



GEMCLOUD



FANCY SAPPHIRE

EDUCATIONALSERIES

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FANCY SAPPHIRE

INTRODUCTION



FANCY SAPPHIRE BIOGRAPHY

Photo credit: Linda Boucher (pinterest)



Species: Corundum

Variety: Fancy Sapphire

Chemical Composition: Aluminum Oxide (Al_2O_3)

Trace Element Causing the Color: Iron, Titanium, Vanadium, Chromium

Color: All colors possible, also color change and colorless (see next pages)

Refractive Index: 1.760 – 1.775

Double Refraction: 0.008 to 0.010

Specific Gravity: 4.00 (\pm 0.08)

Pleochroism: Strong, depending on the color

Fluorescence: Weak to strong, depending on the color

Mohs Hardness: 9.0

Common Inclusion: Rutile, crystals, negative crystals, healed fissures

Most Common Shapes: Cushion, oval, octagonal, pear



FANCY SAPPHIRE VALUE



The value of a fancy sapphire is based on the combination of 6 different parameters:

COLOR

This is the most important parameter. The finer and purer the color the higher the value.

CLARITY

The clarity of fancy sapphires is evaluated with the naked eye, fancy sapphires free of inclusions are rare and visible inclusions (rutile crystals, healed fissures) are common. Nevertheless, the higher the purity the higher the price.

CUT

Fancy sapphires which are cut with a good level of symmetry, proportion and polishing are commanding the highest prices.

CARAT

Because large stones are much rarer than small stones, their prices are exponentially higher. The per carat difference in price between a 1 carat and a 10 carats fancy sapphire can be as big as 50 times.

TREATMENT

Because untreated stones are much rarer than treated ones, this factor will have an impact on the price.

ORIGIN

Gemstones from different origins can have different prices, even if they are not visually distinguishable. For fancy sapphires, premium origins are Burma and Sri Lanka.



FANCY SAPPHIRE

INTERESTING FACTS



Photo credit: shaneco.com

Below are some interesting facts about Fancy Sapphires:

- By far the most expensive and rarest fancy sapphire is the orangy pink padparadscha sapphire whose name comes from the Singhalese word padmaraga which means lotus flower.
- Pink Sapphires symbolize trust, loyalty and sincerity. They are also believed to carry good fortune and intense love.
- Yellow Sapphires, Pukhraj in Hindi, are associated with wisdom, knowledge, power, good fortune and wealth.
- Green Sapphires are said to bring the wisdom of fidelity and integrity to one's life, honoring loyalty and trust.
- Purple sapphires are said to promote spiritual growth and inner peace and also enhance the clarity of the mind.



FANCY SAPPHIRE

CATALOGUE & NOMENCLATURE



FANCY SAPPHIRE PRIMARY AND SECONDARY HUES

Color is a significant factor affecting the value of a fancy sapphire.

Color preferences do change in time and from culture to culture - fancy sapphires are found in the full color spectrum and nowadays the preferences tend to go to pink sapphires.

Currently, the most sought after color is said to be indistinguishable from pink to orange and is sometimes named padparascha - this specific color is fetching record prices at international auctions.

Less valuable colors such as brownish hues can be heated to improve the purity of their colors.



Bluish Green



Pinkish Orange



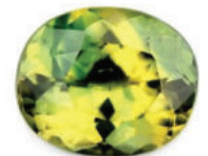
Purplish Pink



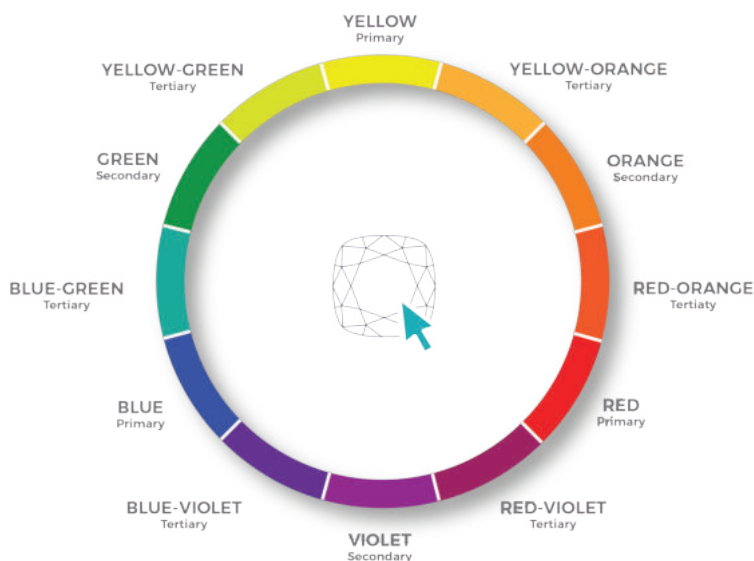
Brownish Pink



Yellowish Orange



Greenish Yellow



The Color wheel with primary, secondary and tertiary colors might give an idea of the complexity that comes when grading fancy sapphires. Possible combinations are plentiful.



