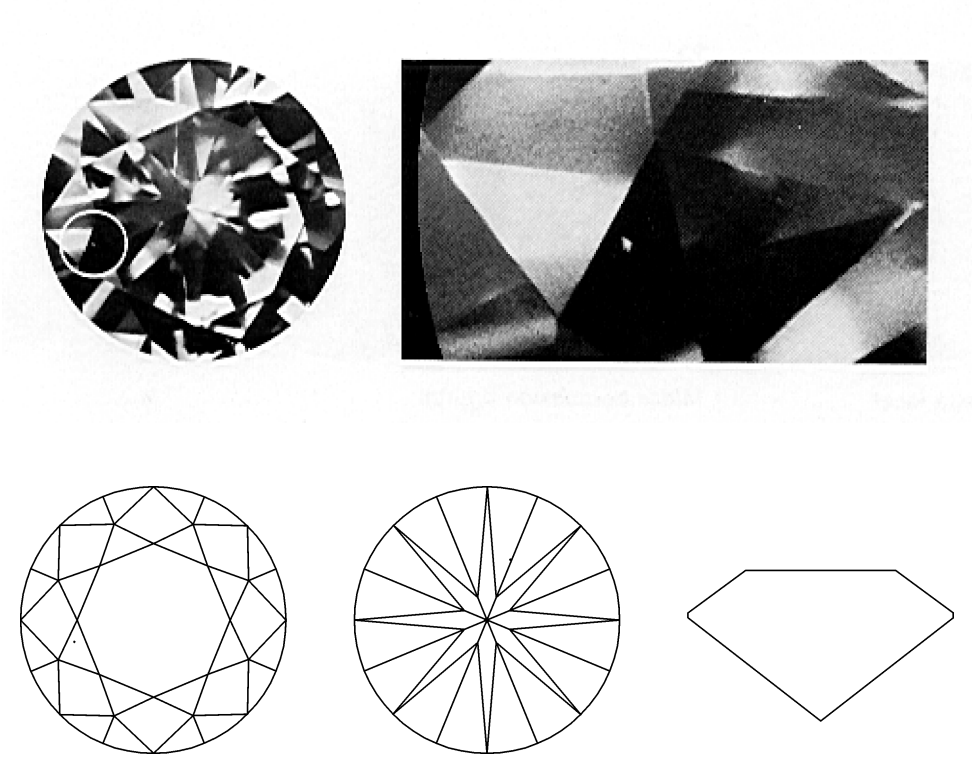


Figure 18 — A pinpoint outside the table and a slightly rough culet

6.3.10.6 The Clarity Grade VVS1 (example diagrams)

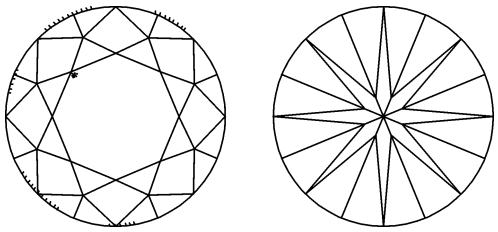


Figure 19 — Small groups of minute pinpoints, pitted girdle and a slightly rough culet

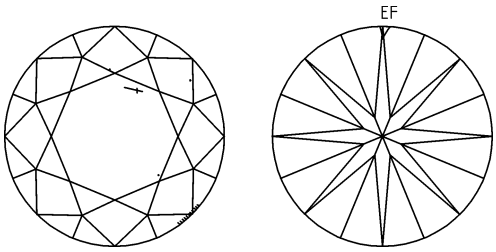


Figure 20 — A minute pinpoint, a pinpoint outside the table, a small scratch, pitted girdle, and a small extra facet

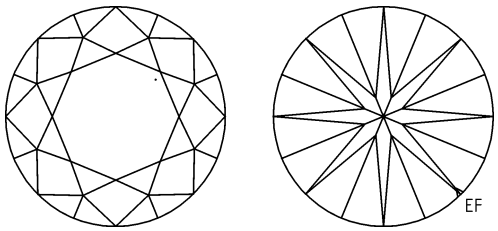


Figure 21 — A minute pinpoint and a small extra facet

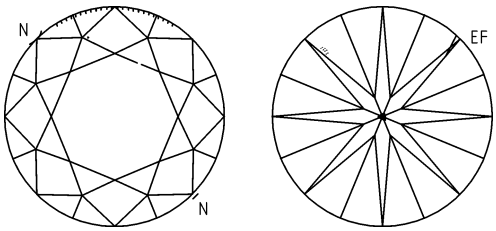


Figure 22 — A minor natural, a natural, pitted girdle, a tiny feather not visible from above, a small extra facet and a slightly rough culet

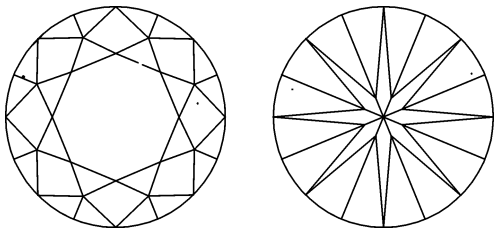


Figure 23 — A minute colourless crystal under a facet edge

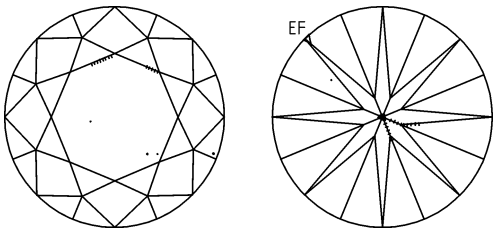


Figure 24 — A pinpoint outside table, roughness on the facet edges, a small extra facet and a slightly rough culet

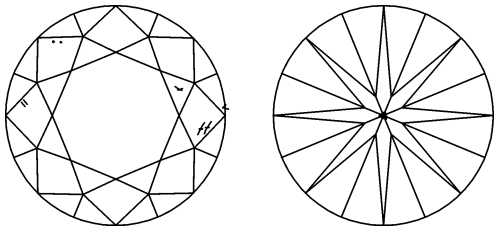


Figure 25 — Minute pinpoints, a minute nick, small scratches and a slightly abraded culet

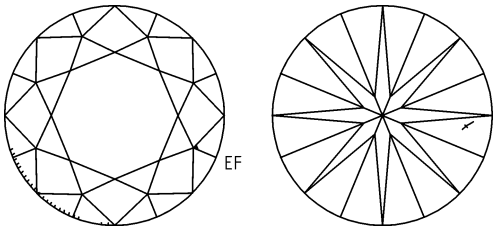


Figure 26 — Minor girdle bearding, pitted girdle, a small scratch and a minor extra facet

6.3.10.7 VVS2 (Very Very Slightly Included/Very Very Small Inclusions)

VVS2 diamonds shall contain minute internal characteristics/inclusions which shall be very difficult to observe when examined under 10 × magnification.

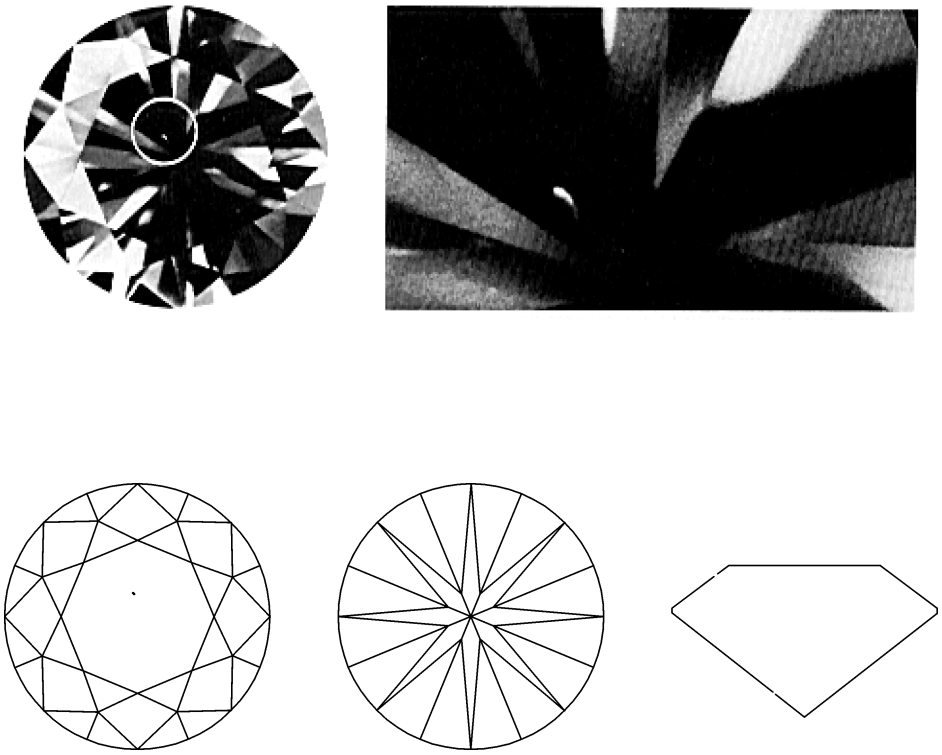


Figure 27 — A minute crystal

6.3.10.8 The Clarity Grade VVS2 (example diagrams)

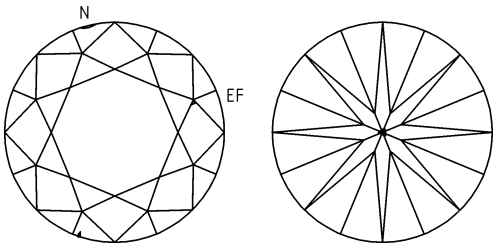


Figure 28 — Clearly visible bearding, a natural, a minor extra facet and a slightly abraded culet

