E-CIGARETTES

A LANDSCAPE STUDY

October 29, 2018
Interactive Analytics Dashboard Customized For Your Needs
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- Patent Records
- Portfolio Analyst
- Product Mapping
- Litigation Status
- Search Strategy
This is a sample report

Please contact us if you would like to order a custom report on e-cigarettes with a comprehensive patent taxonomy, our detailed analysis, competitor mapping, and much more.

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Mergers & Acquisitions

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Exemplary Products on Cannabis-related e-cigarette devices

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References
Objective

This report reviews the market, IP coverage, product development, clinical trials, regulatory environment, litigation events, M&A activity related to electronic cigarettes (E-cigarettes)
Executive Summary

*Not part of the sample report. Please contact us if you would like a live report*
E-Cigarettes: A Patent Timeline

- 2003: Chinese pharmacist, Hon-Lik, files for a e-cigarette patent (Application number: WO2004080216)
- 1963: Smokeless non-tobacco cigarette was invented by Herbert A. Gilbert (Patent number: US3200819)
- 2006: Umar and Tarid Sheikh file for cartomizer patent (Patent number: GB2465247)
- 2012: Ruyan Holdings and Fonten Ventures initiate legal proceedings in California
- 2015: Patenting activity intensifies for modular devices and Cannabis/THC-based e-cigarettes
- Future: It is predicted that e-cigarettes market will grow rapidly leading to increased patent filings in multiple jurisdictions
E-Cigarette

Introduction

• An electronic cigarette is a device comprising a battery, an atomizer, and an inhaler, which provides similar experience of tobacco smoking without inhalation of smoke.

• The device is filled with solution containing nicotine or nicotine free liquid, which is heated and converted into vapor, and inhaled, and is considered less harmful as compared to conventional cigarettes.

• Presently, this device is being recognized as an alternative to conventional cigarettes, as it offers benefits such as zero smoke, no pollution, reduces health-related problems, and can be smoked at public places.
Evolution of E-Cigarettes (1 of 4)

Evolution of the e-cigarette

Generic combustible tobacco cigarette  Second generation e-cigarette  Third generation e-cigarette

First generation e-cigarette

Shown to demonstrate approximate scale

Source: National Academies of Sciences, Engineering and Medicine, Public Health Consequences of E-Cigarettes

First-generation
First-generation e-cigarettes tend to look like tobacco cigarettes and are called "cigalikes".

Components of First-generation
The common parts of an e-cigarette include a cartridge, an atomizer, and a battery.
Second generation devices tend to be used by people with more experience.

Second generation are larger overall and usually consist of two sections, basically a tank and a separate battery.
Evolution of E-Cigarettes (4 of 4)

The third-generation includes mechanical mods and variable voltage devices.

Battery sections are commonly called "mods". Mechanical mods do not contain integrated circuits.

Third-generation

Components of Third-generation
Types of Heating Elements

- Atomizer and tank
- Cartomizers
- Clearomizers
- Rebuildable atomizers
- Squonk mods
E-Juice

The E-liquid nicotine or the “E-Juice” contained in the cartridge is a solution of propylene glycol and/or vegetable glycerine, distilled water, artificial flavouring and nicotine.

E-Juice is categorized by the following flavour types:

- Tobacco
- Botanical
- Fruit
- Sweet
- Beverage

Source: https://www.dentalcare.com
Patent Filing Trends

*Not part of the sample report. Register to access our Live report*
<table>
<thead>
<tr>
<th>P. No.</th>
<th>Title</th>
<th>Assignee</th>
<th>Count of Citing Patents</th>
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<tbody>
<tr>
<td>US5894841A</td>
<td>Dispenser</td>
<td>Injet Digital Aerosols Ltd</td>
<td>761</td>
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<tr>
<td>US7726320B2</td>
<td>Tobacco-containing smoking article</td>
<td>British American Tobacco</td>
<td>646</td>
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<tr>
<td>US4735217A</td>
<td>Dosing device to provide vaporized medicament to the lungs as a fine aerosol</td>
<td>Procter &amp; Gamble</td>
<td>616</td>
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<tr>
<td>US5060671A</td>
<td>Flavor Generating Article</td>
<td>Altria Group</td>
<td>584</td>
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<td>US4922901A</td>
<td>Drug delivery articles utilizing electrical energy</td>
<td>R. J. Reynolds Tobacco Co.</td>
<td>536</td>
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<tr>
<td>US5322075A</td>
<td>Heater for an electric flavor-generating article</td>
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<td>478</td>
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<tr>
<td>US5934289A</td>
<td>Electronic smoking system</td>
<td>Altria Group</td>
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<tr>
<td>US8156944B2</td>
<td>Aerosol electronic cigarette</td>
<td>Imperial Brands</td>
<td>442</td>
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<td>US5666977A</td>
<td>Electrical smoking article using liquid tobacco flavor medium delivery system</td>
<td>Altria Group</td>
<td>439</td>
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<tr>
<td>US7832410B2</td>
<td>Electronic atomization cigarette</td>
<td>Imperial Brands</td>
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<td>US5591368A</td>
<td>Heater for use in an electrical smoking system</td>
<td>Altria Group</td>
<td>424</td>
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<tr>
<td>US6095153A</td>
<td>Vaporization of volatile materials</td>
<td>Vapir Inc.</td>
<td>420</td>
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</tbody>
</table>
Selected E-Cigarette Brands in the Market

