



WINGLE
TECHNOLOGY

NICOTINE SALTS E-LIQUID OVERVIEW

May 2018

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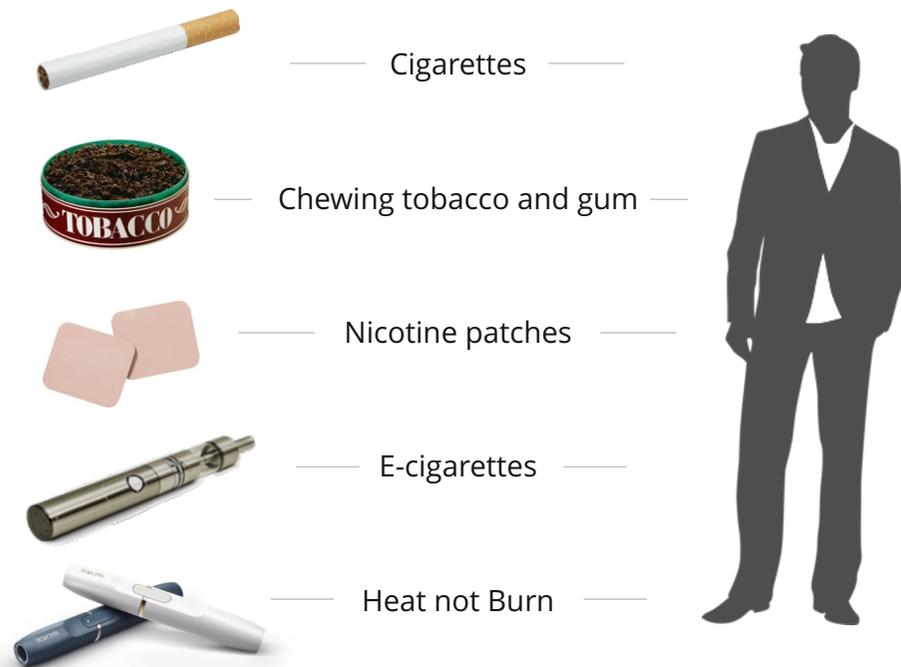
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Nicotine is a potent parasympathomimetic stimulant (substance that stimulates the parasympathetic nervous system) and an alkaloid found in the nightshade family of plants for example tobacco.

Nicotine acts as an agonist - chemical that binds to a receptor and activates the receptor to produce a biological response at most nicotinic acetylcholine receptors.

The primary products that contain nicotine are tobacco - containing products such as cigarettes, cigars, pipe tobacco, and chewing tobacco. There are some nicotine products containing smoking cessation products such as patches and gums. In addition, electronic cigarettes or “E-cigarettes”, contain purified nicotine and not tobacco and are increasing in popularity.

POPULAR WAYS OF DELIVERING NICOTINE INTO THE BODY:



SOURCES OF NICOTINE:

Sources of nicotine	Content (mg)
1 whole cigarette	10-30
1 cigarette butt	5-7
1 cigar	15-40
1 gram chewing tobacco	6-8
1 piece nicotine gum	2-4
1 nicotine patch	8-100
1 IQOS HEETS stick	15-18
1 ml e-juice with freebase nicotine	1-24
1 ml e-juice with nicotine salt	1-100

FREEBASE NICOTINE

The form of nicotine ordinarily used in e-liquid is called “freebase” nicotine. This is nicotine not bonded to anything else.

By the early 1960s, Philip Morris began using ammonia to “freebase” the nicotine in cigarette smoke, creating low-yield (reduced-tar or -nicotine) cigarettes that still had the nicotine kick necessary to keep customers “satisfied”.



The chemistry of freebasing is not complex. A base, such as ammonia, accepts a proton from a positively charged nicotine carboxylic acid salt (e.g., a malate or a tartrate) found in tobacco. The ammonia (NH₃) is thereby transformed into a cation (NH₄⁺), and the positively charged nicotine acid salt is deprotonated to become neutral. This neutral, deprotonated nicotine is “free” in that it is no longer bound to another molecule (or anion) in the form of a salt.

