Dear GIA Concern Reporting Team,

In light of the new FTC Jewelry Guides, I am formally lodging a concern that the GIA Synthetic Diamond Grading Report policy is the following:

1. **In violation of the latest publicly available IRS 990 Mission Statement of GIA.** As such I believe that the Synthetic Diamond Grading Report policy is a breach of fiduciary duty of the Board of Directors (Duty of Obedience).
2. **Biased, anticompetitive, and damaging to members of the diamond trade such as Ada Diamonds.** As such, I believe that the Board of Directors is exposing the GIA to unnecessary legal liability under the Sherman Act and Federal Trade Commission Act.

To address my concern, I am formally requesting that the Board of Directors take one of two actions:

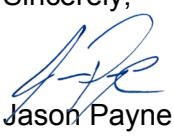
1. **Either Change the Synthetic Diamond Grading Report Policy** to grade laboratory-grown diamonds with the same specificity as natural mined diamonds. In particular, I request that fidelity of diamond color grades be improved to a letter grade (D,E,F, etc.) and that the fidelity of diamond clarity grades be improved to a number grade (VS1, VS2, SI1, etc.).
2. **Alternatively, Change GIA's Public Mission Statement, and 2018 IRS 990 filing** (Part I, Line I & Part III, Line 4B) to reflect that GIA's mission is to only ensure the public trust in **Earth-extracted** gems, and publicly acknowledge that GIA does **not** apply the highest standards of laboratory grading of gems of man-made origin.

I respectfully request that the Board of Directors implement one of these actions on or before the upcoming GIA Symposium, 7-9 October 2018.

If of interest to the GIA Concern Reporting Team or GIA Executives, I am happy to discuss further via email, phone, video conference, or even face to face in Carlsbad. I'm willing and able to travel to GIA Headquarters and would cover all of my travel expenses.

I can be reached at jason@adadiamonds.com or +1.650.353.1808.

Sincerely,



Jason Payne
President of Ada Diamonds
GIA Customer
1 Aug 2018

GIA Mission Statement and Lab Diamond Grading

Here are the portions of the IRS 990 Mission Statement (Form 1 Line 1) that pertain to my concern:

- THE INSTITUTE'S MISSION AND MOST SIGNIFICANT ACTIVITIES ARE...
- (B) PROTECTING THE PUBLIC FROM MISREPRESENTATION PERTAINING TO GEMS
- PROMOTING STATE-OF-THE-ART RESEARCH INTO THE TECHNIQUES BY WHICH GEMS ARE MODIFIED TECHNOLOGICALLY OR MANUFACTURED SYNTHETICALLY AND AS IMITATIONS OF GEMS;
- (C) SUPPORTING, PERFORMING, AND PUBLISHING SCIENTIFIC RESEARCH AND ANALYSIS RELATED TO GEMS AND GEMOLOGY AND LEARNING IN RELATED FIELDS.
- GIA'S RESEARCHERS UTILIZE SOPHISTICATED ANALYTICAL TECHNIQUES AND EQUIPMENT TO ADVANCE THE SCIENCE OF GEMOLOGY, AND TO DETECT SYNTHETIC AND ALTERED GEMS

Furthermore, I am concerned that the synthetic diamond grading policy is in violation of GIA's latest Form 990, Part III, Line 4B. Here are the relevant sections of that section:

- LABORATORY: THE MISSION OF THE INSTITUTE'S LABORATORY IS TO PROTECT THE PUBLIC FROM MISREPRESENTATION PERTAINING TO GEMS (WHETHER INNOCENT, NEGLIGENT OR INTENTIONAL),
- TO PROMOTE STATE-OF-THE-ART RESEARCH INTO THE TECHNIQUES BY WHICH GEMS ARE MODIFIED TECHNOLOGICALLY OR MANUFACTURED SYNTHETICALLY.
- THE LABORATORY FULFILLS ITS MISSION BY EXAMINING AND CLASSIFYING INDIVIDUAL GEM MATERIALS SUBMITTED TO THE GIA LABORATORY AND ITS INTERNATIONAL SUBSIDIARIES' LABORATORIES. DIAMONDS AND SYNTHETIC DIAMONDS ARE IDENTIFIED AND GRADED, WITH REPORTS ISSUED ON THEIR PRECISE IDENTIFYING FEATURES AND WITH QUALITY ASSESSMENTS ON THE 4CS: COLOR, CLARITY, CUT AND CARAT WEIGHT.
- COLORED GEMSTONES, SYNTHETIC COLORED STONES, PEARLS AND CULTURED PEARLS ARE IDENTIFIED, WITH REPORTS ISSUED UPON CLIENT REQUEST.
- THE DISTINGUISHING CHARACTERISTICS AND FEATURES OF A GIVEN GEM ARE UNIQUE TO THAT GEM IN MUCH THE SAME WAY A FINGERPRINT IS UNIQUE TO AN INDIVIDUAL PERSON. ONCE A GEM HAS BEEN SUBMITTED FOR EXAMINATION, ITS CHARACTERISTICS AND FEATURES ARE RECORDED FOR FUTURE REFERENCE IN CASE IT IS EVER RESUBMITTED, EITHER IN THE

NORMAL COURSE OF EVENTS OR IN QUESTIONABLE CIRCUMSTANCES, SUCH AS WITH LOST OR STOLEN ITEMS.

- THE SUBSTANTIAL AND CONTINUOUS VOLUME OF GEM MATERIALS THAT ARE SUBMITTED FOR EXAMINATION, TOGETHER WITH THE LARGE COLLECTION OF COMPARISON GEMS ACQUIRED BY GIA, CONSTITUTE AN INVALUABLE DATABASE FOR THE RESEARCH AND PUBLIC SERVICE CONDUCTED BY THE INSTITUTE.

I want to specifically highlight the following section of the 990 (in bold below), as I find it to be a factually incorrect reporting to the IRS that could expose GIA or GIA employees to penalties: ***synthetic diamonds are identified and graded, with reports issued on their precise identifying features and with quality assessments on the 4cs: color, clarity, cut and carat weight.***

Data presented in the Fall 2017 issue of Gems & Gemology, as well as many other GIA publications about lab diamonds [see Attachment #1], reveals that GIA ***is* precisely identifying features of laboratory-grown diamonds** on the highest fidelity 4Cs standards; however, GIA **is choosing to *not* issue Synthetic Diamond Grading Reports containing the precise identifying features of laboratory-grown diamonds on GIA's.**

Furthermore, the FTC unambiguously ruled last week that a laboratory-grown diamond is both #1) a diamond and #2) a gem/gemstone. As such, If "*GIA's mission is to ensure the public trust in gems and jewelry,*" GIA must now grade man-made diamonds on the same criteria as mined diamonds or change it's public mission statement. Why? A lab diamond is a gem, GIA is bound to ensure public trust in gems, and a full fidelity 4C grading report is required for the public to trust diamond gemstones of any origin (lab or mined).

Why GIA's Current Policy Undermines Public Faith in Gems

According to GIA's public Mission Statement, GIA is bound to ensure public trust in lab diamond gems and jewelry.

#1) Ambiguity in 4C Characteristics Damages Faith in Diamond Gems

When GIA insists on ranges of color and clarity for lab diamonds, the public must assume that the worst grade of the range is the color and clarity of the diamond (F,J, M, VVS2, VS2, SI2, I3).

Why? Any reputable gemologist will agree that there is a significant difference between a G vs J color diamond and an I1 vs I3 diamond. A GIA Synthetic Diamond Grading Report would give a G I1 and a J I3 diamond the exact same grading.

The origin of a diamond does not change the fact that the diamond is a diamond. GIA using specific grading for one type of diamond (mined) and grading ranges for another type of diamond (man-made), is *not* ensuring public trust in diamond gems.

Furthermore, a reporting a color and clarity range is reporting a lower quality standard for grading, which confers to the public that a lab diamond is, in the eyes of GIA, not as desirable.

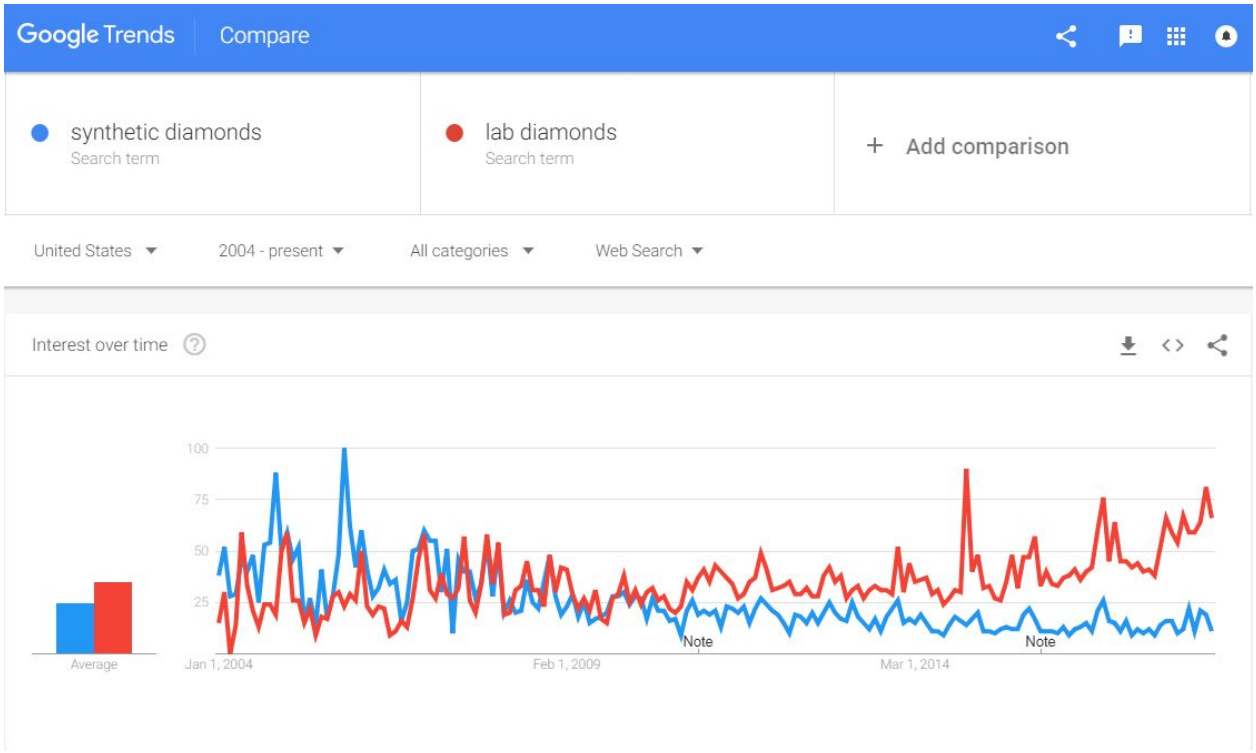
My formal concern is that the insistence on ranges for color and clarity grades of lab diamond gems results in a reduction of public faith in gems, a direct violation of the GIA Mission Statement.

#2) Confusion Between Synthetic and Simulants Damages Public Faith in Lab Diamond Gems

In the FTC's recent update to their jewelry guides, the FTC clearly states *'The record indicates many consumers mistakenly believe "synthetic" means an artificial product such as cubic zirconia, which lacks a diamond's optical, physical, and chemical properties. Given the likelihood of consumer confusion, the final Guides do not include "synthetic" among the examples of terms that marketers may non-deceptively use to qualify claims about man-made diamonds, thus eliminating the contradiction.'*

Furthermore, both Google Search Trends as well as industry trends both show clear movement toward lab diamonds being the most widely accepted term for man-made diamonds.

When you combine the FTC's clear guidance on public confusion about synthetic gems, the clear public preference for lab diamonds over synthetic diamonds, and GIA mission to create public faith in gems, I believe that Board of Directors must modernize GIA's lexicon for lab diamonds, despite how unpopular that may be with portions of the trade.