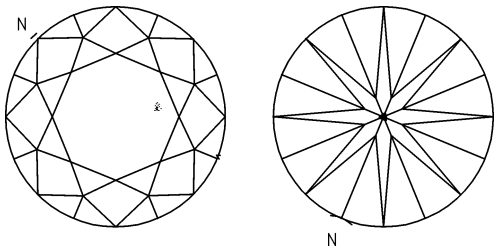


Figure 29 — Small group of minor pinpoints, a nick, a minor natural, a natural, and a slightly rough culet

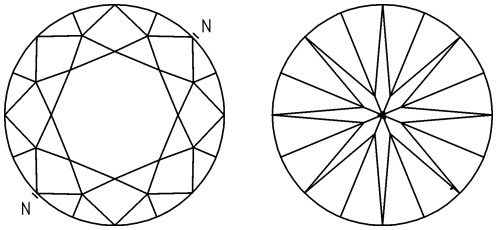


Figure 30 — A minor pinpoint, a minor cleavage visible only from below, minor naturals, and a slightly rough culet

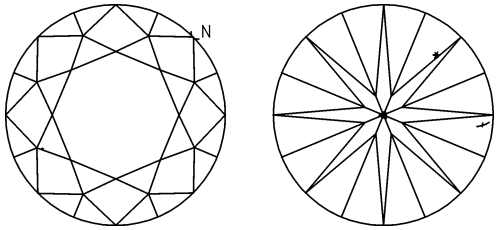


Figure 31 — A minor crystal, natural, a minor pit, a small scratch and a slightly rough culet.

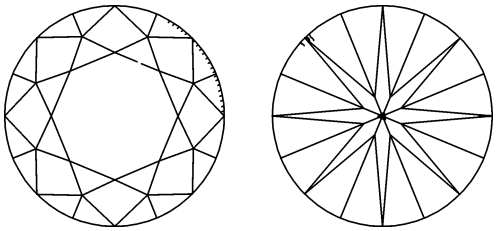


Figure 32 — Bearding visible only from below, and pitted girdle

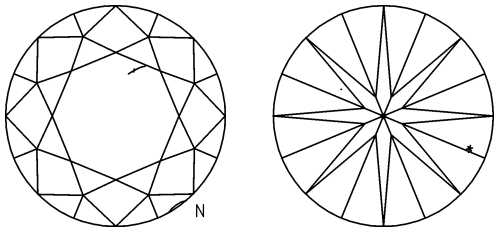


Figure 33 — A distinctly indented natural with minor nicks, a scratch, a pit, and a rough culet

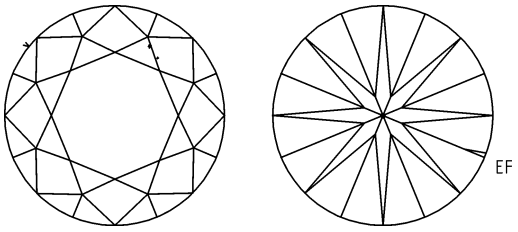


Figure 34 — Pinpoints, a small nick, an extra facet, and a rough culet

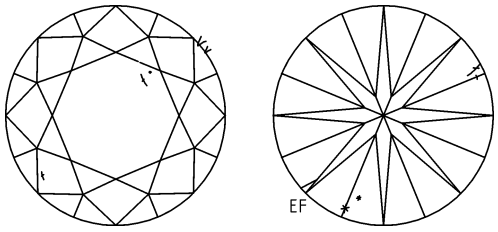


Figure 35 — A minor crystal, small nicks, scratches, pits, an extra facet and a minor cleavage under a facet edge visible only from below

6.3.10.9 VS1 (Very Slightly Included/ Very Small Inclusions)

VS1 diamonds shall contain minor internal characteristics/inclusions which shall be difficult to observe when examined under 10 × magnification.

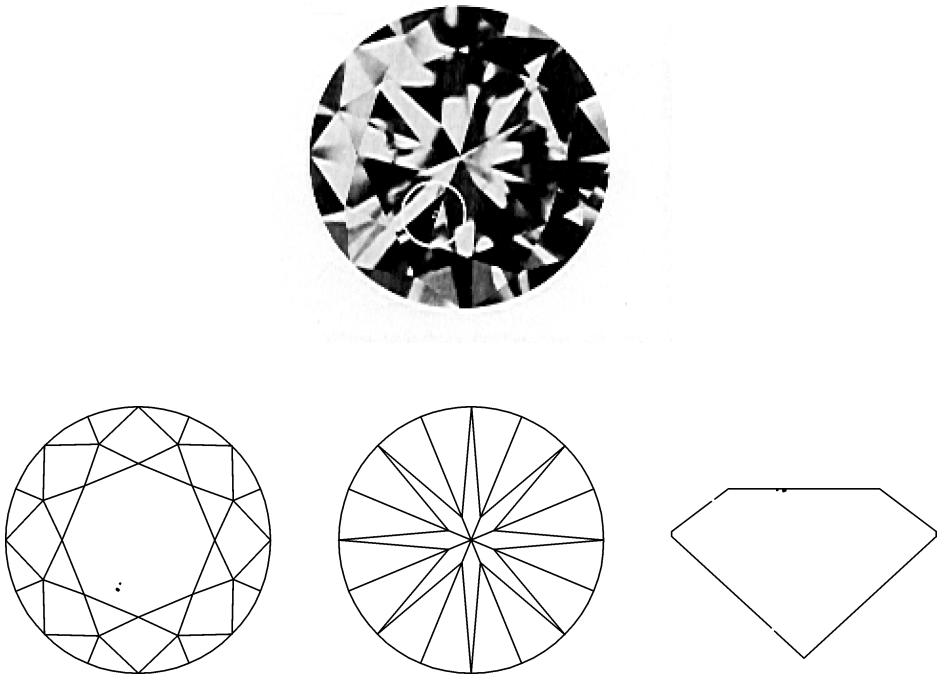


Figure 36 — Minute crystals very close to the table surface

6.3.10.10 The Clarity Grade VS1 (example diagrams)

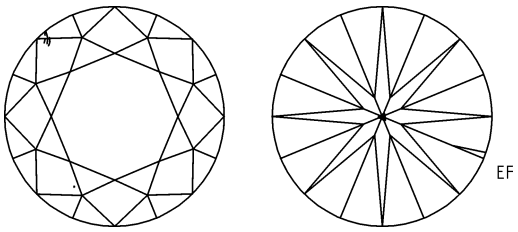


Figure 37 — A pinpoint, small cleavages, an extra facet and a rough culet

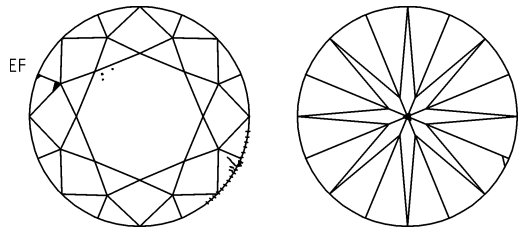


Figure 38 — Pinpoints, bearding, pitted girdle, a girdle nickminor extra facets, and rough culet

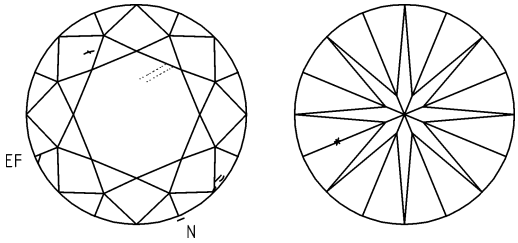


Figure 39 — Minor Cleavages, a small crystal under a facet edge, growth lines, a scratch, a minor natural, an extra facet, and a pit

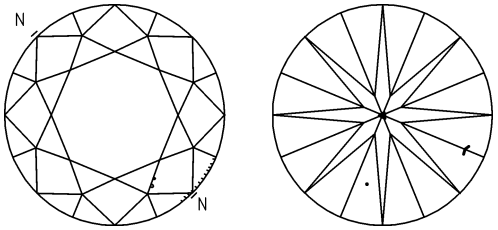


Figure 40 — Small crystals under a facet edge, a small cleavage visible only from below, pitted girdle, minor naturals, and an abraded culet