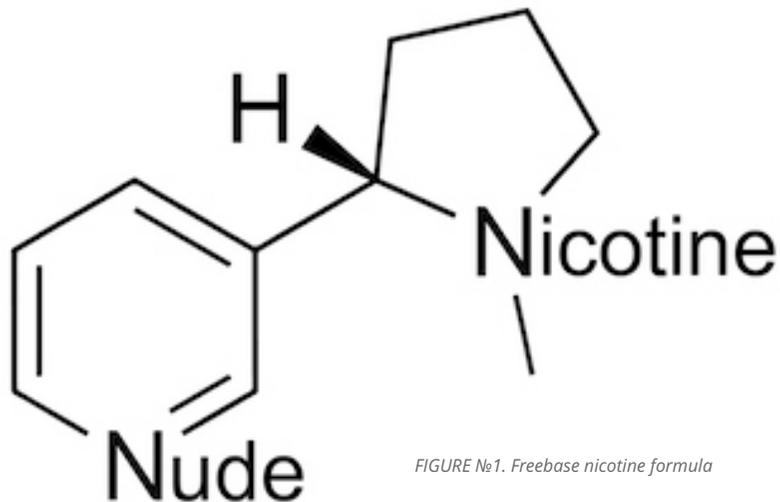


FIGURE №1. Freebase nicotine formula

Free nicotine is more volatile.

James F. Pankow, of Oregon Health and Science University, stresses that “increasing the proportion of the particle-phase nicotine that is in the freebase form will . . . tend to drive more nicotine into the gas phase.” Gas-phase nicotine is able to deposit quickly and easily in the respiratory tract and, because of its free-base form, crosses the blood-brain barrier more readily, making the nicotine more “available” to the smoker and therefore more potent.

Long before the widespread use of freebasing, tobacco industry scientists knew that nicotine deliveries were sensitive to pH manipulation (by adding acids or bases).

The sorption of nicotine through biological membranes depends on the pH and for mucous membranes is accelerated at high pH values when the nicotine molecule does not have a charge. At physiological pH values, nicotine is protonated by 69%. Nicotine is low in polarity and readily soluble in media with low polarity, so it is well absorbed through the skin and penetrates into the brain tissue through the blood-brain barrier.

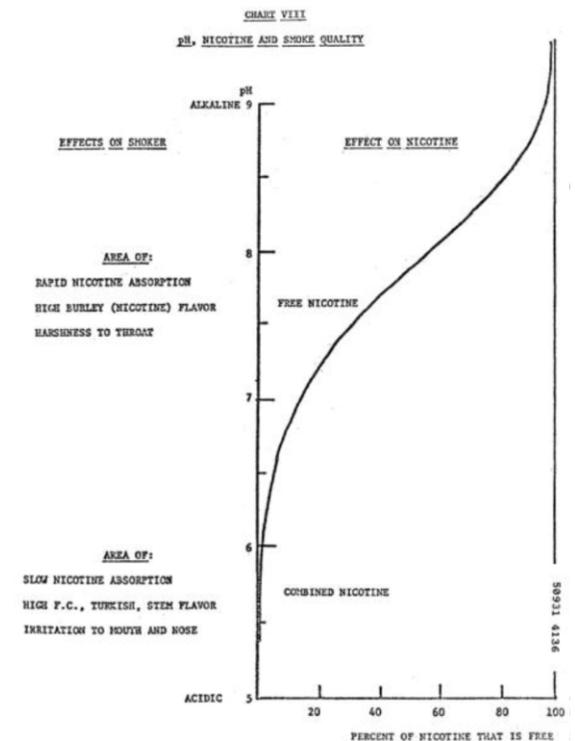


FIGURE №2. The chemistry of freebasing.