- SXmini
- SMOK®
- JUUL
- MIGVAPOR
- blu
- Kangertech
- NJOY
- Joyetech™
- IJOY
- British American Tobacco
- Altria
- Halo
- Vaporfi®
## Selected E-Cigarette Products In The Market

### By Vape Pen Type

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<thead>
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<th>Brand</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>JUUL</td>
<td>JUUL Vape</td>
<td><img src="image" alt="JUUL Vape" /></td>
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<tr>
<td>halo</td>
<td>Halo Triton II</td>
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<tr>
<td>Mig Vapour</td>
<td>Mig Vapour SR-72</td>
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<tr>
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<td>Joyetech</td>
<td>eGo</td>
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<tr>
<td>blu</td>
<td>blu Pro</td>
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## Selected E-Cigarette Products In The Market

### By Box Mod Type (1 of 2)

<table>
<thead>
<tr>
<th>Brand</th>
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<tr>
<td>SXmini</td>
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<td>SXmini</td>
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<td>SMOK®</td>
<td>Smoke Alien</td>
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<td>SMOK®</td>
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<td>SMOK®</td>
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<td>SMOK®</td>
<td>SMOK Procolor</td>
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### Selected E-Cigarette Products In The Market

#### By Box Mod Type (2 of 2)

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<thead>
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<td>halo</td>
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<td>halo</td>
<td>Halo Reactor</td>
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<td>KangerTech</td>
<td>Kanger TOGO mini</td>
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<td>MigVapor</td>
<td>Mig WTF SUB 40 mini</td>
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<tr>
<td>iJoy</td>
<td>iJoy Diamond PD270</td>
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<tr>
<td>vaporfi</td>
<td>The Rebel 3</td>
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</table>
Market Overview

- Global E-Cigarette Market is forecasted to attain a value of $48 Billion by 2023.
- The growth is driven by a surge in interest for smokeless and ashless vaping, and a growing number of vape shops that have opened up to cater to the increased demand.
- The e-cigarette market can be categorized into cig-a-like, vaporizer, vape mod, and t-vapor among others.

Market Scope

- Increased awareness of consuming safe, smokeless, and ash less tobacco is expected to propel the market.
- Its adoption is estimated to increase, particularly among individuals trying to quit smoking or having the need to smoke merely for recreational purposes.
- Launch of new and innovative vaping devices is also anticipated to foster the adoption of e-cigarettes.
- Growing concerns regarding conventional cigarettes among the population is boosting the demand for e-cigarettes.
- Diverse e-liquid flavors are introduced in the market to cater to changing preferences of individuals, thereby stimulating market growth all over the world.
Market Dynamics

• Several industry experts estimate that there are hundreds of competing companies, largely due to the fact that it’s relatively easy for start-ups to purchase inexpensive vape pens from China in bulk and rebrand the devices as their own.

• There’s are over hundred vaporizers that are compatible with cannabis, that range from pens to big desktop ones. And there are new ones being launched in the market. It’s a booming market, with lots of options to choose from but very few quality ones.

Expanding Markets

• As more countries relax their marijuana laws in the near future, demand for the discreet, on-the-go type of vaporizers will be on the rise and we will see an increase in the number of peddlers.

• Vaporizers also could gain significant traction in emerging medical marijuana permitted countries and specific states where raw cannabis sales are banned, but medical marijuana is permitted.
Market Segmentation

By Product type:
- Disposable
- Rechargeable
- Modular

By Distribution channel:
- E-Cigs shops
- Online
- Supermarkets

By Region:
- North America
- Europe
- Asia Pacific
Lorillard, Inc. has acquired SKYCIG for approximately £30 million.

Altria Group Incorporated - the parent company for Philip Morris USA, through its subsidiary announced an agreement to acquire E-Vapor business of Green Smoke, Inc. for approximately $110 million.

Blu e-cigs was acquired by Lorillard, Inc. during April 2012 for $135 million.

British American Tobacco acquired a UK based startup company CN Creative Limited in 2012.

Victory electronic cigarettes and Fin electronic cigarettes signed a merger agreement on February 12, 2014.

Victory electronic cigarettes acquired Vapestick –for $70 million on December 19, 2013.

E-Cigarette Brand Blu is sold to Imperial Tobacco in 2014

Reynold American Buys Lorillard in 2014.
Litigation Status

The below table displays the list of open and closed cases associated with E-cigarettes along with the outcomes for the closed cases.

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Plaintiff</th>
<th>Defendant</th>
<th>Court</th>
<th>Patent Number</th>
<th>Date Filed</th>
<th>Date Closed</th>
<th>Outcome</th>
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</thead>
<tbody>
<tr>
<td>2:12-cv-05482</td>
<td>Ruyan Investment</td>
<td>Logic Technology</td>
<td>California Central District Court</td>
<td>US8156944</td>
<td>6/22/2012</td>
<td>12/19/2012</td>
<td>Closed</td>
</tr>
</tbody>
</table>

*Not part of the sample report. Please contact us if you would like a full report*
E-Cigarettes and intake of cannabis

- Marijuana can also be vaped. Like vaping nicotine, the goal of vaping marijuana is to heat a product to vaporize the psychoactive ingredients (THC) generally contained in its oil.

- The act of vaping marijuana can also be done using plant material, such as wax/butane hash oil (BHO), or liquid/oil (also called CO2 oil or flower oil).

- In general, the essential cannabis oils require a higher temperature to vaporize and thus a standard vape pen cannot be used to vape marijuana.

- There are however, specific devices created to vape each of the marijuana form mentioned above. Further, as vape pen technology has gained popularity, there are now specific heating elements and cartridge modifications sold to adapt a vape pen for marijuana use.
# Exemplary Patents on Cannabis-related e-cigarette devices

<table>
<thead>
<tr>
<th>P. No.</th>
<th>Title</th>
<th>Assignee</th>
<th>Publication Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>US10034990B2</td>
<td>Drug Delivery System And Method</td>
<td>Vapor Cartridge Technology LLC</td>
<td>2018-07-31</td>
</tr>
<tr>
<td>US9775379B2</td>
<td>Method And System For Drug Delivery</td>
<td>Syqe Medical Ltd.</td>
<td>2017-10-03</td>
</tr>
<tr>
<td>US20180043115A1</td>
<td>Methods And Apparatuses For Concentrate Vaporization</td>
<td>Juul Labs</td>
<td>2018-02-15</td>
</tr>
<tr>
<td>US20170136076A1</td>
<td>Therapeutic Compositions Comprising Herbal Extracts And Essential Oils For Smoking And Vaporization</td>
<td>Nisarga Biotech Private Limited</td>
<td>2017-05-18</td>
</tr>
<tr>
<td>US20180077967A1</td>
<td>Leak-Resistant Vaporizer Device</td>
<td>Juul Labs</td>
<td>2018-03-22</td>
</tr>
<tr>
<td>US20180147142A1</td>
<td>Method For Isolation Of Alkaloids And Amino Acids, And Compositions Containing Isolated Alkaloids And Amino Acids</td>
<td>Microstrada Research LLC</td>
<td>2018-05-31</td>
</tr>
<tr>
<td>US20170273914A1</td>
<td>Device With Compositions For Delivery To The Lungs, The Oral Mucosa And The Brain</td>
<td>Janing Holding</td>
<td>2017-09-28</td>
</tr>
<tr>
<td>US20180007958A1</td>
<td>Elegant Delivery Systems, Devices And Designs</td>
<td>High In Heels LLC</td>
<td>2018-01-11</td>
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<tr>
<td>US20180104214A1</td>
<td>Vaporizing Devices And Methods For Delivering A Compound Using The Same</td>
<td>Altria Group, Inc.</td>
<td>2018-04-19</td>
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<tr>
<td>US20150181924A1</td>
<td>Cannabidiol Liquid Composition For Smoking</td>
<td>Hddc Holdings LLC</td>
<td>2015-07-02</td>
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<tr>
<td>US20180289062A1</td>
<td>Cannabinoid Formulations for Aerosol Devices and Methods Thereof</td>
<td>Markham Biotech Inc</td>
<td>2018-10-11</td>
</tr>
<tr>
<td>US20160325055A1</td>
<td>Device To Deliver Cannabidiol And Associated Compounds To Promote Health</td>
<td>Lunatech LLC</td>
<td>2016-11-10</td>
</tr>
</tbody>
</table>
Exemplary Cannabis-related E-cigarette Devices

DaVinci IQ
- Takes: dry herb

Pulsar APX
- Takes: dry herb

Pax 3
- Takes: dry herb, wax

Magic Flight Launch Box
- Takes: dry herb

Storz & Bickel Mighty
- Takes: dry herb, wax

Source: [https://www.esquire.com/lifestyle/g20952097/best-weed-vaporizers-to-buy-now/](https://www.esquire.com/lifestyle/g20952097/best-weed-vaporizers-to-buy-now/)
SWOT Analysis

**Strengths**
- Rapid adoption
- High preference and customization
- Sophisticated and ample channels of distribution
- Increased awareness of health concerns

**Weaknesses**
- Weak social media presence
- Cannot be advertised in public events
- Limited regulation of e-cigarette
- Lack of experience and way of buying

**Opportunities**
- Emerging markets
- Medical regulation
- Product expansion to regulated countries
- Mergers & Acquisitions
- New technology, development and customization

**Threats**
- Government regulation on tobacco control
- Increasing Taxation
- Aggressive marketing campaign of competitors
- Rising health concerns
REFERENCES

- https://www.reuters.com/brandfeatures/venture-capital/article?id=40600
- https://mjbizmagazine.com/industry-snapshot-vaporizers/
- https://www.consumeraffairs.com/e-cigarettes/
- https://www.technavio.com/blog/top-e-cigarette-brands-world