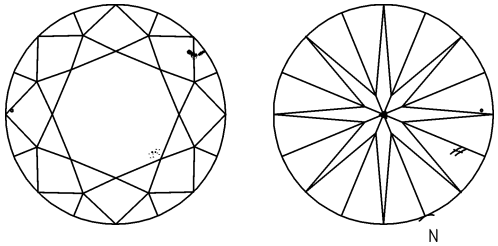


Figure 41 — A group of pinpoints, small cleavages, a minute crystal, a natural, scratches and an abraded culet

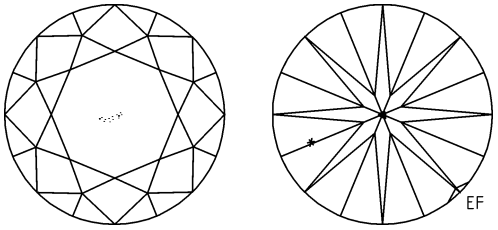


Figure 42 — A group of pinpoints, a pit, an extra facet, and a rough culet

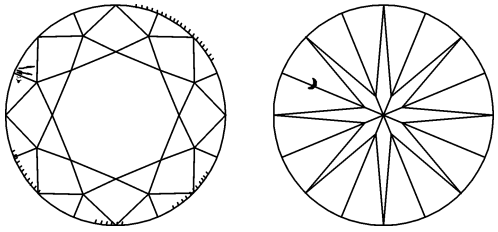


Figure 43 — Small cleavages partly under a facet edge and only some of them visible from above, a minor crystal, and areas of girdle roughness

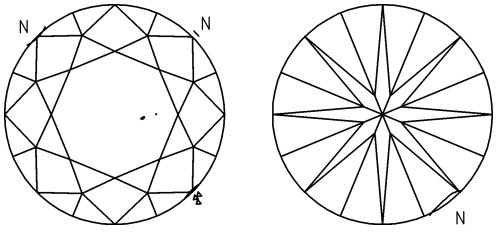


Figure 44 — Pinpoints, a minor natural and an indented natural with trigons

6.3.10.11 VS2 (Very Slightly Included/ Very Small Inclusions)

VS2 diamonds shall contain minor internal characteristics/inclusions which shall be somewhat easy to observe when examined under 10 × magnification.

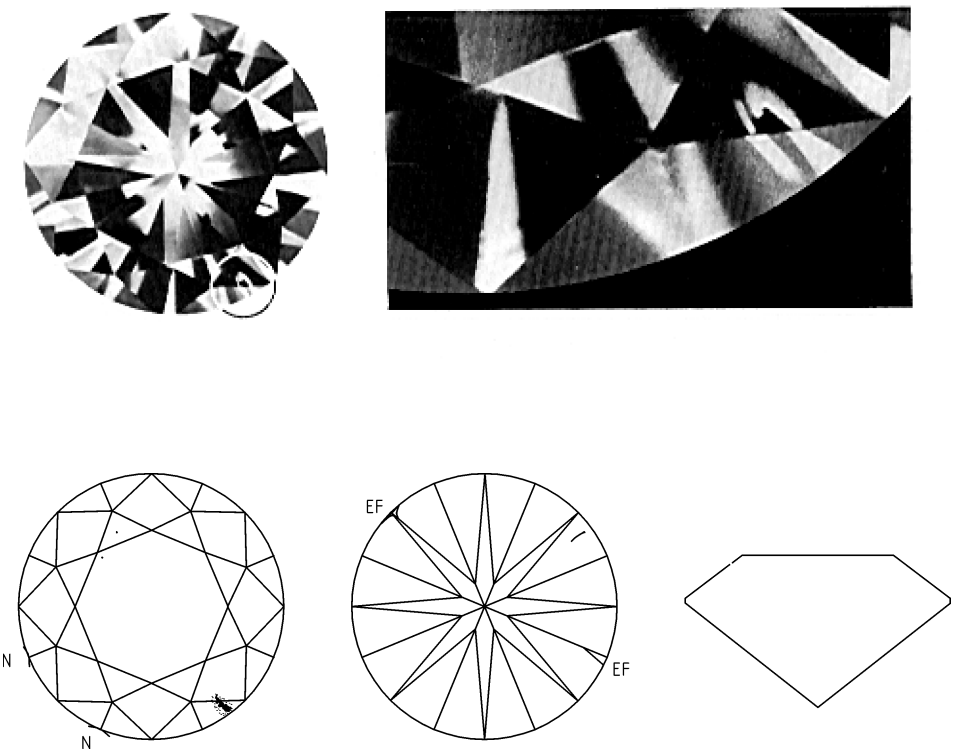


Figure 45 — Cloud surrounding a cleavage, two naturals, a scratch, two extra facets, and a rough culet

6.3.10.12 The Clarity Grade VS2 (example diagrams)

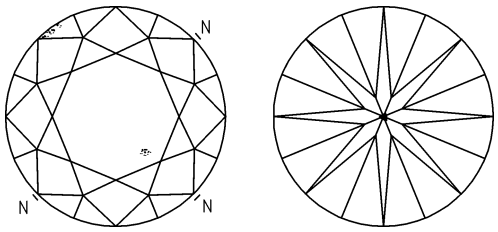


Figure 46 — A group of pinpoints, a cleavage minor naturals and an abraded culet

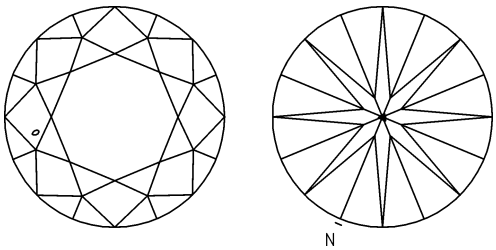


Figure 47 — A crystal, a minor natural, and a rough culet

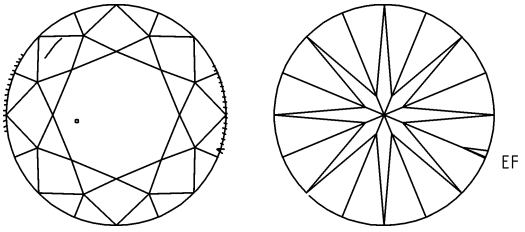


Figure 48 — A small crystal, a cleavage, a small girdle nick, areas of girdle roughness, and an extra facet

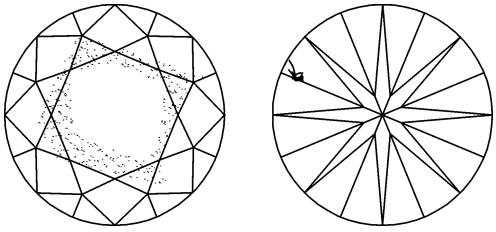


Figure 49 — Hardly visible cloud areas and a feather under a facet edge

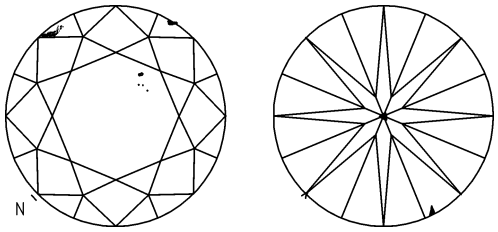


Figure 50 — A small crystal, a group of pinpoints, small cleavages, a girdle nick, a minor natural and a rough culet

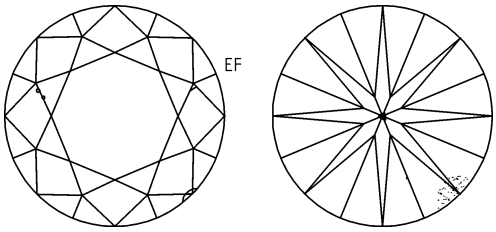


Figure 51 — Small crystals outside table, a small girdle cleavage, a cloud, an extra facet, and an abraded culet

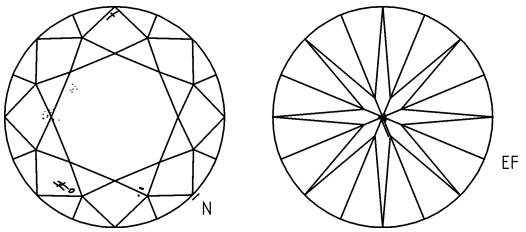


Figure 52 — Small groups of pinpoints, minor crystals, a minor natural, scratches, an extra facet and a rough culet

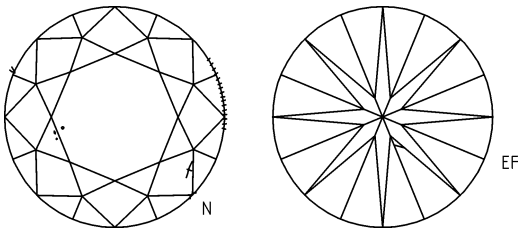


Figure 53 — A group of small crystals near facet edge, a girdle nick, a natural, a scratch, an extra facet and pitted girdle

6.3.10.13 SI1 (Slightly Included/ Small Inclusions)

SI1 diamonds shall contain noticeable internal characteristics/inclusions which shall be easy to observe when examined under 10 × magnification.