The tobacco industry has long appreciated the pH for boosting nicotine's impact. (Source: Page from a 1973 report by Claude E. Teague Jr of RJ Reynolds)

NICOTINE SALT | About

Natural nicotine salts is the form of nicotine found in tobacco leaves containing freebase nicotine and another organic components.

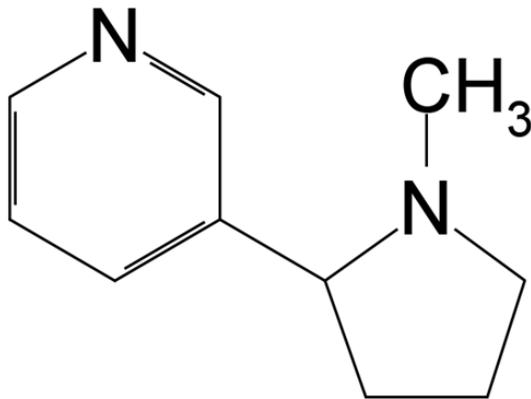


FIGURE №3. Nicotine salt formula

Nicotine salts can be formed from nicotine and organic acid (made up of molecules containing organic radicals, for example, lactic acid and propionic acid, which contain the ionizable - COOH group) are salts that produce a satisfaction in an individual user consistent with efficient transfer of nicotine and a rapid rise in nicotine plasma levels.

In 2015 PAX Labs patented their JUUL salts formulation of nicotine salt for use in its e-cigarette device, the JUUL. The compact low temperature device utilizes e-liquid pods that contain high levels of nicotine (in the form of nicotine salts) – 59 mg/ml per pod – intended to match the strength of a traditional cigarette.

In general, the e-liquid industry standard for nicotine content ranges from 0-24 mg/ml.

Nicotine salt that is used in JUUL pods, and in combination with convenient form factors became the key to the rapid popularity of this product.

Key feature of the liquid has become nicotine benzoate salt, as a nitrogenous base, freebase nicotine reacts with benzoic acid and forms salts.:

- Benzoic acid in JUUL about 45 mg/mL or 4.5%.
- Nicotine in JUUL about 60mg/ml or 6%



FIGURE №4. JUUL POD

When the organic acid/nicotine salts are delivered by inhaled dose there is no dumping of strongly basic nicotine into the lungs, nor is there dumping of free acid into the lungs; rather, nicotine is delivered as a salt comprising nicotine and the associated organic acid. This is a highly desirable feature as it provides nicotine in an inhalable form that is more biocompatible than delivery of the free base and provides delivery of the nicotine in a pH range more acceptable to a human.

These acids possess positive charges, also known as free hydrogens, with exhibit attraction to nicotine's basic nitrogen centers. This is nature's beautiful way of stabilizing the nicotine molecule for prolonged activity and defense against oxidative degradation. The binding of a cationic salt at nicotine's electronegative nitrogen center(s), inhibits the oxidative damage it would suffer in comparison to a non-salt formulation.

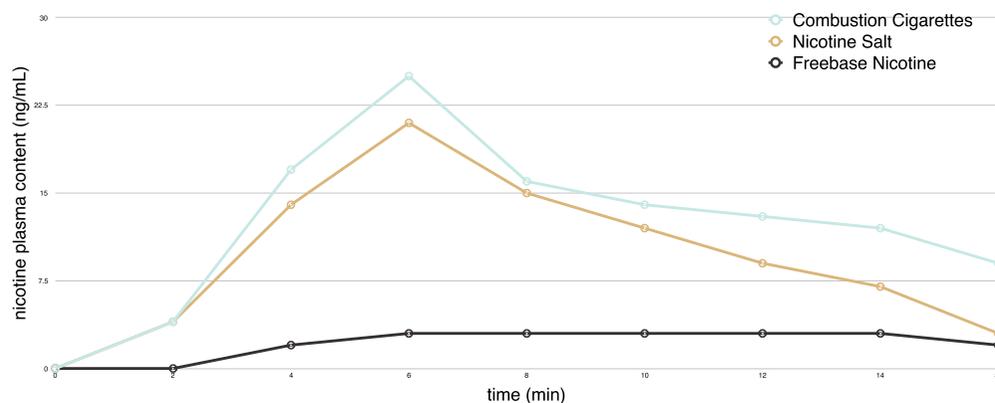
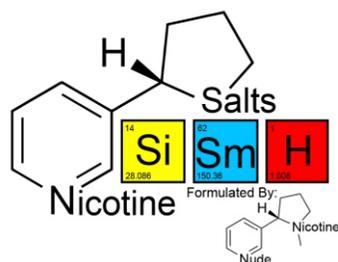