FANCY SAPPHIRE COLOR CHANGE

Daylight



Violetish Blue

Incandescent Light



Purple

It's not commonly known that fancy sapphires can display color change phenomena. To see the two different colors, two different light sources are needed. One light source is a rather cool light (referred to as daylight), the other one is a warm, yellowish light (referred to as incandescent light).

Color-change sapphires are valuable gemstones which are often sought after by collectors, especially if they show a strong color change.

A typical color-change for a fancy sapphire is from blue to purple, light greenish blue to pink, brown to reddish purple and others have been observed.



FANCY SAPPHIRE COLOR GRADES

GEMCLOUD classifies the different color intensity of fancy sapphires into 7 different grades:



Dark

Moderate to strong saturation of color with a very dark tone



Deep

Moderate to strong saturation with a slightly dark tone



Vivid

Vivid saturation of color with medium dark tone



Intense

Moderate saturation of color with a medium light tone



Medium Intense

Moderate saturation of color with a light tone



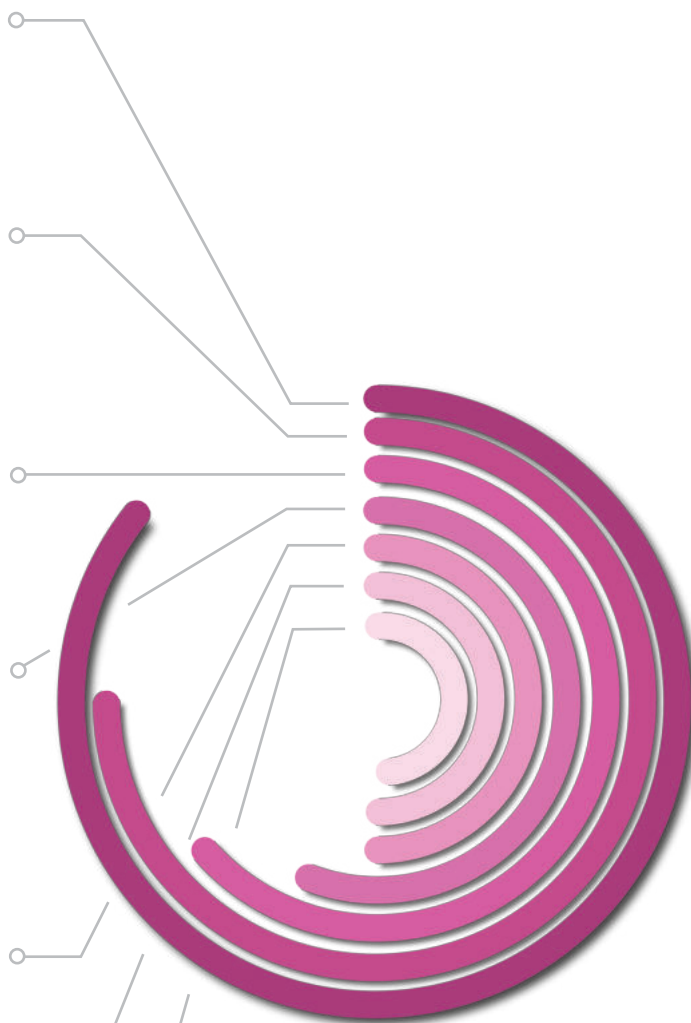
Light

Light saturation with a medium to light tone



Very light

Grayish color with a very light tone, near colorless



FANCY SAPPHIRE

GEMCLOUD CLARITY GRADES



Transparent



Translucent



Opaque

GEMCLOUD grades all its gemstones through a universal clarity standard composed of 8 different grades (6 transparent grades, 1 translucent grade & 1 opaque grade) divided into the below:

TRANSPARENT

Transparent gemstones are the ones which have the property of transmitting light without serious diffusion.

