



Supply Chain Sustainability Study

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For the Corporation of the City of London



Agenda

1. About the laptop
2. Key components
3. Summary
4. Recommendations

The laptop in question



Item	Manufacturer
CPU	Intel
RAM	Samsung
Storage	Samsung
Sound	Realtek
Chipset	Intel

From your desktop to mine



FROM THIS

CASSITERITE

Tin oxide mineral with the symbol SnO_2 .

It has been the most important source of tin throughout history, and is where most of today's tin still comes from.

It can also be used as a gemstone, with its beautiful and unique crystals.

50	73	74	79
Sn	Ta	W	Au
Tin	Tantalum	Tungsten	Gold

TO THIS

GOLD

Pins in processors are often made of gold, because it's conductive but not corrosive.

TIN

Often used as a replacement for lead in printed circuit boards and processors, and used to solder pieces together with devices.

TANTALUM

The key ingredient in tantalum capacitors, which can be used in devices that require high performance in a small amount of space, like laptops.

TUNGSTEN

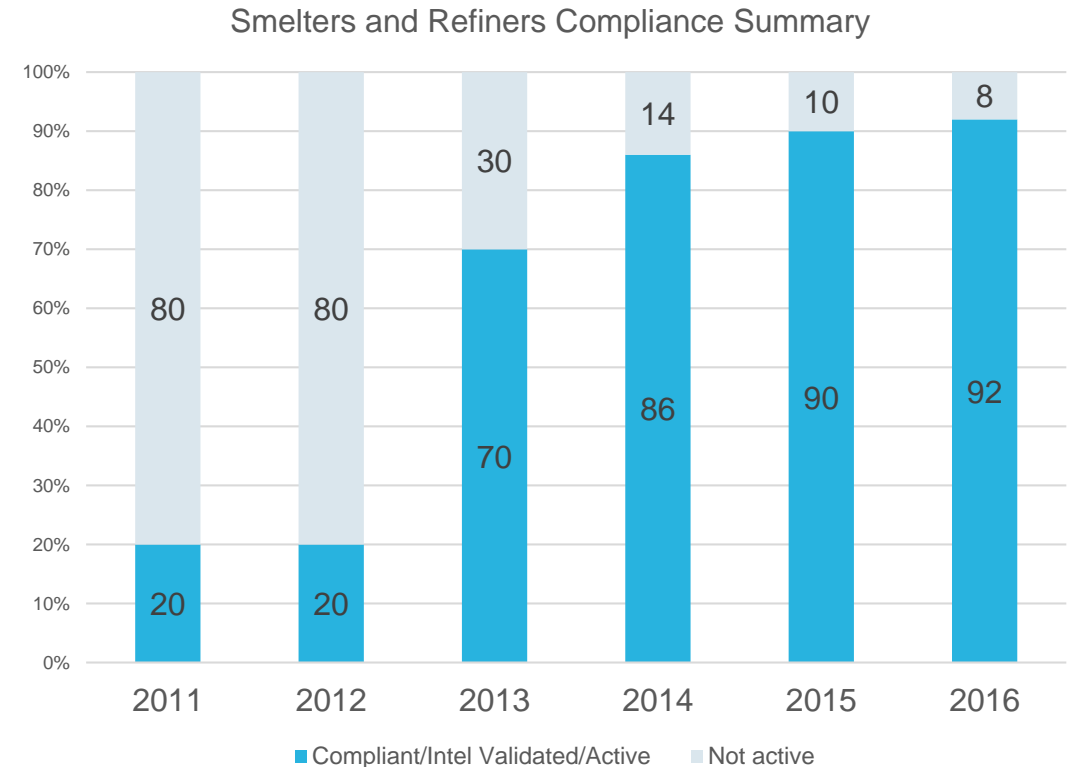
Because of its chemical properties, it's used to conduct electricity in integrated circuits and metallic films.