#3) The Public Increasingly Accepts Lab Diamond Gems

Today, a sizeable minority of the public considers lab diamonds for a jewelry purchase. According to the Knot's 2017 Engagement Survey, 25% of couples considered lab diamonds for their engagement ring. This is a 56% increase in interest in lab diamonds when compared to the 2015 survey.

For GIA is to fulfill its mission statement of ensuring public trust in gems and jewelry, I believe GIA must grade lab diamond gems the same way GIA grades mined diamond gems. See Attachment #3 for more survey data.

Recent Changes to GIA's Diamond Grading Report Policies

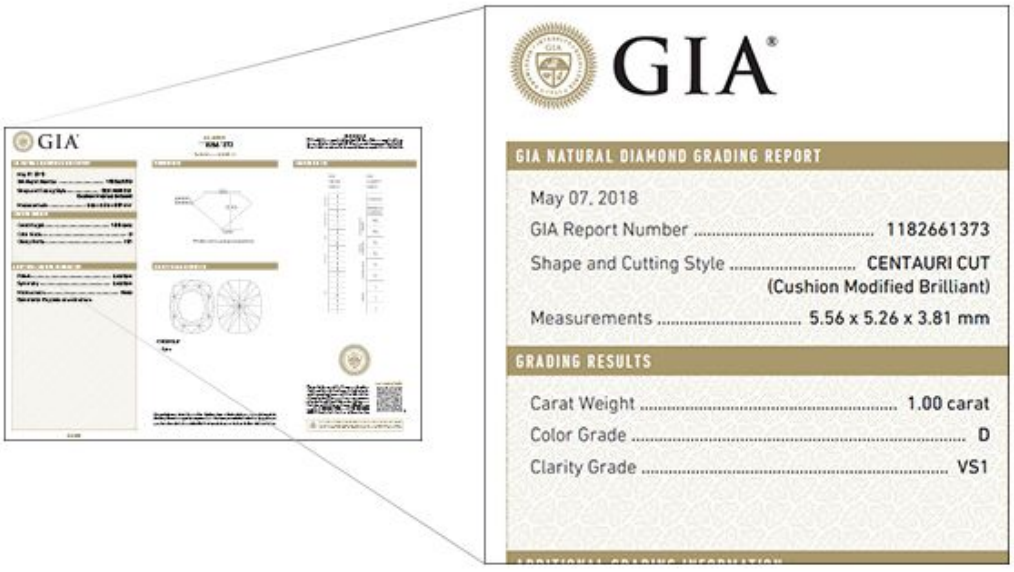
GIA leadership might argue that GIA can't or won't update synthetic diamond grading reports. That argument can be proven incorrect, as GIA has recently (June 2018) changed a policy for diamond grading reports, as discussed in this Rapaport article:

The Gemological Institute of America (GIA) has introduced branded-cut names on grading reports.

Proprietary-cut names will now appear alongside the diamond's shape and a description of its cutting style when the lab returns stones with their grading reports, it said.

The program will be available to members of the trade or public who submit stones directly to the GIA for grading or other laboratory services. The GIA believes the program will help build consumer trust in the industry.

"By including the name of proprietary, branded cuts as part of the shape and cutting description, ***GIA is providing additional information to clients and reinforcing its mission of protecting consumers and ensuring their trust in the gem and jewelry industry,****" the grading lab told Rapaport News.*



GIA's Justification, Code of Conduct, and Provable Damages

Multiple executives at GIA have acknowledged to me, privately, that there are 'inconsistencies' in GIA's lab diamond grading policies that are damaging to GIA's public reputation.

I concur with these executives that the policy is damaging to GIA's long-term reputation. Why? When I explain the lab diamond policy to the public, the typical responses are along the lines of "*oh, so GIA was bought off by the mining industry*," or "*GIA must be in De Beers' pocket*"

To be clear, I do not disparage GIA or GIA's lab diamond grading policy and merely state the information available on GIA's website. See Attachment #2 for Ada Diamonds' publicly available explanation of the GIA lab diamond grading policy.

Current Justification

Part of the publicly available justification for GIA's 2006 lab diamond grading policy is the rarity of lab diamonds: *"Since synthetic diamonds continue to be rare, and to differentiate them from what is reported on grading reports for natural diamonds, only color and clarity ranges are used."*

While lab diamonds were rare in 2006, today, lab diamonds are not as rare. Thousands of carats of gemstone quality lab diamonds are produced and sold every month. Multiple industry experts including Bain, Morgan Stanley, and Citi, have predicted that lab grown diamonds will quickly take 7.5 to 15% of the total diamond jewelry market. I have personally sold millions of dollars of bespoke lab diamond jewelry, including multiple diamonds graded by GIA.

As such, I believe this public justification is no longer accurate.

Furthermore, GIA publicly states that the opinion of the mined diamond industry was a factor in GIA's 2006 lab diamond grading policy: *"When these reports were introduced, there was a range of opinion in the trade about GIA grading synthetic diamonds."*

It is my belief that the FTC and/or the court system could potentially interpret the above quote as an admission of unfair influence by powerful members of the trade that resulted in a biased and anticompetitive decision by GIA.

Given that GIA is the standards body that developed the worldwide standards for diamond evaluation (4Cs), there are potentially antitrust implications if GIA's actions are deemed to be anticompetitive.

Code of Conduct

It is my concern that GIA's lab diamond policy directly contradicts GIA's code of conduct issued by GIA CEO Susan Jacques: *"To truly be the foremost authority in gemology, we must always be an impartial, independent organization. No matter what other changes may come to GIA, we will always be steadfast in our commitment to lead with integrity and the highest ethical standards."*

I believe it is **not** impartial to grade laboratory-grown diamonds on the same criteria but lower fidelity, and I believe the decision is biased by impartial actors in the trade, given public and private statements from GIA officials.

Financial Damages from GIA's Policy

Ada Diamonds, as well as other members of the lab diamond trade, believe there are provable financial damages that arise from GIA's lower specificity grading of lab diamonds.

#1) Ada Diamonds has lost sales to multiple clients that clearly stated in writing that they will only purchase a diamond that has a full fidelity grading report from GIA. They are not willing to accept an IGI or GCAL certificate, and are not willing to accept a low fidelity GIA Synthetic Diamond Grading Report, leading to substantive lost salesperson time and lost revenue for Ada Diamonds.

#2) The pricing for the entire diamond trade, lab and mined, is based on prices established by Rapaport Price List published by the Rapaport Group. The Rapaport Group clearly states that "*Stones with non-GIA certificates may trade at discounts to stones with GIA reports.*"

In a 2014 article published on Rapaport's website, analysis revealed "*Diamonds graded by IGI were listed at a 13 percent discount to the GIA price for the equivalent stone. Uncertified goods in the same category were priced at a 20 percent discount to the GIA, while diamonds graded by EGL USA were priced at an average discount of 30 percent, EGL Israel at a 34 percent discount and EGL Hong Kong at a 42 percent discount to the GIA graded stone.*"

Furthermore, Rapaport pricing for a 1.0ct G I1 diamond is $4,200, where as Rapaport pricing for a 1.0ct J I3 is $1,300. As such, there could be a 323% difference in market price for two mined diamonds graded by GIA, but those same diamonds, if man-made, would receive the same color and clarity on a GIA Synthetic Diamond Grading Reports.

When GIA refuses to give a specific grade for a lab diamond, the market price falls to the lowest value in the range of possible gradings, which damages many members of the trade.

My provable (documented in email) loss of sales due to GIA's policies, the well known and well documented pricing premium for GIA graded diamonds, and the widely promoted/accepted fact that GIA is the most reputable grading laboratory combine to clearly damage Ada Diamonds and other members of the diamond trade in a way that I believe runs afoul of the Sherman Act and/or the Federal Trade Commission Act.

While I personally do not seek litigation against, or financial compensation for the damages my company is incurring, I am aware of multiple corporations in the lab diamond industry that are actively investigating an FTC complaint or legal action against GIA.

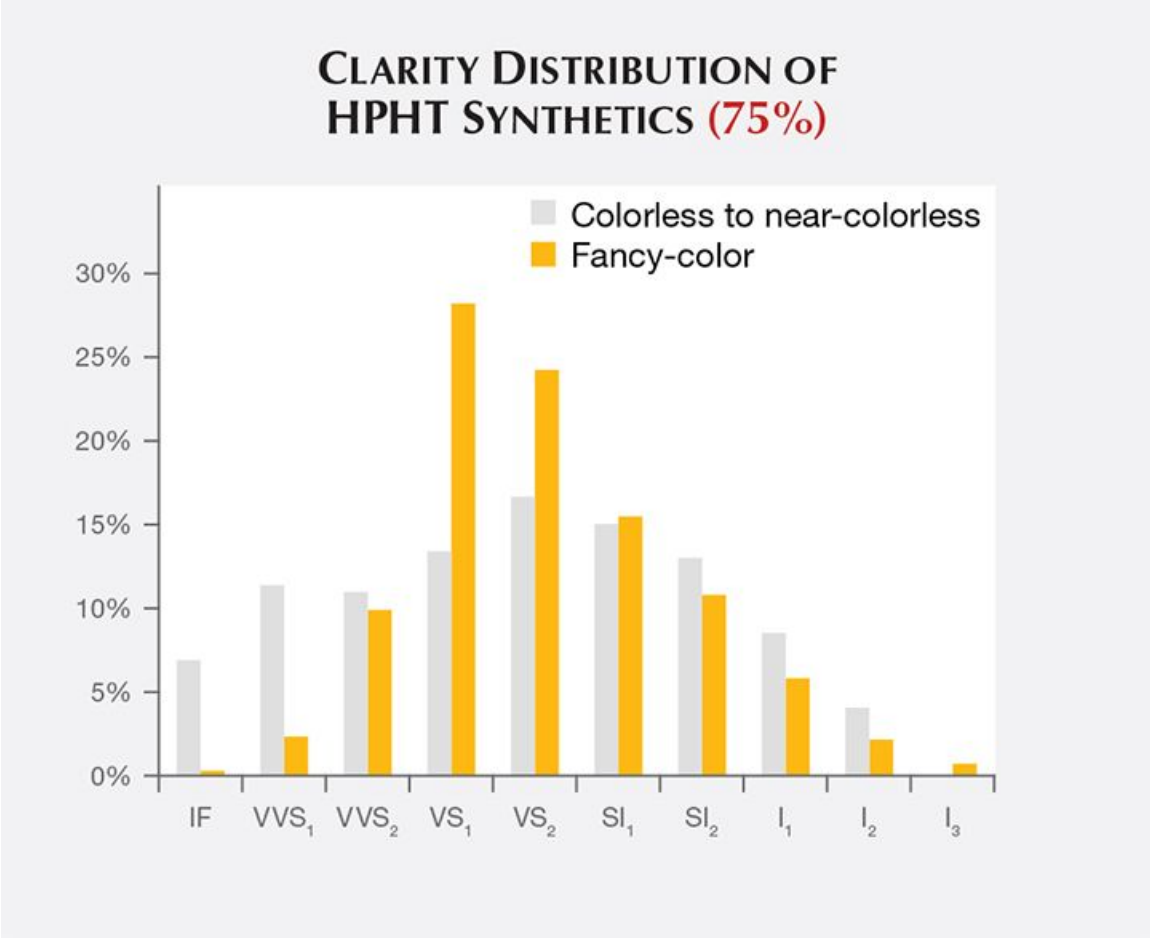
In conclusion, I strongly recommend that the Board of Directors quickly and deeply review their dozen-year-old policies about grading man-made diamonds. While my recommended change to GIA grading may not be popular with many actors in the diamond trade, it would certainly be celebrated by consumers. I believe it is the right decision that will enable GIA to adapt to rapidly growing consumer adoption of man-made gems. I believe it is decision that mitigates the risk of expensive and reputationally damaging investigation or litigation.

[Attachment #1] High Fidelity GIA Grading of Lab Diamonds

Despite GIA's synthetic diamond grading policy, GIA has publicly graded lab diamonds on the same 4Cs as mined diamonds (Letter Color and Number Clarity gradings) many times. My company, Ada Diamonds, has sold at least three lab diamonds that GIA graded with a Letter and/or Number:

- 5.05 D VS2 Heart (GIA Grading)
- 5.27 Fancy Deep Blue VS1 Emerald (GIA Grading)
- 5.03 Fancy Deep Blue VS1 Emerald (GIA Grading)

In fact, GIA publicly stated that 75% of HPHT diamonds have been GIA graded to the highest specificity over the last decade. Below is a GIA produced chart that clearly proves GIA is grading lab diamonds with full fidelity. [*"the percentage shown in red represents the portion of samples for which data are available."*]



Published High Fidelity Lab Diamond Gradings & Analysis from GIA

TABLE 1. Large HPHT synthetic diamonds recently examined by GIA.

Sample	Weight (ct)	Cut	Color (ct)	Clarity
1	5.26	Heart	Fancy Deep blue	VVS_2
2	5.27	Emerald	Fancy Deep blue	VS_1
3	10.02	Emerald	E	VS_1
4	5.06	Round	D	VS_2
5	5.05	Heart	D	VS_2

The largest, at 0.90 carats, was a rectangle cut graded L

A Russian producer, New Diamond Technology, has produced colorless and near-colorless HPHT synthetics as large as 5 carats, Wang noted, displaying a 5.19 ct. K color I1 cut-cornered rectangular shape and a 4.30 ct. D color SI1 cushion shape.

These samples had weights ranging from 0.20 to 5.11 carats, color grades from D to K, and clarity grades from IF to I2.

Thirty-nine (89%) of the samples were found to be colorless (D–F), while four attained near-colorless (G or H) grades and the remaining (and largest) sample was a faintly colored K grade.

NDT11 weighed 1.13 ct and achieved D color and IF clarity grades, marking a major breakthrough in laboratory growth.

Five colorless samples weighed over 2 ct, with clarities ranging from VVS_2 to I_2 (though this improved up to IF for smaller sizes). The 4.30 ct D-color, SI_1 clarity specimen (NDT-B) is the largest faceted laboratory-grown diamond of this color grade available to date

One such specimen, a 1.13 ct round brilliant with a very good cut grade, characterized by D color and IF clarity, was remarkable for its quality.

The HPHT synthetics span nearly the entire clarity scale, but most received grades in the VS1/VS2 range (figure 6). This is slightly lower than the clarity range observed for CVD synthetics, most of which were in the VVS2/VS1 range, and slightly higher than the VS2/SI1 range observed for colorless to near-colorless natural diamonds

The other three samples were colorless (figure 2). The largest one was a 10.02 ct emerald cut with E color equivalent. This stone was Previously Reported In 2015. The round cut weighed 5.06 ct and the heart shape 5.05 ct; both were graded as D color equivalent.

Their clarity ranged from VS_2 to VVS_2, attributed to a few tiny metallic inclusions trapped during diamond growth.

It had VS_1 clarity, with only very small metallic inclusions and a cavity observed at the girdle

TABLE 1. Gemological properties and calculated bulk concentrations of neutral boron (B^0) impurities for 44 HPHT synthetic diamonds produced by New Diamond Technology.

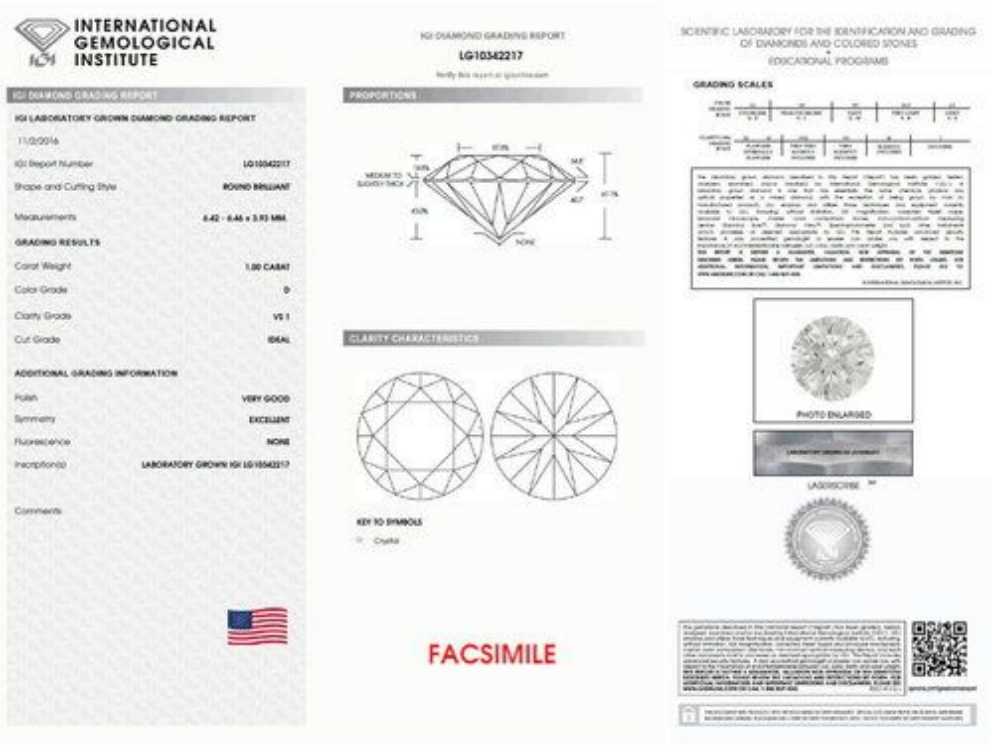
Sample	Carat weight (ct)	Color	Clarity	Cut	Dimensions (mm)	Type	B^0 bulk concentration (ppb)
NDT-A	5.11	K	I_1	Cut-corner rectangular modified brilliant	10.05 × 8.74 × 7.01	IIb	1.2 ± 0.2
NDT-B	4.30	D	SI_1	Cushion	10.29 × 9.76 × 5.39	IIb	7 ± 1
NDT01	2.30	E	SI_1	Cushion	7.30 × 8.48 × 4.85	IIa	nd [a]
NDT02	2.20	E	VVS_2	Heart	8.53 × 7.55 × 5.41	IIb	20 ± 3
NDT03	2.03	F	SI_2	Heart	7.73 × 8.41 × 5.07	IIb	5 ± 1
NDT04	2.02	D	I_1	Pear	7.14 × 10.80 × 4.45	IIb	6 ± 1
NDT05	1.90	F	VS_1	Octagonal	7.65 × 7.68 × 4.58	IIa	nd
NDT06	1.53	D	SI_1	Round	7.18 × 7.26 × 4.60	IIb	2.0 ± 0.5
NDT07	1.53	D	I_1	Round	6.49 × 9.33 × 4.08	IIb	13 ± 2
NDT08	1.50	E	SI_1	Round	7.14 × 7.17 × 4.44	IIb	2.6 ± 0.5
NDT09	1.41	D	VS_2	Square emerald	6.25 × 6.49 × 4.26	IIa	nd
NDT10	1.20	E	SI_2	Round	6.73 × 6.75 × 4.23	IIb	2.5 ± 0.5
NDT11	1.13	D	IF	Round	6.57 × 6.62 × 4.10	IIb	0.8 ± 0.2
NDT12	1.04	E	SI_2	Oval	5.58 × 7.92 × 3.40	IIb	13 ± 2
NDT13	1.03	D	SI_2	Round	6.39 × 6.47 × 3.99	IIb	9 ± 1
NDT14	1.02	F	SI_1	Round	6.45 × 6.49 × 4.06	IIb	58 ± 9
NDT15	1.01	D	VS_2	Oval	5.64 × 7.79 × 3.35	IIb	0.5 ± 0.3
NDT16	1.00	G	I2	Round	6.50 × 6.53 × 3.79	IIb	6 ± 1
NDT17	0.92	E	VS_2	Round	6.04 × 6.07 × 3.96	IIb	1.6 ± 0.5
NDT18	0.90	D	VS_1	Pear	5.38 × 7.78 × 3.38	IIa	nd
NDT19	0.90	D	SI_1	Round	6.15 × 6.18 × 3.78	IIb	5 ± 1
NDT20	0.81	D	VVS_2	Round	5.92 × 5.96 × 3.79	IIb	2.5 ± 0.5
NDT21	0.80	D	VVS_2	Round	6.07 × 6.09 × 3.57	IIa	nd
NDT22	0.80	D	SI_2	Pear	5.34 × 7.78 × 3.17	IIb	9 ± 1
NDT23	0.71	D	VS_1	Round	5.75 × 5.80 × 3.42	IIb	8 ± 1
NDT24	0.71	D	VVS_1	Pear	5.08 × 7.29 × 2.99	IIb	6 ± 1
NDT25	0.64	E	SI_2	Round	5.43 × 5.46 × 3.53	IIa	nd
NDT26	0.58	H	I_1	Round	5.43 × 5.46 × 3.53	IIb	2.5 ± 0.5
NDT27	0.58	E	SI_2	Oval	4.89 × 6.49 × 2.75	IIa	nd
NDT28	0.54	E	SI_1	Pear	4.62 × 6.63 × 2.92	IIb	13 ± 2
NDT29	0.52	E	VS_2	Round	5.09 × 5.11 × 3.31	IIb	9 ± 1
NDT30	0.51	D	VVS_1	Round	5.15 × 5.17 × 3.90	IIb	6 ± 1
NDT31	0.50	E	SI_2	Round	5.08 × 5.12 × 3.10	IIa	nd
NDT32	0.48	D	VVS_2	Round	5.11 × 5.14 × 3.06	IIa	nd
NDT33	0.47	H	IF	Emerald	3.93 × 4.71 × 2.67	IIb	33 ± 5
NDT34	0.43	F	I_1	Round	4.78 × 4.80 × 2.99	IIb	3.7 ± 0.5
NDT35	0.43	D	VS_1	Pear	4.38 × 6.22 × 2.66	IIb	20 ± 3
NDT36	0.38	F	I_1	Round	4.70 × 4.73 × 2.83	IIb	1.8 ± 0.5
NDT37	0.37	D	I_1	Marquise	3.90 × 7.64 × 2.24	IIb	25 ± 4
NDT38	0.31	E	VS_2	Round	4.35 × 4.37 × 2.63	IIb	18 ± 3
NDT39	0.30	E	I_2	Round	4.34 × 4.36 × 2.59	IIb	1.6 ± 0.5
NDT40	0.28	F	VVS_2	Round	4.15 × 4.17 × 2.60	IIb	13 ± 2
NDT41	0.24	D	SI_1	Round	4.09 × 4.11 × 2.41	IIb	3.3 ± 0.5
NDT42	0.20	G	VS_1	Round	3.70 × 3.69 × 2.33	IIb	33 ± 5

[a] *"nd" indicates that boron was not detected.*

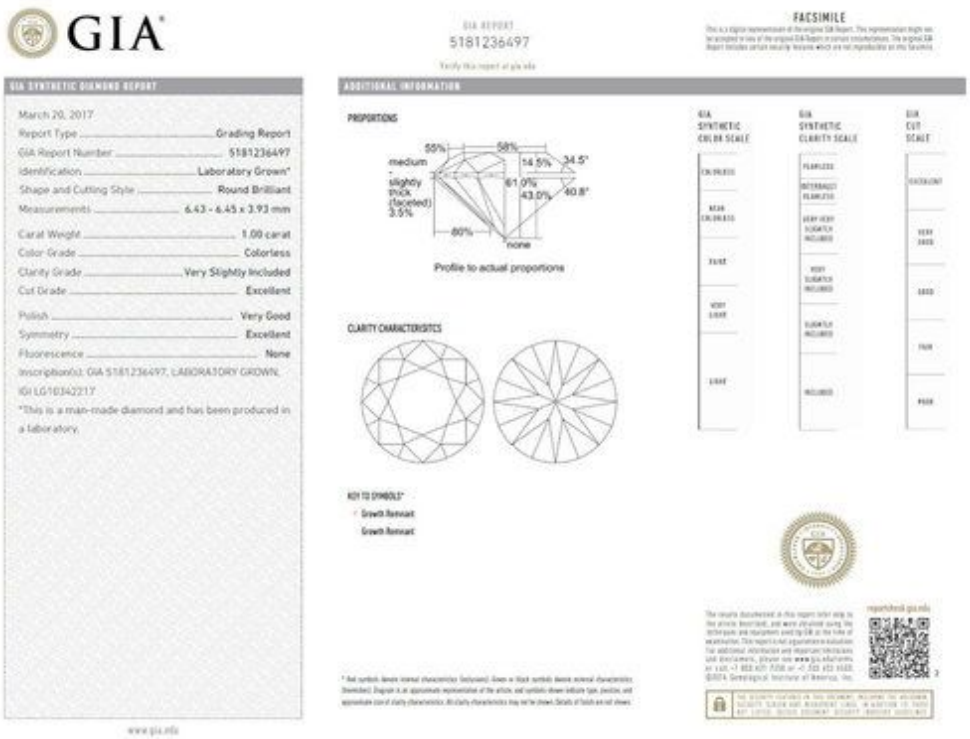
[Attachment #2] Ada Diamonds Public Explanation of GIA's Policy

When asked about GIA's policy, we refer our clients to this page and the explanation pasted below. https://www.adadiamonds.com/four-cs-of-lab-diamonds

- Many of Ada's fancy colored lab diamonds (blues, pinks, yellows) are graded by GIA; however, Ada's colorless lab diamonds are most commonly graded by IGI. The reason that we do not regularly use GIA for our colorless lab diamonds is that GIA made a business decision 2006 to not grade lab diamonds as specific as a grading by IGI or GCAL. GIA will only say that a lab diamond is colorless, not D, E, or F color. GIA will say a diamond is Very, Very Slightly Included, but not VVS1 or VVS2.
- Why did GIA make the decision to not grade lab diamonds with full specificity? GIA has publicly stated two justifcations for their decade old policy:
    1. *"Since synthetic diamonds continue to be rare, and to differentiate them from what is reported on grading reports for natural diamonds, only color and clarity ranges are used."*
    2. *"When these reports were introduced, there was a range of opinion in the trade about GIA grading synthetic diamonds."*
- In the past, GIA has produced full specificity grading reports for some of the largest lab grown diamonds ever produced. However, for stones below 5ct, GIA has refused to offer full fidelity grading, despite heavy interest from sophisticated consumers.
- If a GIA grading is important to you, we are happy to send a diamond of your choice to GIA to have it graded a second time. It normally takes them a few weeks to return the diamond along with their grading report. Below is an example of a lab diamond that was first graded by IGI and then by GIA.



1.0ct Ideal Cut D Color VS1 Clarity by IGI



The same diamond as graded by GIA

[Attachment #3] Lab Diamond Predictions & Survey Data

Industry experts unanimously predict significant market penetration of lab diamonds in the years ahead, including Morgan Stanley, Bain, and Citi:

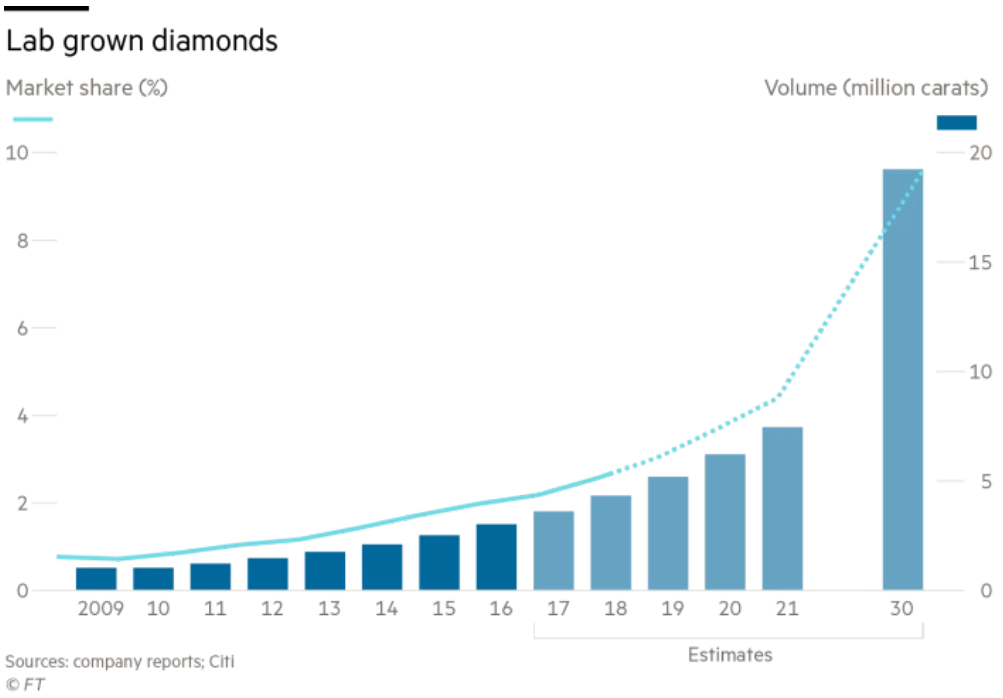
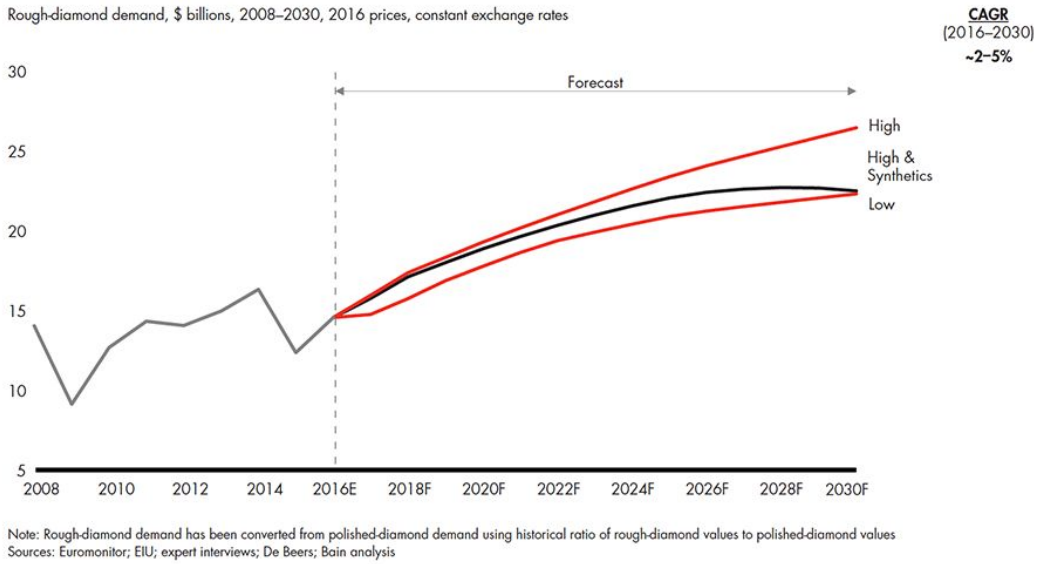
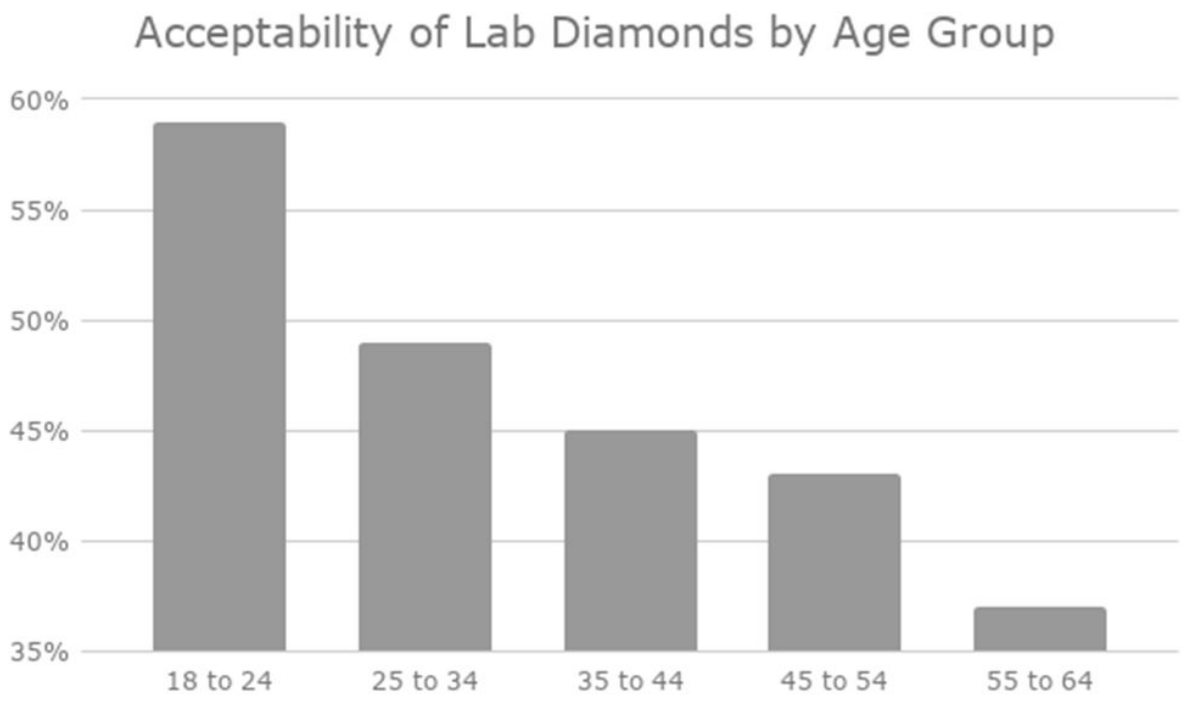


Figure 39: Global demand is expected to grow 2% to 5% per year



Furthermore, surveys provide clear evidence that the American consumer is increasingly aware of and considering lab diamond gems:

- *“25% of grooms considered purchasing lab-grown diamonds for the center stone of an engagement ring (up from 16% in 2015)”*
- *16% of American consumers consider lab diamonds real, and 16% more are not sure*
- *"Almost half the respondents—45 percent—said they wouldn’t mind receiving a lab-grown diamond”*



[Attachment #4] Retaliation Concern

I have been invited to present the below abstract at the upcoming GIA Symposium.

Out of an abundance of caution and a deep desire to educate gemologists from around the world on the functional uses of diamond to improve humanity, I do want to flag for the Concern Reporting Team that I would view a retraction of my abstract as a violation of the *"GIA policy prohibits retaliation against anyone for reporting or inquiring about potential breaches of GIA policies or for seeking guidance on how to handle suspected breaches."* (Source)

Beyond Gemstones: the Medical, Industrial, Scientific, and Computational Applications of Lab Diamonds

Many gemologists know that there are important technological applications for laboratory-grown diamonds; however, it is less well-understood how broad the non-gemological uses really are or why diamond is the ideal material for each use case. This presentation will review modern industrial applications of laboratory-grown diamonds including surgical tools, tumor detection, orthopedic implants, water purification, industrial tooling, compound refractive energy focusing, Fresnel lenses, high-pressure anvils, sound reproduction, deep space communication, high-power electronics, quantum computing, long-term data storage, AC/DC conversion, electrical vehicle efficiency, and more.

These applications are rooted in the less-frequently discussed gemological properties of diamonds that make diamond a 'supermaterial.' Biological, thermal, mechanical, optical, acoustic, and electrochemical properties of diamond will be introduced. Specific properties discussed will include thermal conductivity, Young's modulus, breakdown field, band gap, and saturated electron drift velocity. Furthermore, the utility of diamond defects such as nitrogen-vacancies, and boron will be explored.

In addition to discussions about functional monocrystal diamonds, two unnatural forms of functional diamond will be discussed: polycrystalline diamond (PCD) and diamond like carbon (DLC).

Many of the functional diamonds discussed, including PCD and DLC, will be available for hands-on examination as part of the presentation.