GEMCLOUD grades transparent gemstones between 6 different grades: EC1, EC2, VII, VI2, I1 and I2 (see next page).

TRANSLUCENT

Translucent gemstones are the ones which only have partial light going through due to their numerous inclusions.

GEMCLOUD grades translucent gemstones type with a single grade called 'translucent'.

OPAQUE

Opaque gemstones are so included that there is no light passing through the gemstone.

GEMCLOUD grades opaque gemstones with a single grade called 'opaque'.



FANCY SAPPHIRE

TRANSPARENT CLARITY GRADES

Clarity of transparent fancy sapphires is assessed by naked eye only and at distance of about 40cm. Transparent fancy sapphires that are free of inclusions are rare and visible inclusions are common.



EC1

Eye Clean 1 (EC1):

Free of inclusions while looking with the unaided eye and very few inclusions visible while looking with a loupe. This is considered the finest clarity for colored gemstones.

Potential other names: Top eye clean, Very minor inclusions, Very Very slightly included (VVS)



EC2

Eye Clean 2 (EC2):

Free of inclusions while looking with the unaided eye.

Potential other names: Eye clean, Minor inclusions, Very slightly included (VS)



VI1

Visible Inclusions 1 (VI1):

Inclusions very slightly visible with the unaided eye.

Potential other names: Slightly Included (SI) eye. Potential other names: Slightly Included (SI)



VI2

Visible Inclusions 2 (VI2):

Inclusions slightly visible with the unaided eye.

Potential other names: Moderately Included (MI)



I1

Included 1 (I1):

Inclusions highly visible with the unaided eye



I2

Included 2 (I2):

Inclusions very highly visible with the unaided eye



FANCY SAPPHIRE

ORIGINS IN GEMCLOUD
CATALOGUE



FANCY SAPPHIRE GEOGRAPHIC ORIGINS



GEMCLOUD catalogue will include fancy sapphires from the most common sources:

- Afghanistan
- Australia
- Madagascar
- Mozambique
- Myanmar (Burma)
- Sri Lanka
- Tanzania
- Thailand
- USA
- Vietnam

Basaltic Deposits (Australia, Cambodia and others)*

*Basaltic Deposit will be issued on some lab reports as the properties of basaltic fancy sapphires are too similar to distinguish between different origins.



FANCY SAPPHIRE

DETERMINATION OF ORIGIN



Fancy Sapphires coming from different mining areas have a slightly different chemical signature and different inclusions. This is due to the fact that they were formed in slightly different geological environments.

These chemical signatures and the different type of inclusions are like fingerprints of humans and they help gemologists to distinguish the different origins.



FANCY SAPPHIRE

BURMA, MYANMAR

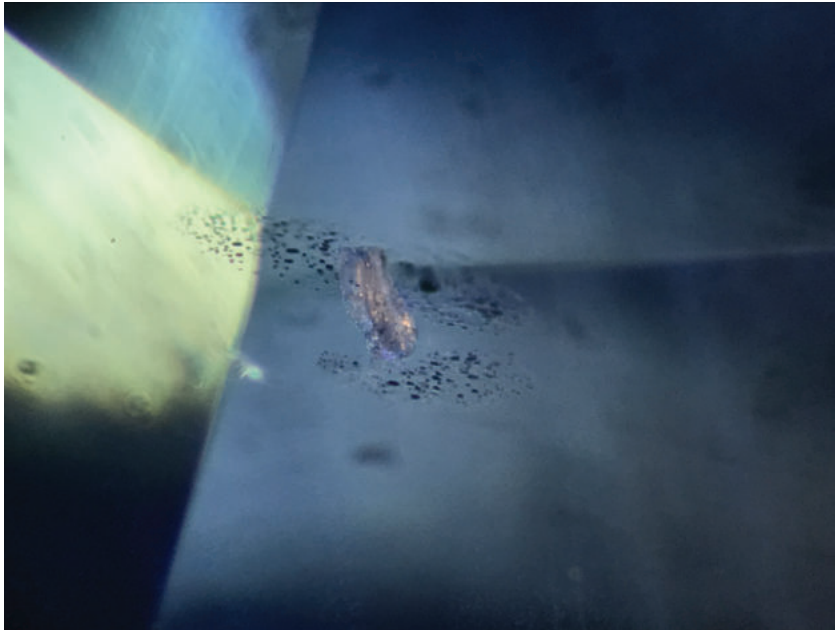


Photo credit: Sebastian Haensel



Burma (today called Myanmar) is also in terms of fancy sapphires an historical source: fancy sapphires have been mined here for centuries.

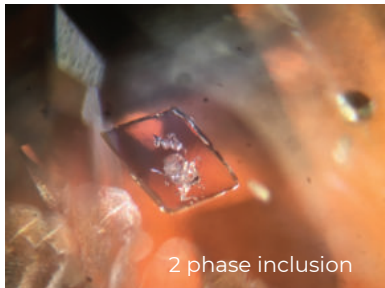
Burmese fancy sapphires are mined out of gravels of old river beds which are reached in shafts from the surface down between 10 and 15 meters.

The area of Mogok produces fine light and pastel colored fancy sapphires with partly impressive sizes up to 30 carat. Very often the gems are very pure.



FANCY SAPPHIRE

SRI LANKA



2 phase inclusion

Photo credit: Sebastian Haensel



Rough fancy sapphires

Photo credit: ceylongemhub.com



Traditional river mining in Sri Lanka

Photo credit: goldfingers.dk



Fine Padparadscha

Sri Lanka is the oldest known source for sapphire and fancy sapphire. Sometimes it is described as the "Island of Gems".

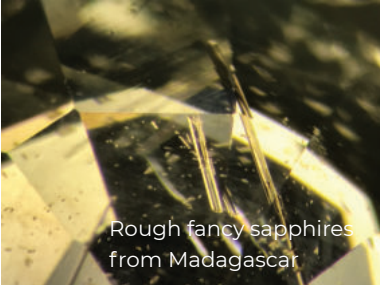
It is well known for its wealth of fancy sapphires, having a large variety of colors, especially pink and yellow colors, sometimes in large sizes.

Gemstones in Sri Lanka are primarily mined from alluvial secondary deposits, within gem-bearing river gravels locally known as "ILLIAM". To access the gem-bearing gravel, 2 to 15 meter mining pits are hand dug by teams of several workers, pumping out any ground-water as it enters the hole from the below. When the pit is dug to the depth of the illiam, tunnels are dug horizontally following the gem bearing gravels.

Fancy sapphires are commonly found together with other gemstones like chrysoberyl, zircon, sapphires and spinel.



FANCY SAPPHIRE MADAGASCAR



Rough fancy sapphires
from Madagascar

Photo credit: Sebastian Haensel



Photo credit: preciousgem.com



Mining with hand tools in Madagsacar

Photo credit: iied.org



Fine Pink Sapphire

Madagascar is the most recent source of gem quality corundum and known as the biggest producer of fancy colored sapphires. Even mining of secondary deposits take place with simple hand tools, production is on a high level and steady.

The most common fancy sapphire is pink sapphire which is commonly heated to remove purple overtones. Also color-change sapphires are quite common.

As in other deposits, fancy colored sapphires are found with a wide range of other gemstones like zircon, kornepine, chrysoberyl and others.

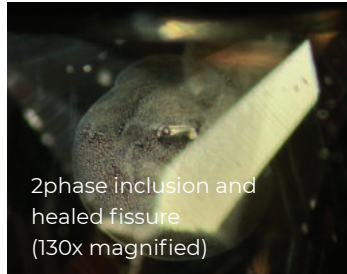


FANCY SAPPHIRE TANZANIA



Gem concentrate with fancy sapphires

Photo credit: Vincent Pardieu



2phase inclusion and healed fissure (130x magnified)

Photo credit: Sebastian Haensel



Typical mining situation in secondary deposits in Tanzania

Photo credit: mining-technology.com



Orange Sapphire

Fancy Sapphires are found in different regions of Tanzania. The deposits are commonly located in old river beds, meaning that there is no hard rock to break in order to reach the gemstones.

Besides fancy sapphires, other gemstones like garnets, zircons and also rare gems are found.

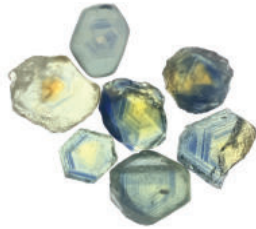
The mining area of Songea became famous for its fancy sapphires of very bright orange and yellow colors. The color of these is usually brought out by beryllium-diffusion heat treatment.

Production is small but steady and untreated fancy sapphires from Tanzania are rare.