FIGURE №5. Tests of the blood nicotine levels

Different nicotine salt formulations produced varying degrees of satisfaction in an individual.



Nevertheless, there are numerous nicotine salts. Only certain salts can be used for e-cigarettes. They have to meet two conditions: they may go to a volatile state together with glycol and glycerin at about the same temperature, and be based on acids that are accepted by the human body (and used as food or medicinal additives), and sometimes are produced by our body. Salts examples: nicotine levulate, pyruvate, benzoate and nicotine salicylate.

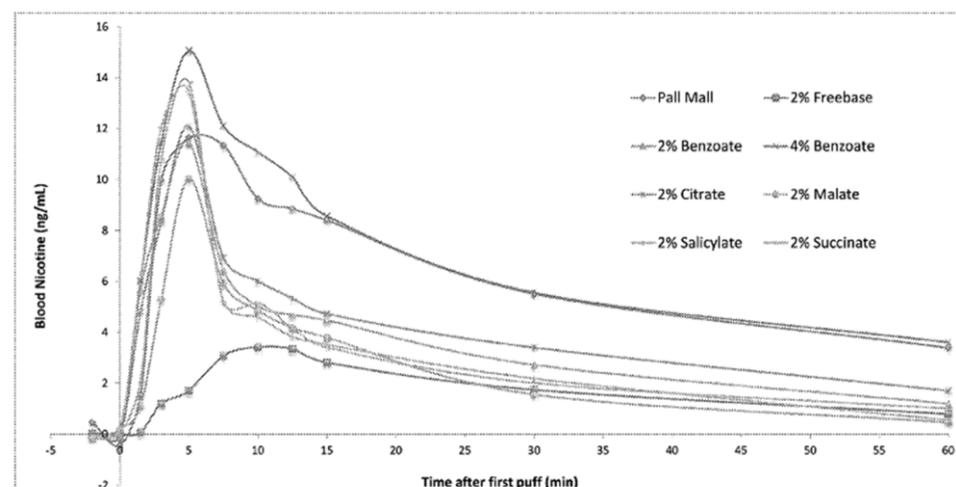


FIGURE №6. Pharmacokinetic profiles of the blood plasma testing

(Source: patent US 20150020824 A1: Nicotine salt formulations for aerosol devices and methods thereof)

Nicotine salts are also commonly used in Heat-not-Burn (HnB) devices, which are also increasingly popular.

As a result, the formulation of the present invention provides a more palatable delivery of nicotine and the user can consume more of the nicotine through the respiratory system in comparison of freebase nicotine. Freebase nicotine has a harsh, unpleasant taste. In contrast, nicotine salt forms are less harsh and have a less unpleasant taste. In addition, free-base nicotine can sometimes lead to gastrointestinal upset more often than the salt form.

Main types of nicotine salts on market

The differing benefits of the main salt combinations are not as yet fully defined, and perceptions vary in consumer testing and more research is in progress and more required. Based on the available data and feedback the 3 main salts indicates similar but also subtle differences in the vaping experience.

Nicotine benzoate

Benzoic acid reduces the pH of the nicotine free base give a soft and smoother nicotine hit especially at higher nicotine contents. Studies suggest that benzoic acid notably improves the stability of the nicotine molecule and may therefore preserve better the taste and flavour of an e-liquid.

Nicotine levulinate

Levulinic acid may desensitizes the upper respiratory tract potentially allowing for the vaped nicotine to be inhaled deeper into the lungs. Some literature suggests that levulinic acid also may enhance the binding of nicotine to neurons that ordinarily would be unresponsive to nicotine.

Nicotine pyruvate

Research suggest that pyruvic acid aids nicotine uptake, particularly at lower nicotine doses. In a study on nicotine inhalers, Nicotine pyruvate inhalations produce rapid increases in plasma nicotine concentrations, provide satisfaction and were well tolerated.

Also on the market presented acids such Nicotine salicylate, Nicotine tartrate, Nicotine glucuronide, Nicotine citrate.

Nuances of the production of nicotine salts

The manufacturing of nicotine salts whilst not complex does requires an understanding of chemistry and reactions to ensure the salt is correctly formed - poorly produced salts have significant amounts of free nicotine and the acid salt unbound making them a a simple mix of the base ingredients rather than a true nicotine salt. When vaped these liquids will not provide the enhanced vaping experience and nicotine delivery.

Processing should also ensure the nicotine free base does not oxidize in process. Whilst some colouration is normal as the process involves heat, if a nicotine salts goes a dark yellow or orange colour it could indicate strong oxidation, potentially the formation of unwanted impurities as well as affect the organoleptic properties of the nicotine (taste, colour, smell) and other quality aspects.

Types of organic acids that can be used for forming nicotine salt e-liquid solutions

Common Names	IUPAC	CAS Number	Description
Acetic acid	ethanoic acid	64-19-7	Acetic acid, systematically named ethanoic acid, is a colourless liquid organic compound with the chemical formula CH_3COOH . When undiluted, it is sometimes called glacial acetic acid.
Benzoic acid	benzoic acid	65-85-0	Benzoic acid, $\text{C}_7\text{H}_6\text{O}_2$, is a colorless crystalline solid and a simple aromatic carboxylic acid. The name is derived from gum benzoin, which was for a long time its only known source.
Butyric acid	butonic acid	107-92-6	Butyric acid, also known under the systematic name butanoic acid, abbreviated BTA, is a carboxylic acid with the structural formula $\text{CH}_3\text{CH}_2\text{CH}_2\text{-COOH}$. Salts and esters of butyric acid are known as butyrates or butanoates.
Capric acid	decanoic acid	334-48-5, 1002-62-6(sodium salt)	Decanoic acid is a saturated fatty acid. Its formula is $\text{CH}_3(\text{CH}_2)_8\text{COOH}$. Salts and esters of decanoic acid are called decanoates or "caprates".
Caproic acid	hexanoic acid	142-62-1	Hexanoic acid is the carboxylic acid derived from hexane with the chemical formula $\text{CH}_3(\text{CH}_2)_4\text{COOH}$. It is a colorless oily liquid with an odor that is fatty, cheesy, waxy, and like that of goats or other barnyard animals.
Caprylic acid	octanoic acid	0124-07-02	Caprylic acid is the common name for the eight-carbon saturated fatty acid known by the systematic name octanoic acid. Its compounds are found naturally in the milk of various mammals, and as a minor constituent of coconut oil and palm kernel oil.
Citric acid	2-Hydroxypropane-1,2,3-tricarboxylic acid	77-92-9	Citric acid is a weak organic acid that has the chemical formula $\text{C}_6\text{H}_8\text{O}_7$. It occurs naturally in citrus fruits. In biochemistry, it is an intermediate in the citric acid cycle, which occurs in the metabolism of all aerobic organisms.
Formic acid	methanoic acid	64-18-6	Formic acid, systematically named methanoic acid, is the simplest carboxylic acid. The chemical formula is HCOOH or HCO_2H . It is an important intermediate in chemical synthesis and occurs naturally, most notably in some ants.
Fumaric acid	(E)-but-2-enedioic acid	110-17-8	Fumaric acid or trans-butenedioic acid is the chemical compound with the formula $\text{HO}_2\text{CCH=CHCO}_2\text{H}$. It is produced in eukaryotic organisms from succinate in complex 2 of the electron transport chain via the enzyme succinate dehydrogenase.
Gluconic acid	(2R,3S,4R,5R)-2,3,4,5,6-pentahydroxyhexanoic acid	526-95-4, 133-42-6	Gluconic acid is an organic compound with molecular formula $\text{C}_6\text{H}_{12}\text{O}_7$ and condensed structural formula $\text{HOCH}_2(\text{CHOH})_4\text{COOH}$. It is one of the 16 stereoisomers of 2,3,4,5,6-pentahydroxyhexanoic acid.
Lactic acid	2-hydroxypropanoic acid	50-21-5, 79-33-4 (L), 10326-41-7 (D)	Lactic acid is an organic compound with the formula CH_3CHCOOH . In its solid state, it is white and water-soluble. In its liquid state, it is colorless. It is produced both naturally and synthetically.

Common Names	IUPAC	CAS Number	Description
Lauric acid	dodecanoic acid	143-07-7	Lauric acid or systematically, dodecanoic acid, is a saturated fatty acid with a 12-carbon atom chain, thus having many properties of medium chain fatty acids, is a white, powdery solid with a faint odor of bay oil or soap.
Levulinic acid	4-oxopentanoic acid	123-76-2	Levulinic acid, or 4-oxopentanoic acid, is an organic compound with the formula $\text{CH}_3\text{CCH}_2\text{CH}_2\text{CO}_2\text{H}$. It is classified as a keto acid. This white crystalline solid is soluble in water and polar organic solvents.
Linoleic acid	(9Z,12Z)-octadeca-9,12-dienoic acid	60-33-3	Linoleic acid, a carboxylic acid, is a polyunsaturated omega-6 fatty acid, an 18-carbon chain with two double bonds in cis configuration. A shorthand notation like "18:2" or "18:2 cis-9,12" may be used in literature.
Linolenic acid	(9Z,12Z,15Z)-octadeca-9,12,15-trienoic acid	463-40-1	Linolenic acid is an n-3 fatty acid. It is one of two essential fatty acids, so called because they are necessary for health and cannot be produced within the human body. They must be acquired through diet.
Malic acid	-hydroxybutanedioic acid	617-48-1, 6915-15-7	Malic acid is an organic compound with the molecular formula $\text{C}_4\text{H}_6\text{O}_5$. It is a dicarboxylic acid that is made by all living organisms, contributes to the pleasantly sour taste of fruits, and is used as a food additive.
Malonic acid	propanedioic acid	141-82-2	Malonic acid is a dicarboxylic acid with structure $\text{CH}_2(\text{COOH})_2$. The ionized form of malonic acid, as well as its esters and salts, are known as malonates. For example, diethyl malonate is malonic acid's diethyl ester.
Malonic acid	propanedioic acid	141-82-2	Malonic acid is a dicarboxylic acid with structure $\text{CH}_2(\text{COOH})_2$. The ionized form of malonic acid, as well as its esters and salts, are known as malonates. For example, diethyl malonate is malonic acid's diethyl ester.
Myristic acid	tetradecanoic acid	544-63-8	Myristic acid is a common saturated fatty acid with the molecular formula $\text{CH}_3(\text{CH}_2)_{12}\text{COOH}$. Its salts and esters are commonly referred to as myristates.
Oleic acid	(Z)-octadec-9-enoic acid	112-80-1	Oleic acid is a fatty acid that occurs naturally in various animal and vegetable fats and oils. It is an odorless, colorless oil, although commercial samples may be yellowish.
Palmitic acid	hexadecanoic acid	57-10-3	Palmitic acid, or hexadecanoic acid in IUPAC nomenclature, is the most common saturated fatty acid found in animals, plants and microorganisms. Its chemical formula is $\text{CH}_3(\text{CH}_2)_{12}\text{COOH}$, and its C:D is 16:0.
Phenylacetic acid	2-phenylacetic acid	103-82-2	Phenylacetic acid, also known by various synonyms, is an organic compound containing a phenyl functional group and a carboxylic acid functional group. It is a white solid with a disagreeable odor. Endogeneously, it is a catabolite of phenylalanine.
Propionic acid	ethanecarboxylic acid	79-09-4	Propionic acid is a naturally occurring carboxylic acid with chemical formula $\text{C}_2\text{H}_5\text{COOH}$. It is a liquid with a pungent and unpleasant smell somewhat resembling body odor.

Common Names	IUPAC	CAS Number	Description
Pyruvic acid	2-oxopropanoic acid	127-17-3	Pyruvic acid is the simplest of the alpha-keto acids, with a carboxylic acid and a ketone functional group. Pyruvate, the conjugate base, $\text{CH}_3\text{COCOO}^-$, is a key intermediate in several metabolic pathways.
Saccharic acid	(2S,3S,4S,5R)-2,3,4,5-tetrahydroxyhexanedioic acid	87-73-0	Saccharic acid, also called glucaric acid, is a chemical compound with the formula $\text{C}_6\text{H}_{10}\text{O}_8$. It is derived by oxidizing a sugar such as glucose with nitric acid. The salts of saccharic acid are called saccharates or glucarates.
Salicylic acid	2-hydroxybenzoic acid	69-72-7	Salicylic acid is a lipophilic monohydroxybenzoic acid, a type of phenolic acid, and a beta hydroxy acid (BHA). It has the formula $\text{C}_7\text{H}_6\text{O}_3$. This colorless crystalline organic acid is widely used in organic synthesis and functions as a plant hormone. It is derived from the metabolism of salicin.
Sorbic acid	(2E,4E)-hexa-2,4-dienoic acid	110-44-1	Sorbic acid, or 2,4-hexadienoic acid, is a natural organic compound used as a food preservative. It has the chemical formula $\text{CH}_3(\text{CH})_4\text{CO}_2\text{H}$. It is a colourless solid that is slightly soluble in water and sublimates readily.
Stearic acid	octadecanoic acid	57-11-4	Stearic acid is a saturated fatty acid with an 18-carbon chain and has the IUPAC name octadecanoic acid. It is a waxy solid and its chemical formula is $\text{C}_{17}\text{H}_{35}\text{CO}_2\text{H}$. Its name comes from the Greek word "stear", which means tallow.
Succinic acid	butanedioic acid	110-15-6	Succinic acid is a dicarboxylic acid with the chemical formula $(\text{CH}_2)_2(\text{CO}_2\text{H})_2$. The name derives from Latin succinum, meaning amber.
Tartaric acid	2,3-dihydroxybutanedioic acid	526-83-0	Tartaric acid is a white crystalline organic acid that occurs naturally in many fruits, most notably in grapes, but also in bananas, tamarinds and citrus.
Valeric acid	valeric acid, butane-1-carboxylic acid, Valerianic acid	109-52-4	Valeric acid, or pentanoic acid, is a straight-chain alkyl carboxylic acid with the chemical formula $\text{CH}_3(\text{CH}_2)_3\text{COOH}$. Like other low-molecular-weight carboxylic acids, it has a very unpleasant odor.

NICOTINE SALT | Harmfulness and benzene formation in electronic cigarettes

The liquid that presented in JUUL pods contains high level of benzoic acid. There was investigated formation of benzene (an important human carcinogen) from e-cigarette fluids containing propylene glycol (PG), glycerol (GL), benzoic acid, the flavor chemical benzaldehyde, and nicotine.

“Benzene formation in electronic cigarettes”:

James F. Pankow , Kilsun Kim, Kevin J. McWhirter, Wentai Luo, Jorge O. Escobedo, Robert M. