

::PULZE:: THE ANATOMY OF SOMETHING BETTER

:: WHAT IS HEATED TOBACCO?

Heated tobacco is a **potentially reduced-risk alternative to smoking**

Previously, burning tobacco - the main cause of smoking-related diseases - was the only way to consume the nicotine present in cigarettes

This new technology heats up a specially designed tobacco 'rod' to a defined temperature, either 315°C or 345°C, both of which are significantly lower than the 900°C reached by the burning tip of a conventional cigarette

Heating – not burning – ensures that nicotine and flavours are released from the tobacco, whilst our initial research suggests this aerosol also contains significantly **fewer HPHCs** (Harmful and Potentially Harmful Chemicals) **than cigarettes**

Unlike a cigarette, Pulze does not create harmful smoke. Instead, it produces a potentially less harmful vapour which the user inhales



:: WHAT IS PULZE?

Pulze is our **cutting-edge heated tobacco device**



PUFF SENSOR TECHNOLOGY™

Pulze monitors the number of puffs users take, helping maintain the device's performance. It also lets users know when the end of a session is approaching and allows them to activate the 'Extra Time' mode if available

LED INTERFACE

Shows current battery status and heating mode



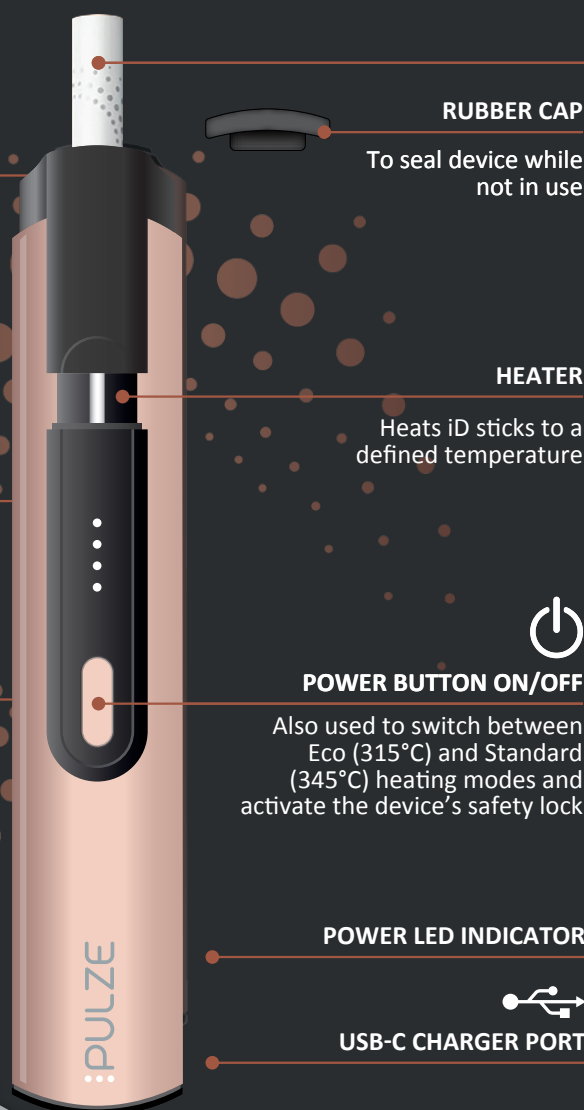
BATTERY

1340 mAh, allows up to 20 consecutive uses between charges



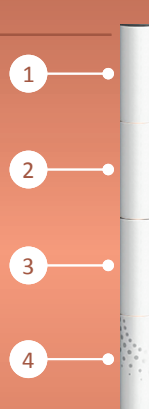
ON-THE-GO CLEANING TOOL

iD sticks may leave some tobacco residue on the rod, or in the heater cavity. As well as this discreet tool, Pulze also comes with a larger version when more comprehensive cleaning is required



iD

TOBACCO ROD (iD STICK)



- Made from **tobacco**, with **no synthetic additives**



- Flavours include regular **tobacco**, **menthol**, **mint** and **mint crushball**

1. TOBACCO

Wrapped in aluminium foil, ensuring iD sticks cannot be smoked like conventional cigarettes

2. BORE FILTER

Creates a pressure drop in the tobacco, mixing the nicotine and vapour for a smoother experience

3. VENTILATED SPACER

Ventilation cools the vapour with ambient air and adds structure to the stick

4. MOUTHPIECE FILTER

iD sticks include a range of filters, including triple bore and a 'crushball', which can be squeezed to release a menthol flavour



AUTHENTIC
TOBACCO



LESS SMELL



NO ASH



POTENTIALLY UP TO
96% LESS
TOXICANTS¹ THAN
CIGARETTES

¹Internal data, Imperial Brands 2019. Full pre-clinical assessment to be published in due course