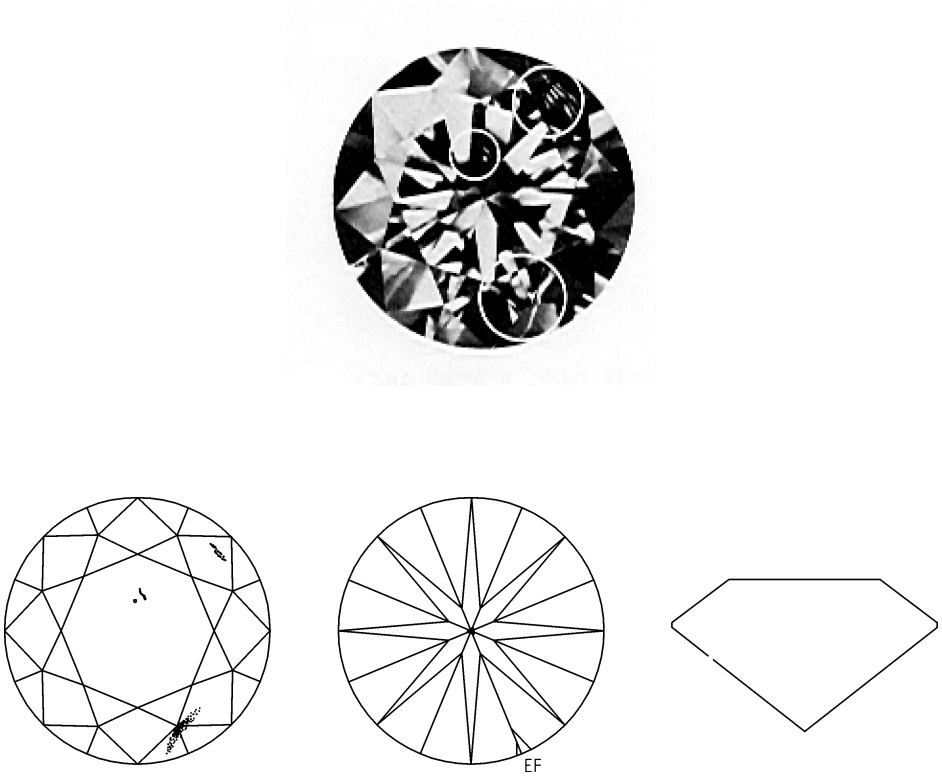


Figure 54 — A small crystal, cleavages (one of these reflects and another is surrounded by a small cloud) extra facets, and rough culet

6.3.10.14 The Clarity Grade SI1 (example diagrams)

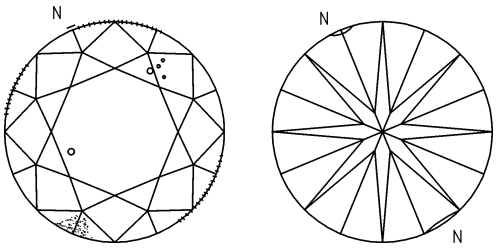


Figure 55 — Small crystals, a cloudy area, a minor natural, a natural, an indented natural, and areas of pitted girdle

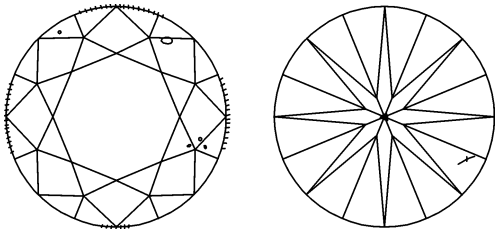


Figure 56 — A dark inclusion and several crystals, areas of pitted girdle a scratch, and an abraded culet

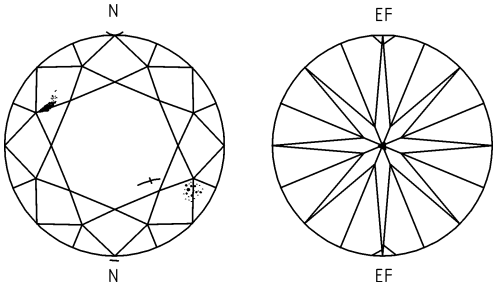


Figure 57 — A cleavage, a group of pinpoints, - partly under facetedges, a scratch, extra facets, a minor natural, a natural, and an abraded culet

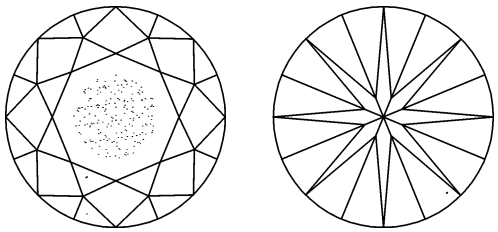


Figure 58 — A cloud causing decrease in transparency

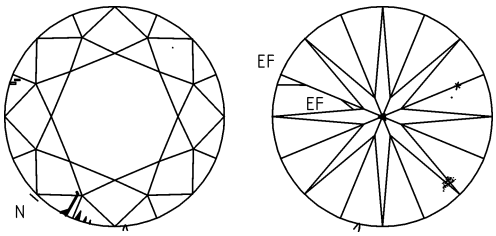


Figure 59 — Crystals, bearding, a cleavage visible only from below , girdle nicks, a minor natural, extra facets, and a rough culet

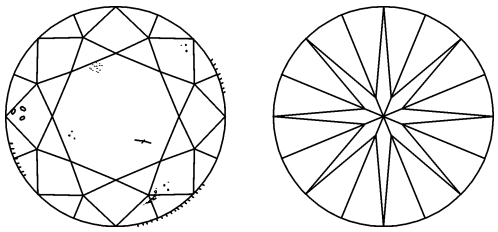


Figure 60 — Small groups of pinpoints and crystals, minute cavities on table surface, areas of pitted girdle, a small cleavage and a scratch

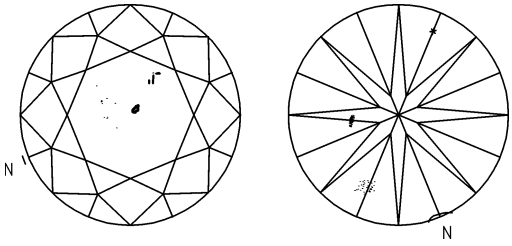


Figure 61 — A crystal, groups of pinpoints, a small cleavage, a minor natural, an indented natural, and a pit

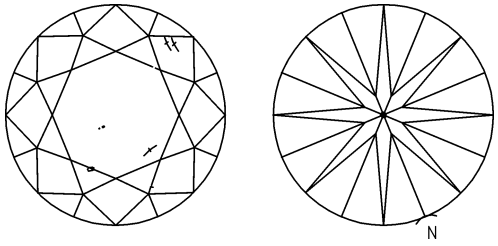


Figure 62 — Reflecting crystals, a crystal under a facet edge, an indented natural, a scratch, and a rough culet

6.3.10.15 SI2 (Slightly Included/ Small Inclusions)

SI2 diamonds shall contain noticeable internal characteristics/inclusions which shall be very easy to observe when examined under 10 × magnification

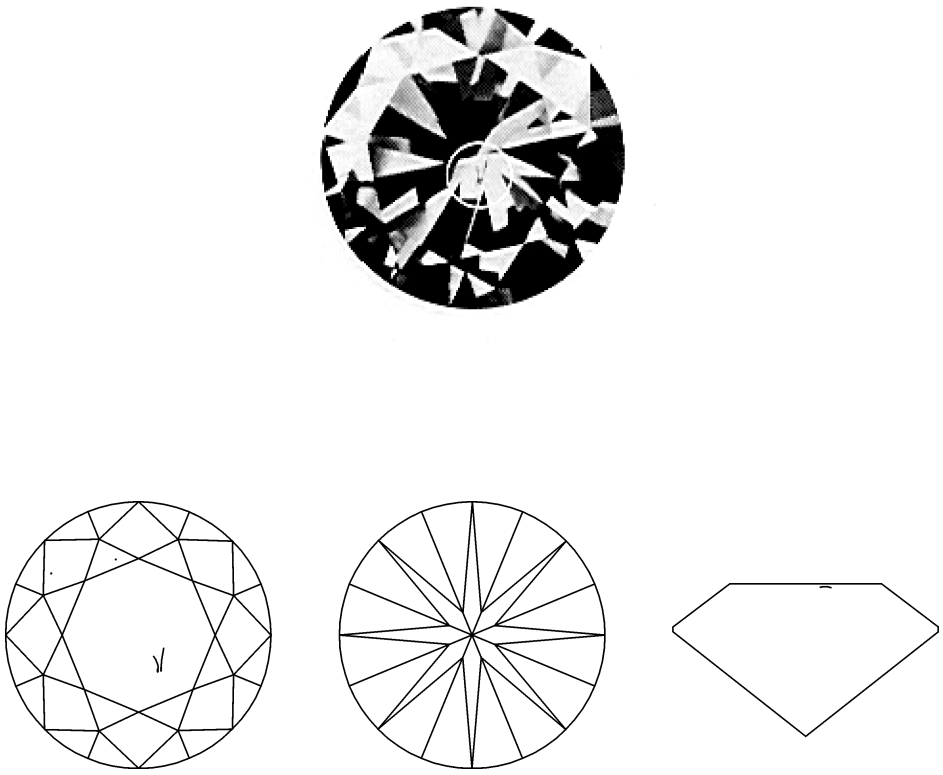


Figure 63 — Distinct inclusions immediately under the table

6.3.10.16 The Clarity Grade SI2 (example diagrams)

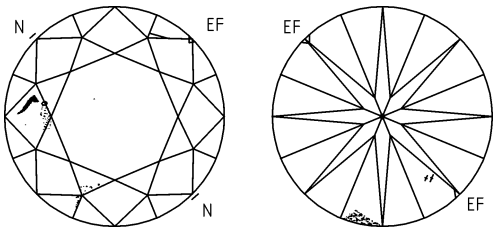


Figure 64 — A feather, groups of crystals and dark inclusions outside table, a cloud - visible only from below, minor naturals, extra facets, scratches, and an abraded culet

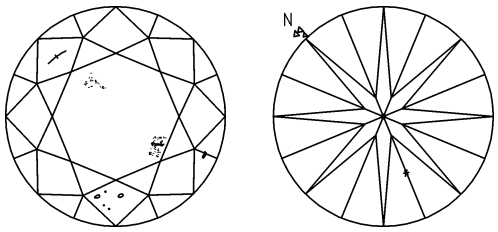


Figure 65 — A crystal surrounded by a cloud, a cloud of pinpoints, a group of small crystals, a small cleavage, a natural with trigons, a scratch a pit, and an abraded culet

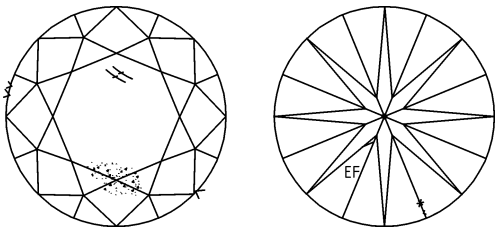


Figure 66 — A group of crystals, and dark pinpoints at edge of table, girdle nicks, scratches, an extra facet, a pit, a nick, and an abraded culet

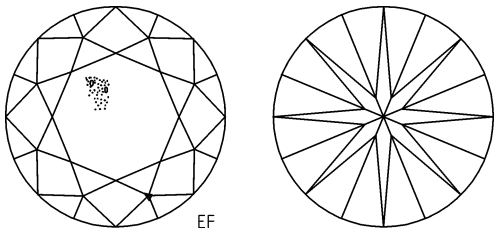


Figure 67 — Crystals under table - surrounded by a cloud and an extra facet

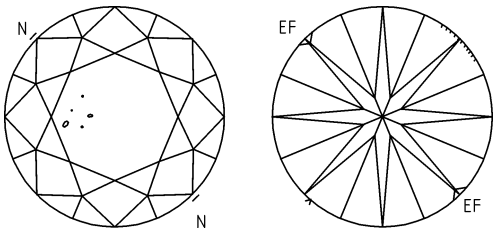


Figure 68 — A group of crystals under the table, minor naturals, extra facets, a girdle nick and pitted girdle

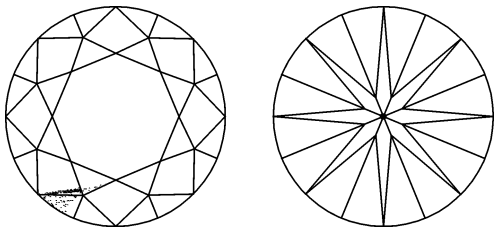


Figure 69 — A distinct cloud and rough culet

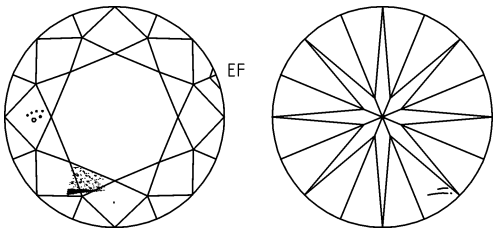


Figure 70 — A cloud and a group of dark pinpoints outside table, an extra facet, scratches and a rough culet

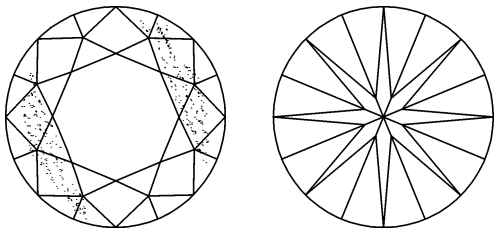


Figure 71 — Cloudy areas

6.3.10.17 I1/P1 (Included 1 or Piqué 1)

Included 1 or Piqué 1 diamonds shall contain internal characteristics/inclusions which shall be prominent when examined under 10 × magnification. They shall be also visible face up with the naked eye.

NOTE Under certain circumstances, internal characteristics/inclusions may also be visible face up to the naked eye in higher grades.

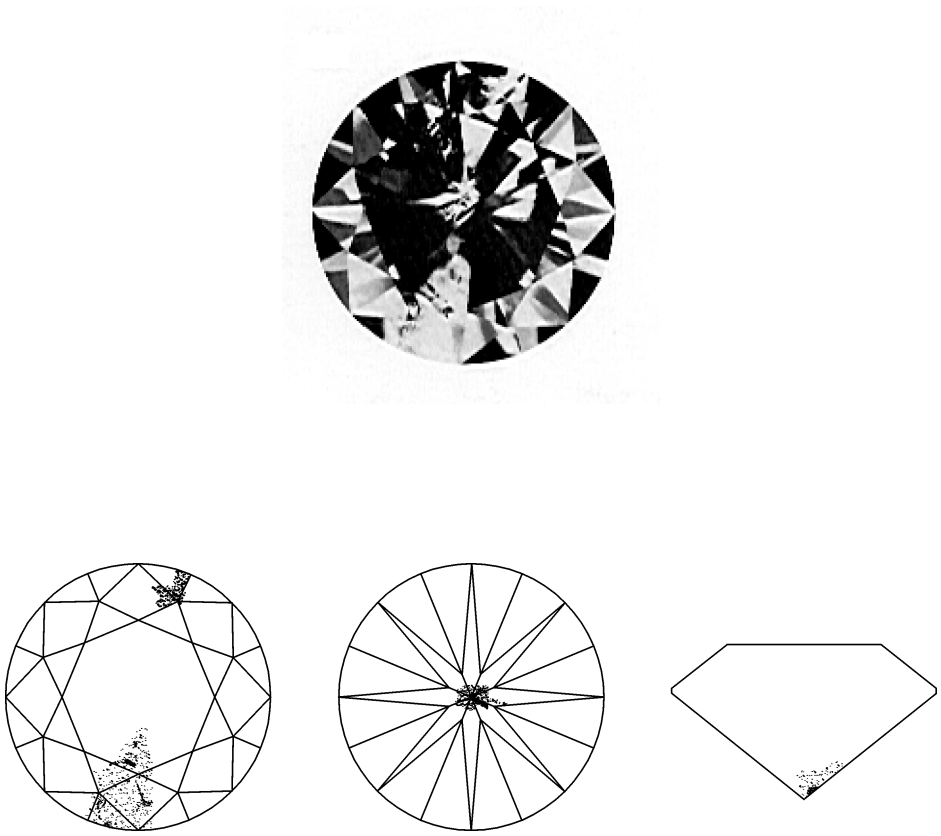


Figure 72 — Large cleavages, a reflecting cleavage near culet, and an abraded culet

6.3.10.18 The Clarity Grade I1/P1 (example diagrams)

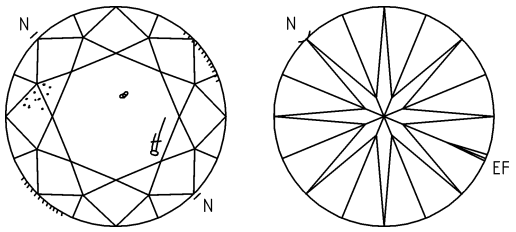


Figure 73 — A reflecting dark spot, a crystal, a group of crystals, scratches, minor naturals, and indented natural, an extra facet and areas of pitted girdle

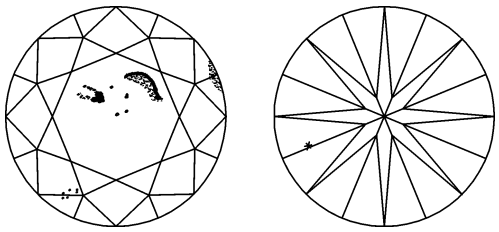


Figure 74 — A group of dark spots, a cleavage, a group of crystals, a girdle nick surrounded by a cloud, and a pit

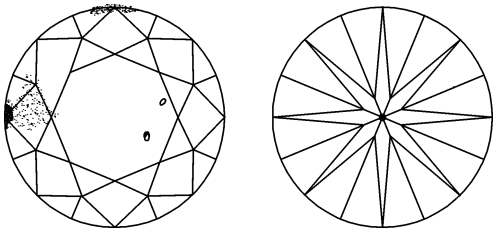


Figure 75 — Crystals, a feather, clouds, a girdle nick, and a rough culet

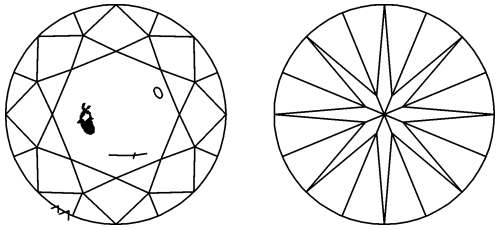


Figure 76 — A reflecting dark inclusion with a crystal and bearding, a crystal , girdle nicks and a scratch

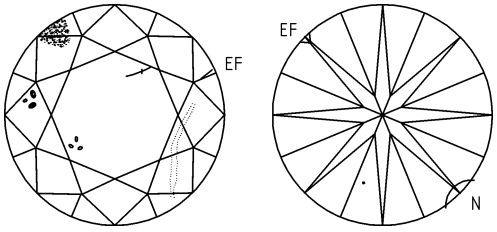


Figure 77 — A group of crystals, a group of dark inclusions, a cloud, growth lines, a scratch, extra facets, an indented natural, and an abraded culet

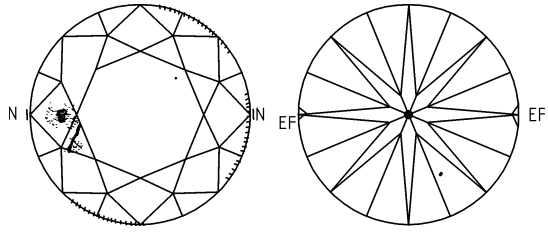


Figure 78 — Dark inclusions with surrounding clouds, minor naturals, extra facets, areas of pitted girdle and a rough culet

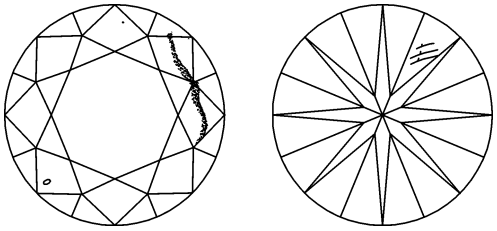


Figure 79 — A crystal, a coloured cleavage and scratches

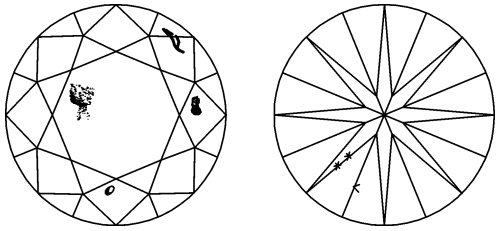


Figure 80 — Dark inclusions and feathers - one surrounded by a cloud - a nick, pits, and an abraded culet

6.3.10.19 I2/P2 (Included 2 or Piqué 2)

Included 2 or Piqué 2 diamonds shall contain internal characteristics/inclusions which shall be very prominent when examined under 10 × magnification. They shall be also easily visible face up with the naked eye, slightly reducing the brilliancy of the diamond.

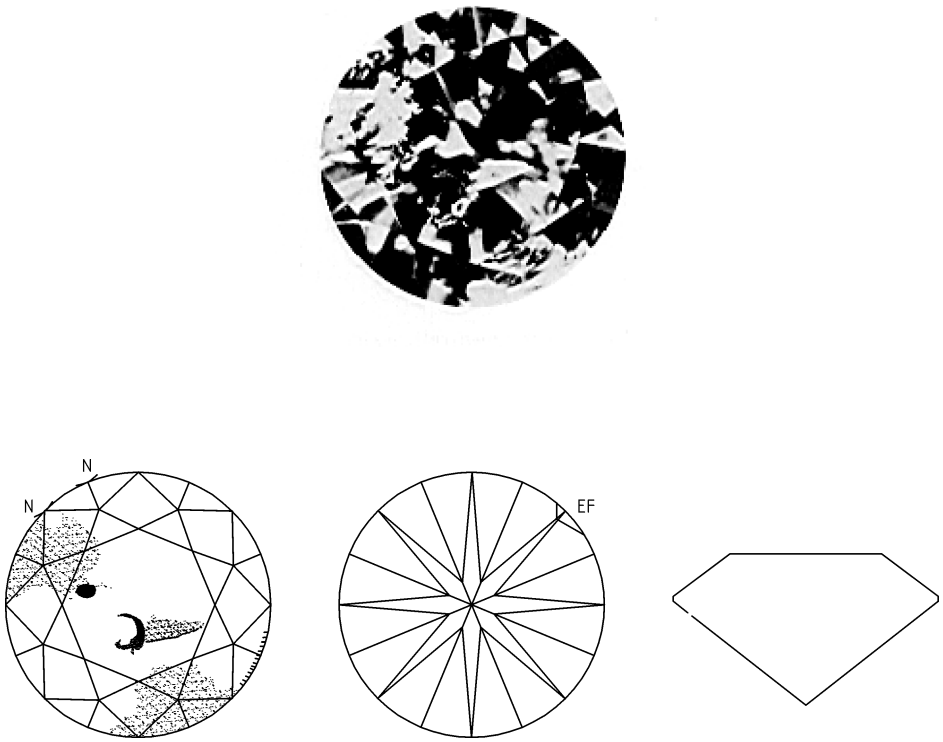


Figure 81 — Colourless and dark inclusions, cloudy areas, naturals, a minor natural, an extra facet, and pitted girdle. Substantial decrease in transparency and brilliancy

6.3.10.20 The Clarity Grade I2/P2 (example diagrams)

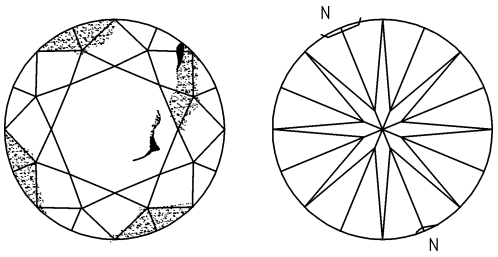


Figure 82 — A dark inclusion, partly coloured cleavages, cloudy areas and indented naturals

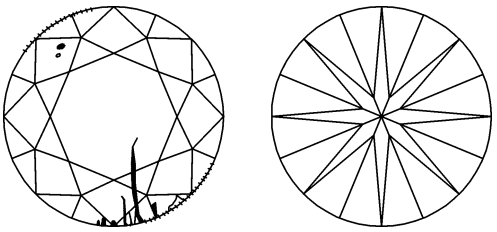


Figure 83 — Large girdle bearding, dark inclusions, and pitted girdle

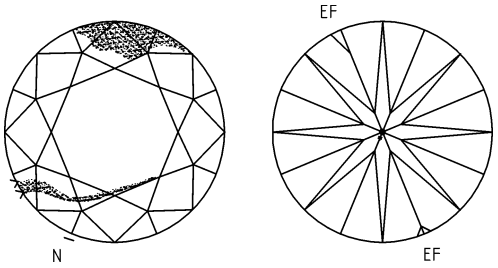


Figure 84 — A coloured cleavage with a cloud, a cloudy area, a minor natural, extra facets, a pit, and girdle nicks

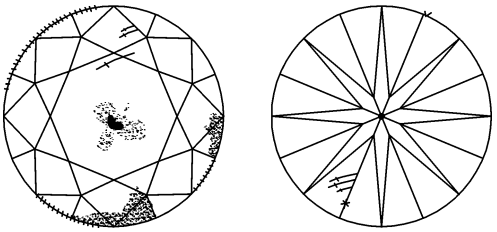


Figure 85 — A dark inclusion, clouds, scratches, pits, a girdle nick

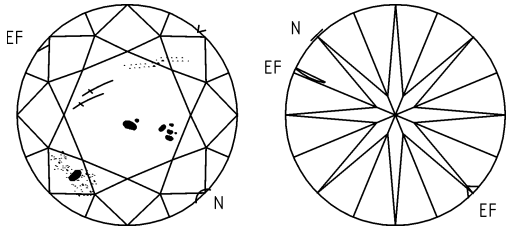


Figure 86 — A group of dark inclusions, crystals surrounded by a cloud, growth lines, scratches, a girdle nick, extra facets, a natural and an indented natural