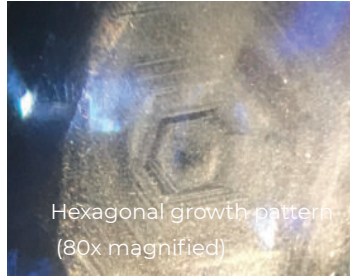
FANCY SAPPHIRE

UNITED STATES OF AMERICA



Rough Fancy Sapphire

Photo credit: Merissa Lambert



Hexagonal growth pattern
(80x magnified)

Photo credit: Sebastian Haensel



Mechanized mining in Colorado, USA

Photo credit: caoistranomining.com



Bluish green Sapphire

Yogo sapphires have a color range from blue to lilac colors, have been mined on and off since the late 19th century.

Two-carat stones are extraordinarily rare and considered a true collectors gem. Yogo sapphires fetch prices in the US far above what would be paid in the rest of the world. While not really of any consequence in the world sapphire market, there is a strong demand for Montana Sapphires in the US. It comes in two distinctive local origins, Yogo and non Yogo (meaning Rock Creek/Gem Mountain, Missouri River and Dry Cottonwood Creek). Stones from other Montana mines come in fancy colors and blues tend to be a bit grayish.

Rock Creek / Gem Mountain produces higher quantities, but virtually all require heat treatment.



FANCY SAPPHIRE

TREATMENTS IN GEMCLOUD
CATALOGUE



FANCY SAPPHIRE TREATMENTS



Before



After

Photo credit: lotusgemology.com

HEAT-TREATMENT of fancy sapphires appeared on the market in the 1970's – The legend says that after a fire in the gemstone market in Thailand, some traders realized that they could change the color of sapphires by heating them.

There are currently 4 major sapphire treatments, but because not all are considered stable, GEMCLOUD only works with the ones below (on top of unheated):

Heated : Sapphires which have been heated with high temperature in order to improve their color and clarity. These are considered the second most valuable after unheated sapphires.

This treatment is permanent, stable and does not require any special care.

These are usually referred as 'Heated' or 'H' on laboratories' reports.

Heated with flux: Fancy sapphires which have been heated with high temperature and a flux, usually borax, in order to improve their transparency/durability. Gem laboratories will classify these between 3 different categories, based on the amount of flux residues within the gemstones, heated with minor residues, heated with moderate residues and heated with significant residues.



FANCY SAPPHIRE TREATMENTS



Beryllium-treated pink Sapphire

Photo credit: Sebastian Haensel

Below are the three-remaining treatments, which will not be present in the GEMCLOUD feed:

Diffusion with Beryllium – to improve color

These are usually referred as 'Diffused', H(Be) or 'Beryllium diffused' on gemological reports.

This treatment is considered stable and does not need any special care, except for stones that need to be recut – the cutter would have to pay attention as the treatment is often located just below the surface (and so color can then be removed during the cutting process).

Diffusion with Titanium – to improve color

These are usually referred as 'Diffused', H(Ti) or 'Titanium diffused' on gemological reports.

This treatment is considered stable and does not need any special care, except for stones that need to be recut – the cutter would have to pay attention as the treatment is often located just below the surface (and so color can then be removed during the cutting process).



FANCY SAPPHIRE TREATMENTS

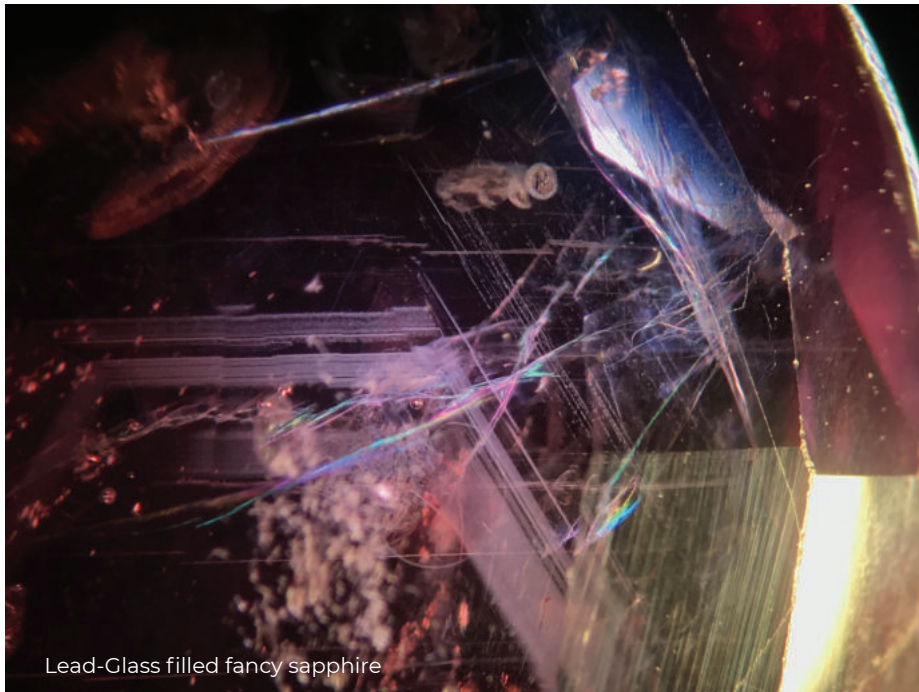


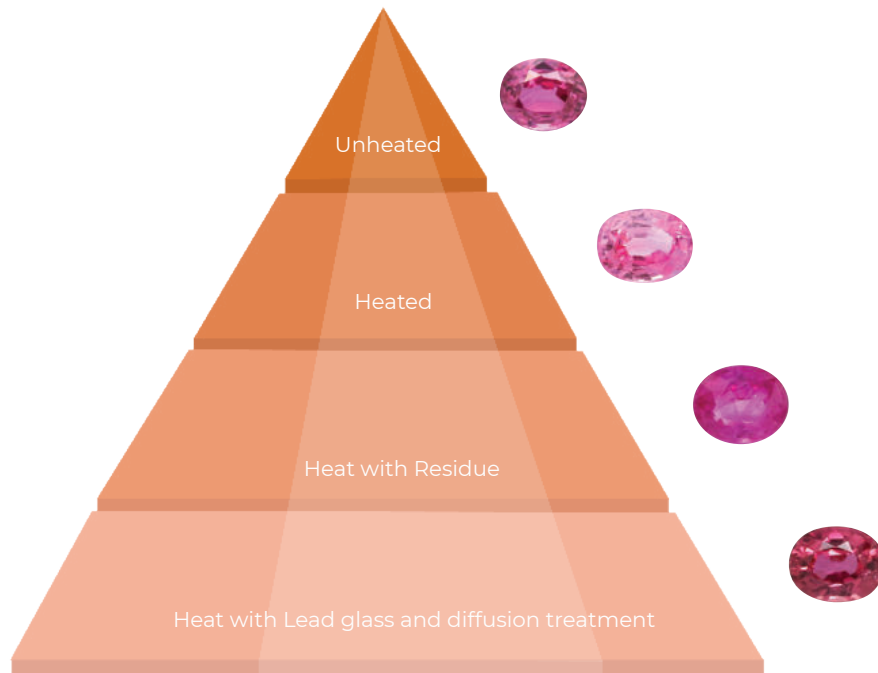
Photo credit: Sebastian Haensel

Heated with lead-glass – to improve color & clarity

These are usually referred as 'lead-glass' or 'composite fancy sapphire' on gemological reports. This treatment is not considered stable and needs special care.



FANCY SAPPHIRE ECONOMICAL OVERVIEW



An unheated fancy sapphire is much rarer than a heated fancy sapphire, these will command different prices – even between stones that are impossible to differentiate with the naked eye.

Indeed, the value follows the scarcity and so, the rarer the fancy sapphire, the higher the price will be.

Below is an example of price comparisons between 3 different fancy sapphires that visually look exactly the same:

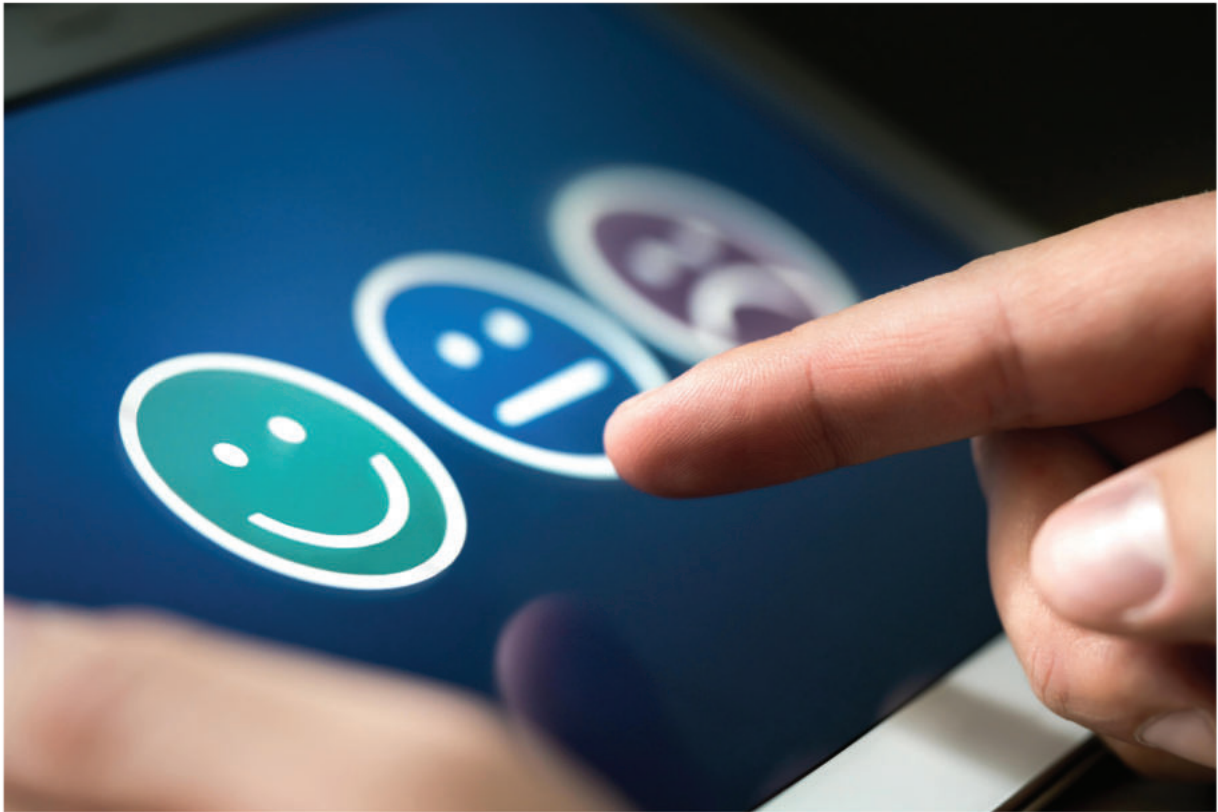
- Unheated vivid pink sapphire of 1 ct: 1,500 USD / total
- Heated vivid pink sapphire of 1 ct: 500 USD / total
- Heated pink sapphire with residue of 1 ct: 200 USD / total

This price difference between unheated, heated and heated with residue then grow exponentially as the sapphires grow in size.

Note: this is just a basic example shown as a guideline and prices may vary from stone to stone and time to time.



FANCY SAPPHIRE COMMUNICATING ABOUT TREATMENTS



Below is a list of arguments to emphasize while communicating treatments to end consumers:

- Heat-treatment of fancy sapphires is very common and well accepted.
- Most of the fancy sapphires in the market are heat - treated.
- All treatments in our catalogue are permanent, stable and do not need any special care.
- Heat - treatment finalizes the unfinished work of mother nature.
- The term 'enhancement' is usually preferred to 'treatment' as it sounds less negative.
- All of GEMCLOUD sapphires are accompanied with a gemological report.
- All treatments on the portfolio are fully disclosed.



FANCY SAPPHIRE

LIBRARY



FANCY SAPPHIRE

ARTICLES – INFORMATION ABOUT FANCY SAPPHIRE

Below is a list of interesting articles with verified information:

General information about fancy sapphires

-  <https://geology.com/gemstones/fancy-sapphire/>
-  <https://www.gia.edu/sapphire-quality-factor>
-  https://www.git.or.th/eng/testing_center_en/lab_notes_en/glab_en/2017/11/1311201703.pdf
-  https://www.ssef.ch/wp-content/uploads/2018/03/2018_Padparadscha_colour_stability_facette.pdf
-  <https://www.gemsociety.org/article/color-change-sapphire/>
-  <https://www.lotusgemology.com/index.php/library/articles/295-pink-sapphire-padparadscha-walking-the-line-in-ruby-sapphire-lotus-gemology>
-  <https://www.gemsociety.org/article/distinguishing-rubies-pink-sapphires/>