FOR SCIENTIFIC AND TRADE PURPOSES ONLY. THIS PRODUCT IS NOT CURRENTLY AVAILABLE FOR SALE IN THE US

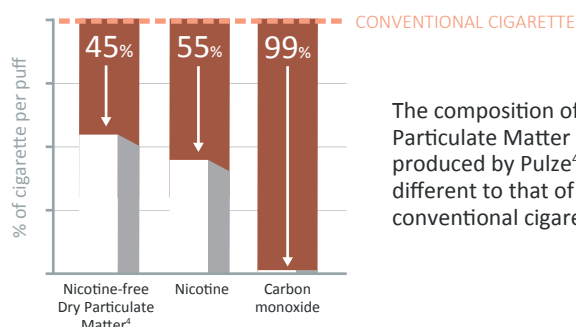
THE SCIENCE OF PULZE

TOXICANTS

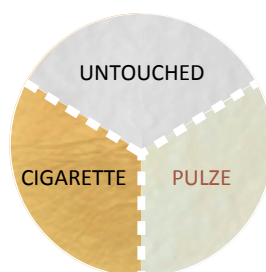
Our initial research suggests Pulse vapour contains substantially **lower levels** (on average 96%²) of **select harmful toxicants** than conventional cigarette smoke



TPM



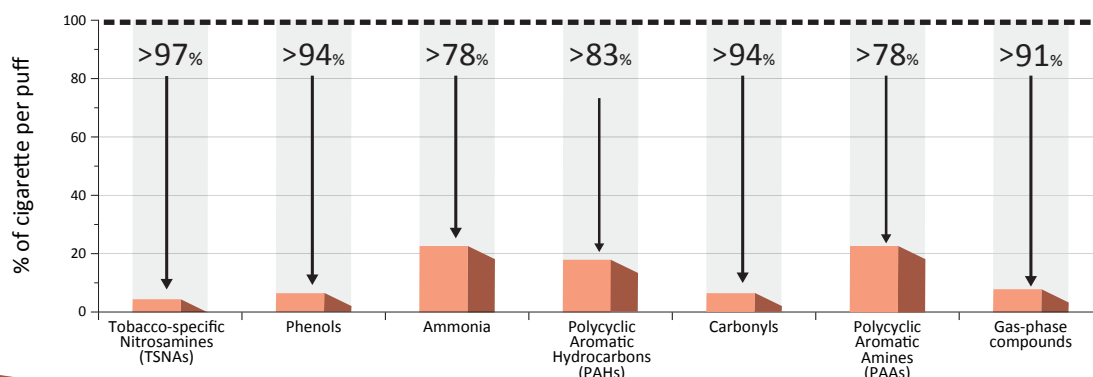
The composition of the Total Particulate Matter (TPM) produced by Pulse⁴ is strikingly different to that of a conventional cigarette



CHEMICAL COMPOSITION

Heating – not burning – tobacco means **Pulse vapour has a markedly different chemical composition** to conventional cigarette smoke, and this is reflected in the contrasting residue captured by a Cambridge filter pad

HPHCs



CONVENTIONAL CIGARETTE

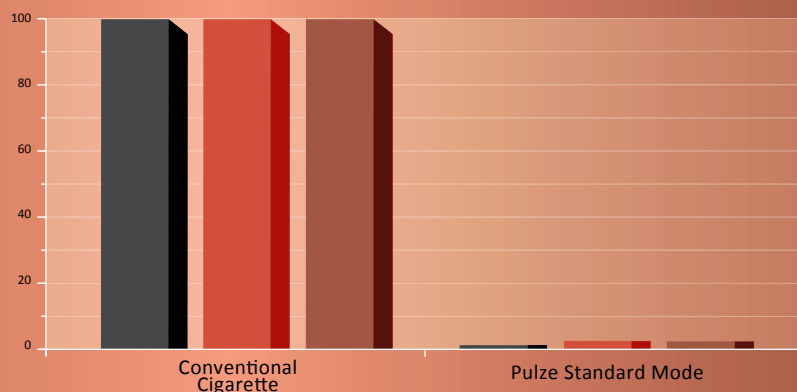
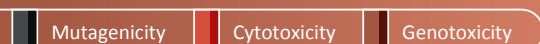
Pulse vapour potentially produces up to **97% lower levels of HPHCs** than conventional cigarette smoke⁵

MUTAGENICITY, CYTOTOXICITY & GENOTOXICITY

We use recognised regulatory methods to perform mutagenicity, cytotoxicity and genotoxicity testing on our products.

We use them to assess the impact of Pulse vapour on cell viability and/or growth rates, as well as the possibility of causing DNA mutation or genetic damage.

Our initial analysis of Pulse vapour demonstrated a potential reduction of **between 98 and >99%⁶ in all 3 tests** compared to conventional cigarette smoke



We don't test on animals, and are committed to driving improved product standards across the heated tobacco category to build trust with regulators, retailers and consumers. Through products backed by science, we are creating something better for the world's smokers. Find out more about our research by visiting www.imperialbrandsscience.com and following @ImperialBrands on Twitter

We believe heated tobacco offers **Something Better** for the world's smokers

²Internal data, Imperial Brands 2019

³The NFDPM produced by Pulse is principally comprised of glycerol

^{4,5,6}Internal data, Imperial Brands Science 2019