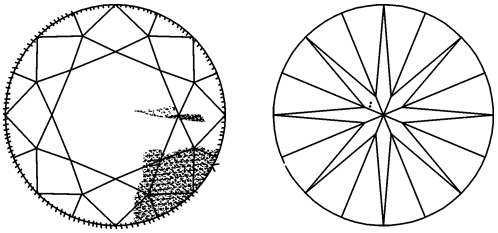


Figure 87 — A cleavage surrounded by a cloud. a cloudy area, a girdle nick

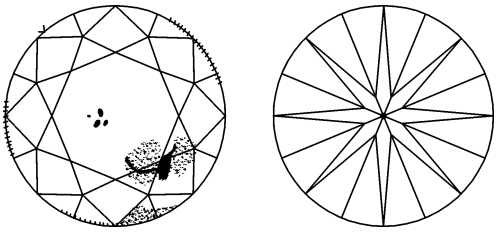


Figure 88 — Groups of dark inclusions, clouds, girdle nicks

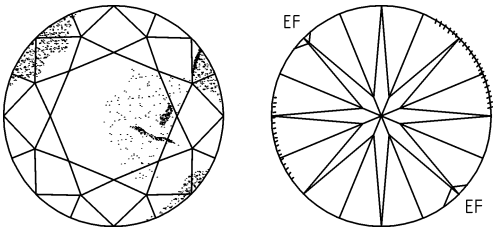


Figure 89 — Cleavages, groups of minute crystals, clouds

6.3.10.21 I3/P3 (Included 3 or Piqué 3)

Included 3 or Piqué 3 diamonds shall contain internal characteristics/inclusions which shall be extremely prominent when examined under 10 × magnification. They shall be also very easily visible face up with the unaided eye, reducing the brilliancy of the diamond.

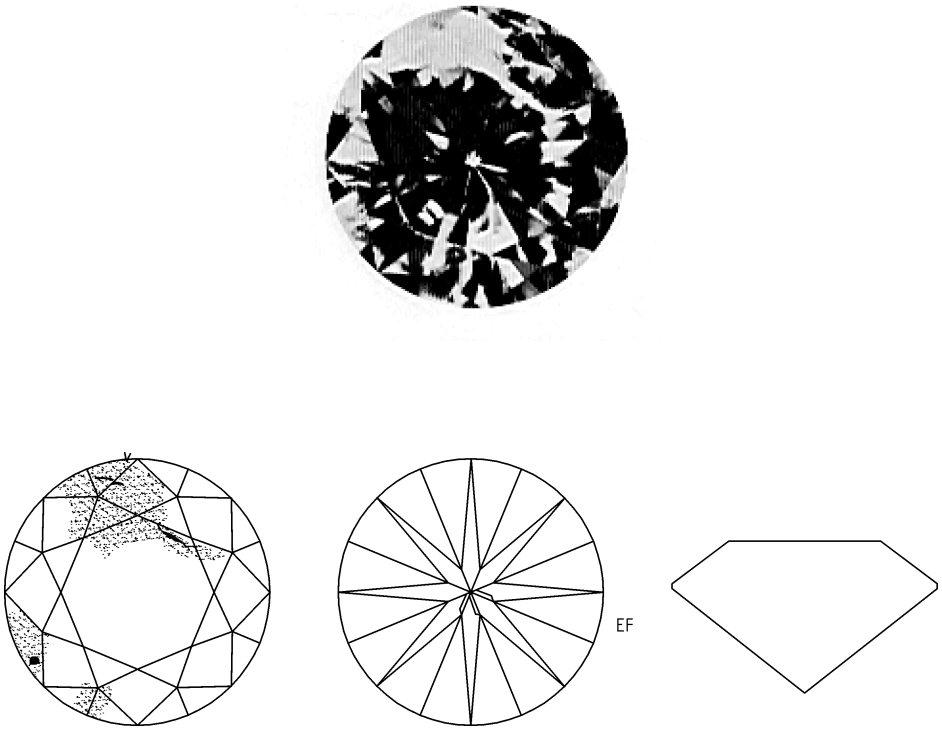


Figure 90 — Dark inclusions, coloured cleavages, clouds, a girdle nick

6.3.10.22 The Clarity Grade I3/P3 (example diagrams)

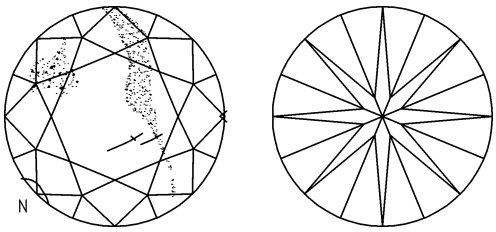


Figure 91 — A group of dark inclusions, a coloured cleavage, clouds, a girdle nick an indented natural

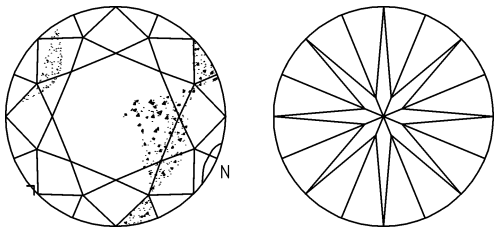


Figure 92 — Numerous crystals and dark inclusions, a feather surrounded by a cloud, a girdle nick and an indented natural

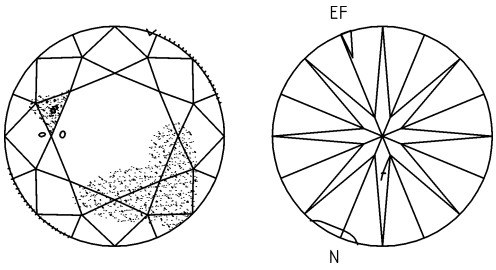


Figure 93 — A dark inclusion surrounded by a cloud, crystals, a cloudy area, a girdle nick, an indented natural, pitted girdle

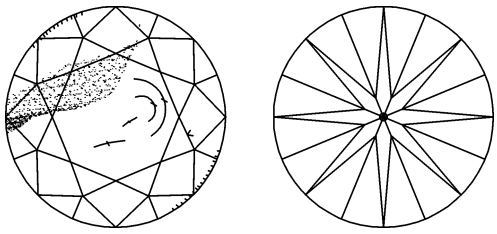


Figure 94 — A partly colored cleavage with a cloud, a nick on a crown facet edge pitted girdle, and a rough culet

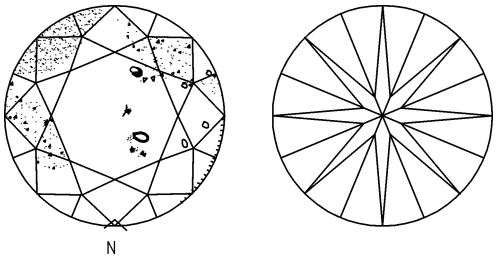


Figure 95 — Numerous crystals and dark inclusions, pinpoints, a cloudy area, an indented natural and pitted girdle

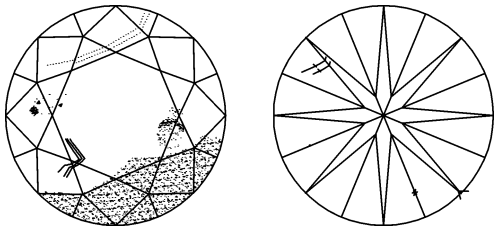


Figure 96 — Dark inclusions, cleavages and clouds, growth lines, pits, a girdle nick, and an abraded culet

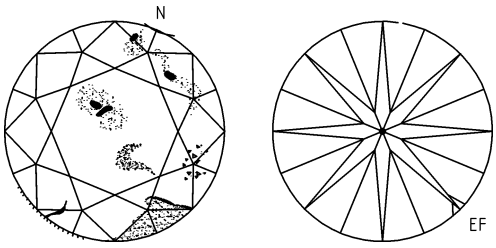


Figure 97 — Numerous crystals and dark inclusions, surrounded by clouds, pitted girdle and an abraded culet

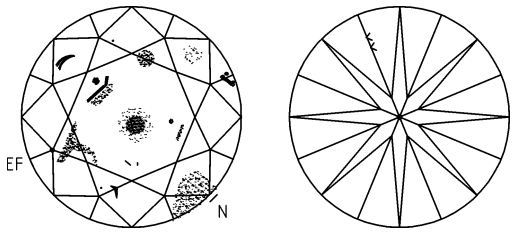


Figure 98 — Numerous dark inclusions and coloured cleavages, groups of pinpoints, a cloud, a girdle nick, nicks on pavilion facet edge and an abraded culet

7 Shape

Minor deviations from the common diamond shapes specified in 8.2 of PAS 1048-1 shall not be remarked upon in the report. Major deviations shall be noted in the report by adding the word “variation” or “modification” in brackets after the shape description.

8 Proportions

8.1 Appropriate instruments

Appropriate instruments shall be used to establish the measurements required to describe the proportions of a diamond.