Intel

Conflict Mineral Smelters and Refiners Compliance

263 (approximately 92%) of the smelters and refiners in Intel's supply chain have either:

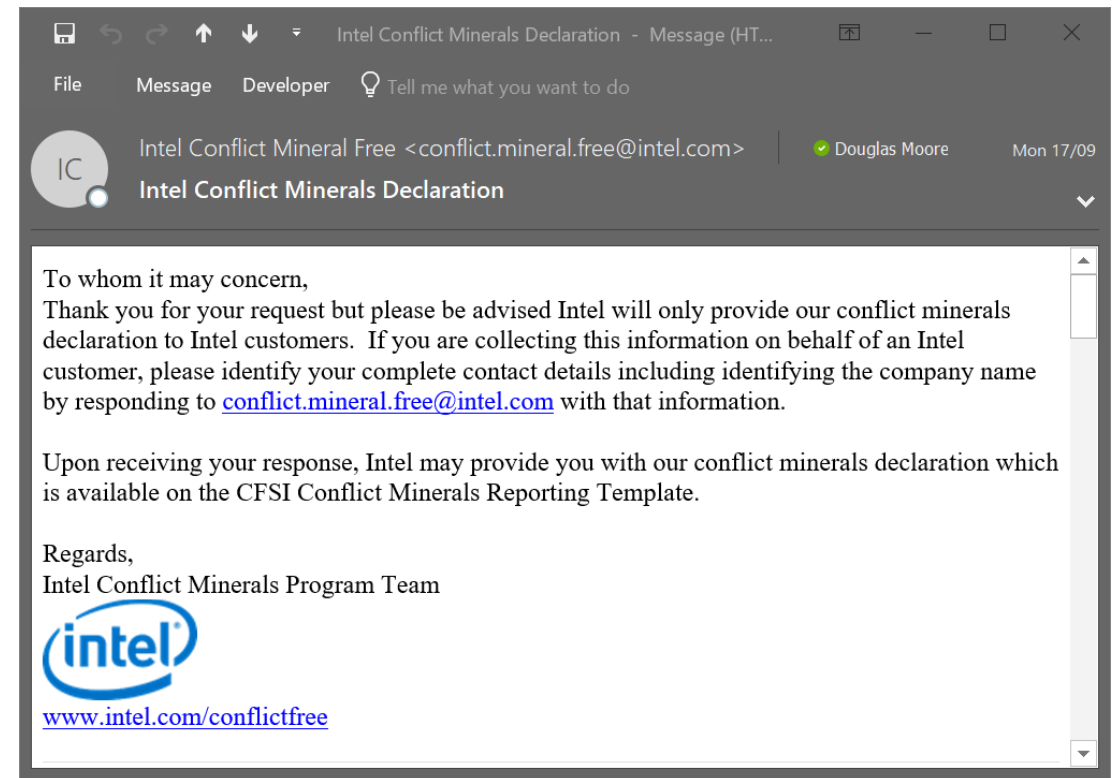
- (i) received a conflict-free designation from an independent third party audit programme,
- (ii) begun participating in such a programme or;
- (iii) have been determined to be conflict-free (through our own due diligence).



Intel

Intel's 14 nm process and lead system-on-a-chip (SoC) product are now qualified and in volume production, with fabrication facilities in Oregon (2014), Arizona (2014), and Ireland (2015).

Intel don't release details about the source of the minerals involved in the manufacturing of their chips, unless you are a direct customer of Intel.

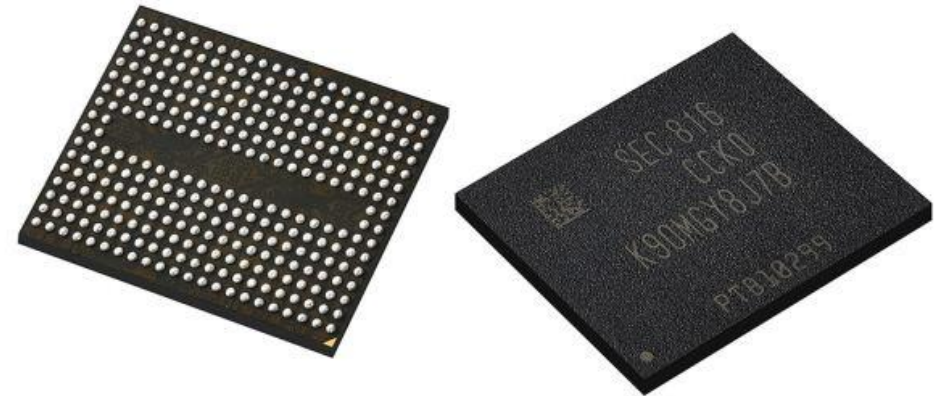


Samsung

The chips manufactured by Samsung that are used in the laptop form two key components;

- Solid State Disks
- DDR RAM

The manufacturing process and functions of the semiconductors are similar to those used by Intel.

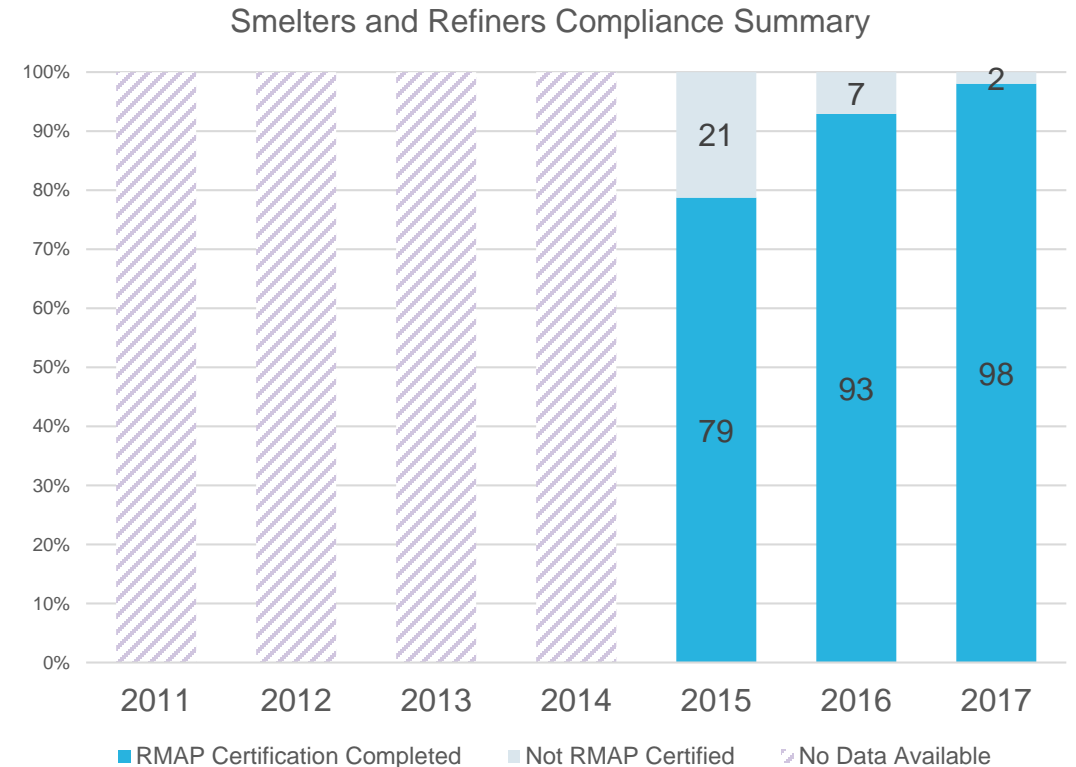


Samsung

Conflict Mineral Smelters and Refiners Compliance

255 of the smelters and refiners in Samsung's supply chain, approximately 98%, have either;

- received a conflict-free designation from an independent third party audit program
- begun participating in such a program,
- or through our own due diligence been determined to be conflict-free.



Realtek

Realtek are the worlds largest manufacturer of on-board audio semi-conductors. They have an estimated market share of 50-60%.

We encountered difficulty in confirming any information about Realtek, and the company is less transparent in its Conflict Mineral sourcing than its peers.

They do not appear to be following the Responsible Minerals Assurance Process and we suspect they should use more robust auditing to ensure their supply chain is sustainable.

“Realtek's suppliers are required to provide a Conflict Mineral Policy Statement and written certificate that no minerals from conflict-affected locations are used in the manufacture of Realtek products, thereby assuring that Realtek products contain no conflict minerals.”

Lenovo

All Lenovo global manufacturing locations are ISO 9001 (quality), ISO 14001 (environmental) and OHSAS 18001 (health and safety) certified. In addition to this, Lenovo states “all key procurement personnel are trained semi-annually on sustainability concerns” to ensure that sustainability risks are removed from the supply chain.



Lenovo

Conflict Mineral Smelters and Refiners Compliance

82% of the smelters and refiners in Lenovo's supply chain have either received a conflict-free designation.