NOTE The parameters used to establish the proportions of a diamond are detailed in PAS 1048-1.

8.2 Description

8.2.1 Table sizes

The table size shall be expressed as a percentage of the girdle diameter.

8.2.2 Crown height

The crown height shall be expressed as a percentage of the girdle diameter.

8.2.3 Pavilion depth

The pavilion depth shall be expressed as a percentage of the girdle diameter.

8.2.4 Girdle thickness

The girdle thickness shall be expressed as a percentage of the girdle diameter or described, in accordance with 8.3.6 PAS-1048-1.

8.2.5 Culet size

The culet size shall be expressed as a percentage of the girdle diameter or described, in accordance with 8.3.7 of PAS 1048-1.

8.3 Proportions comments

In order to maximize the beauty of the finished stone, diamonds are cut to a particular set of proportions. Beauty is a personal impression and will vary from person to person and from time to time. Proportions may therefore vary in accordance with an individual perception of beauty.

Optionally comments on proportions may be given for round brilliant cut stones if this is a regional requirement or custom. When a comment on proportions is given the ranges of proportion parameters for the round brilliant cut set out in Table 4 can apply. Depending upon regional requirements, language or custom the descriptive terms “range (a), range (b) and range (c)” shall be replaced by alternative terms.

Table 4 — Examples of proportions ranges for the round brillian cut

Criterion	Range (c)	Range (b)	Range (a)	Range (b)	Range (c)
Crown angle (β)	up to 26,9º	27,0º to 30,6º	30,7º to 37,7º	37,8º to 40,6º	40,7º and up
Pavilion angle (α)	up to 38,4º	38,5º to 39,5º	39,6º to 42,2º	42,3º to 43,1º	43,2º and up
Table size (%$\varnothing_t$)	up to 50	51 to 52	53 to 66	67 to 70	71 and up
Crown height (% c_h)	up to 8,5	9 to 10,5	11 to 16	16,5 to 18	18,5 and up
Girdle thickness (%)	Up to 0,5	1 to 1,5	2 to 4,5	5 to 7,5	8 and up
Pavilion depth (%p_d) (for pointed culet)	up to 39,5	40 to 41	41,5 to 45	45,5 to 46,5	47 and up
Culet size (%)			pointed to 1,9	2 to 3,9	4 and up
Total depth (% t_d)	up to 52,9	53 to 55,4	55,5 to 63,9	64,0 to 66,9	67,0 and up

NOTE The numbers concerning table width, crown height, girdle thickness and pavilion depth set out in Table 4 are subject to international norms concerning “rounding”.

NOTE The brilliancy and fire of a diamond are largely determined by the angles of inclination and the proportional relationship between various parts of the stone. If these are not optimal, specific undesirable effects, such as “fish-eye”, “culet visible in bezels”, etc., can occur. When judging the proportions of a polished diamond the main issue is to evaluate if and to what extent these effects occur.

9 Finish (Grading of symmetry and polish)

9.1 Symmetry

When determining symmetry the characteristics of the shape and the distribution of facets shall be taken into account, as well as extra facets and naturals. The diamond shall be graded in accordance with Table 5a and 5b.

The observation techniques used to assign the categories listed in Table 5a and 5b are:

– naked eye;

– 10 × magnification;

– measurements.

Examples of the symmetry deviations that shall be considered are set out in Figure 5

Table 5a — Symmetry deviations

Visibility 10 x	Option 1	Option 2
No symmetry deviations	Very Good	Excellent
Negligible visible symmetry deviations		Very Good
Hardly visible or minor symmetry deviations	Good	Good
Visible symmetry deviations	Medium / Fair	Medium / Fair
Major symmetry deviations	Poor	Poor

Table 5b — Symmetry : extra facets – naturals

Location – size	Visibility through crown side 10X	Option 1	Option 2	FL or IF – LC
Cs[a] – Exceptionally small	Very hard	Very Good negligible external characteristic[c]	Excellent	FL – LC
Ps[b] – Very small	Not			
Ps – Small	Not		Very Good negligible external characteristic[c]	FL – LC
Cs – Very small	Hard			
Cs – Small	Easy	Good	Good	IF – LC
Ps – Large	Hard			
Ps – Very large	Easy	Medium/Fair important extra facet – natural	Medium/Fair important extra facet – natural	IF – LC
Cs – Large	Very easy also with naked eye			
Ps – Exceptionally large	Very easy	Poor important extra facet – natural	Poor important extra facet – natural	IF – LC
Cs – Very large	Very easy disturbing to the naked eye			

[a] crown side

[b] pavilion side

[c] description only to be mentioned with LC and FL, the most important description alone shall be mentioned

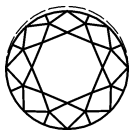
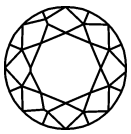
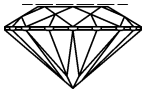
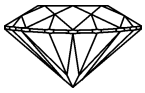
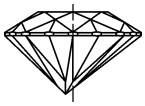
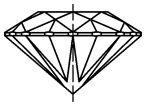
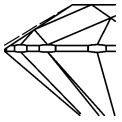
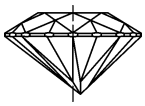
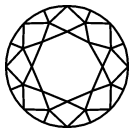
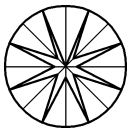
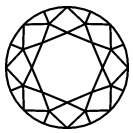
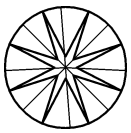
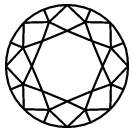
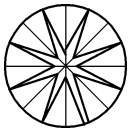
GIRDLE OUTLINE NOT CIRCULAR		CROWN FACETS NOT POINTING UP	
SLANTING TABLE		VARYING GIRDLE THICKNESS	
SLOPING (ILLUSTRATED) OR WAVY GIRDLE		ALTERNATING GIRDLE THICKNESS	
CULET OUT OF CENTRE		CROWN SIDE NOT ALIGNED TO PAVILLION SIDE	
TABLE OUT OF CENTRE		CONE-SHAPED GIRDLE	
TABLE AND CULET OUT OF CENTRE EITHER IN THE OPPOSITE (ILLUSTRATED) OR SAME DIRECTION		GIRDLE PARTLY FACED	
TABLE AND/OR STAR FACETS NOT SYMMETRICAL		PAVILION FACETS NOT SYMMETRICAL	
BEZELS NOT SYMMETRICAL		LOWER GIRDLE FACETS NOT SYMMETRICAL	
UPPER FACETS NOT SYMMETRICAL		PAVILION FACETS NOT POINTING UP	

Figure 99 — Examples of symmetry deviations

9.2 Polish

When determining the optional polish grade the characteristics listed A.3 of PAS 1048-1 shall be taken into account. The diamond shall be graded in accordance with Table 6.

A combination of 10 × magnification and naked eye observations shall be used to assign the categories listed in Table 6.

Table 6 — Polish characteristics

Visibility 10 x	Optional Polish grade			Polish grade not given	
	Option 1	Option 2	FL or IF – LC	Comment to be made	FL or IF – LC
Not found or very hard to find	Very Good	Ex	FL – LC		FL – LC
Hard to find		Very Good	IF – LC	negligible external characteristic[a]	IF – LC
Fairly hard to find	Good	Good	IF – LC	external characteristic [a]	IF – LC
Easy to find	Fair/Medium, specified description	Fair/Medium, specified description	IF – LC	specified description	IF – LC
Very easy to find easily visible to the naked eye	Poor, specified description	Poor, specified description	IF – LC	specified description	IF – LC

[a] description only to be mentioned with LC and IF, specified description : e.g. “important burn mark”, “important polishing lines”; the most important description alone shall be mentioned.

10 Expression of results

Results or grades shall be expressed in a test report in accordance with the manner and wording indicated in PAS 1048-1 and PAS 1048-2.

11 Comments

The sections in a test report that are reserved for the insertion of additional comments shall be used for example for:

– Structural phenomena (growth characteristics) (see Table 3);

– Proportions comments (see Table 4);

– External characteristics (see Table 7).

Table 7 — External characteristics (Naturals and extra facets)

Naturals and extra facets visible with 10 x loupe	Comment
Very small and located on the pavilion	No mention
Small and located on the pavilion or girdle. Not visible from the crown side	Optional mention
Visible from the crown side	“Small external characteristics”
Clearly visible from the crown	“External characteristics” or specified description
NOTE also related to symmetry categories (see 9.1 and Table 5a and 5b)	

12 Test report

The test report shall contain at least the following information:

– reference to this this part of PAS 1048;

– the results of the following tests:

  – clarity;

  – colour;

– comments (if applicable);

– long wave ultra violet fluorescence;

– measurements;

– plot of internal characteristics/inclusions and external characteristics/blemishes;

– proportions (table size, crown height and or crown angle, pavilion depth and or pavilion angle, girdle thickness, culet size);

– reference code;

– shape and cut;

– symmetry;

– weight;

– the date of the test.