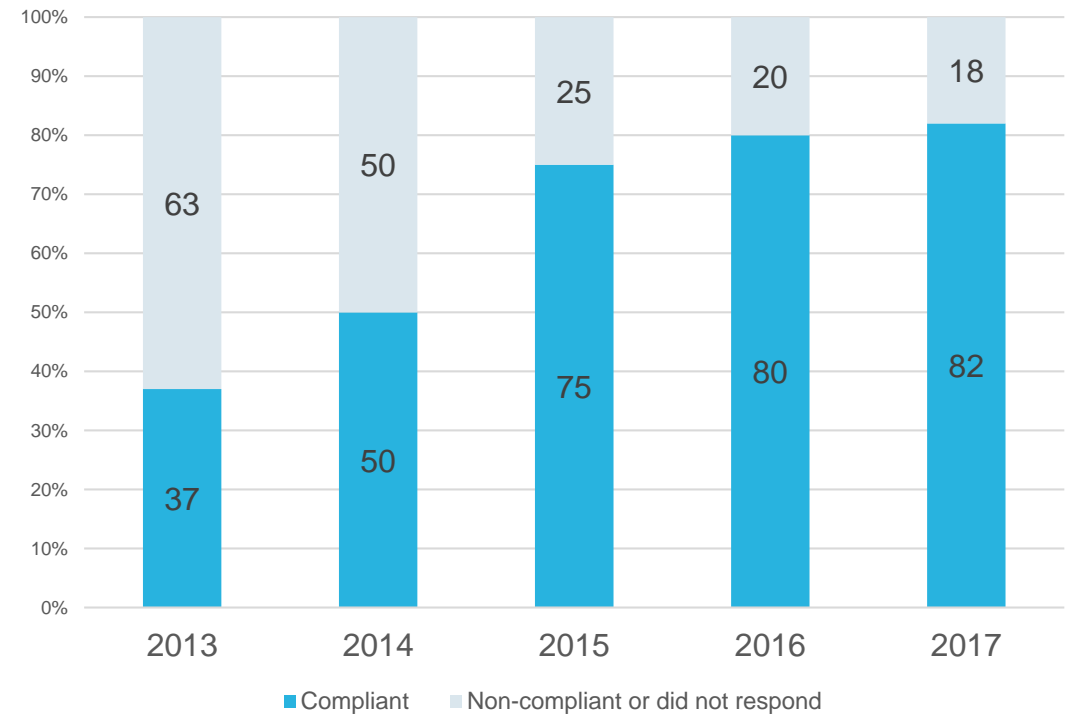
Lenovo stated that;

"2017 was limited due to two causes;

- First, we on-boarded several new suppliers who did not have robust conflict mineral DD programs.*
- Second, several previously compliant SORs became non-conformant during the year.*

Lenovo will take further steps in calendar year 2018 to improve our efforts and to continue our results. We have a goal of improving our overall conflict-free posture to 90% by end of CY2018."

Smelters and Refiners Compliance Summary



Lenovo

ILO Declaration on Fundamental Principles and Rights at Work

Lenovo is a signatory to the U.N. Global Compact, committing to the [10 principles](#) of human rights, labor, the environment and anticorruption.

Lenovo states that it manages all operations consistent with the spirit and intent of the U.N. Universal Declaration of Human Rights and the International Labor Organization (ILO) [Declaration on Fundamental Principles and Rights at Work](#).

Audit data on performance against these commitments was not made available or in the public domain.

Agilisys cannot confirm compliance with these statements.

Lenovo

Occupational Safety and Health

All Lenovo manufacturing locations are OHSAS 18001 certified by [Bureau Veritas](#).

Lenovo also conducts regular site and corporate self-assessments using [Responsible Business Alliance](#) (RBA) templates. The results of the risk assessments are documented on this page.

Agilisys was unable to review any of the actual audit data, and our visibility was limited.

Facility Name	Score (%)	Risk Rating
Lenovo Corporate	94.4	Low
LCFC (Hefei, China)	86.8	Low
Wuhan Plant	90.4	Low
Beijing Plant	93.6	Low
Chengdu Plant	95	Low
Huiyang Plant	94.1	Low
Shanghai Plant	93.7	Low
LIPC (Shenzhen, China)	94.1	Low
LSTC (Shenzhen, China)	94	Low
USFC (Whitsett, N.C., U.S.A.)	85.1	Low
Monterrey, Mexico	88.2	Low
Pondicherry, India	91.4	Low
Indaiatuba, Brazil	89.2	Low
NEC (Yonezawa, Japan)	90.8	Low

Lenovo Risk Assessment Data for FY 2017/18

SCC

The distributor of this laptop was SCC. Laptops may be shipped direct from the manufacturer, or from the distributor warehouse in the UK. We reviewed their delivery supply chain to identify any risks.

Company	Overview	Risk
TNT	Part of the FedEx group. Documented corporate social responsibility policies. However, lacks detail on carbon footprint, and emissions.	Very Low
Bonds Worldwide	Small UK company, based in Birmingham.	Low
UK Mail	Part of DHL. Target of “zero emissions” by 2050. Offers suppliers training in 26 languages on DHL’s Global Code of Conduct that covers human rights.	Very Low
Paul Ponsonby Limited	Small UK company, based in Birmingham.	Low



Summary

Report Summary

Should the City of London be concerned about the supply chain sustainability of Lenovo laptops and the sourcing of minerals?

Not at this time.

Following the procurement responsibility programme, we can confirm that Lenovo and key component manufacturers (such as Intel) use international standards to maximise their supply chain sustainability. This doesn't mean we should be complacent, or that improvements can't be made. There is a general lack of transparency beyond the key component manufacturers. Third party auditing might highlight issues that are not visible to Agilisys at this time.

Contents Summary

- What we've learnt from this investigation.
- Areas that the industry could improve upon.
- Recommendations for further supply chain reviews.
- How intelligent procurements could drive sustainability.

What we've learnt

Growing Importance

Supply chain sustainability is important to the producers of commodity IT goods.

Manufacturers are increasingly pro-active, and self reporting forms a significant element of their annual disclosure to investors.

Standardised Reporting

The embrace of programs such as the Responsible Minerals Initiative Assurance Program (RMAP) allows buyers to compare the supply chain of electronic manufacturers, without the need for bespoke auditing.

Further to go...

The information provided by manufacturers has limited depth, and true transparency is not available at this time.

Areas that could be improved upon

Toxic Chemicals

The chemicals used to fabricate semiconductors are toxic. 43% of Intel's waste is classified as hazardous.

There is very little information published by manufacturers (Intel, Samsung, AMD).

Water Wastage

Semiconductors fabrication also uses a large volume of water.

Fabrication technologies that reduced the amount of water used in the manufacturing process would benefit the environment.

Recommendations for further supply chain reviews

- Undertaking a detailed supply chain review can be resource intensive and requires a combination of specialist skills, knowledge and proficiency in foreign languages.
- Business relationships are required to get access to detailed information that will support an investigation relating to a specific enquiry.
- If the authority wished to conduct its own review of other IT equipment, Agilisys recommends they use a combination of personnel who have the following skills;
 - an understanding of the finished product, possibly with a background in manufacturing,
 - an understanding of chemistry, the chemicals and raw materials used in the product components,
 - and knowledge of which chemicals and raw materials are at a higher risk of sustainability issues.

How could intelligent procurements drive sustainability?



Score the tenders based on supplier RMAP compliance

The use of the RMAP standards across suppliers allows comparison between vendors. As these often form part of SEC filings, you can be confident of the information.



Refresh cycles and flexible working has an impact on the environment

Not all laptops are not designed to be upgraded or fixed. Awarding points for modular designs, and longer warranties will reduce waste.



Request carbon neutral shipping

While the end buyer can't directly influence the distant supply chain shipping methods, it can specify the last mile. Make it a requirement for carbon neutral shipping.



Leverage buying power

Each manufacturers was keenest to support this investigation when they believed it might lead to a sale. In the absence of an immediate purchase opportunity they become disinterested.




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What are RMAP Conformant Smelters & Refiners

Smelters and refiners on the Active list are participants in the RMAP and have committed to undergo a Responsible Minerals Assurance Process (RMAP) assessment. Smelters and refiners are identified as Active in the RMAP once they have scheduled the assessment date.

Smelters and refiners on the Active list are at various stages of the assessment cycle, anywhere from scheduling the assessment date to undergoing the assessment enacting corrective actions in the post-audit phase. The time it takes a smelter to complete an assessment cycle varies, the average time is approximately nine months. During this time, RMI will not share details about a smelter's progress, in accordance with provisions in the AECI.

Companies can be removed from the RMAP Active List for a number of reasons: if the company is deemed by the RMAP to be delaying an assessment, corrective action completion, or re-assessment for more than 90 days; not progressing to the next steps in the assessment process within a reasonable timeframe; or unresponsive for 45 days.



[Link to all Conformant Smelters](#)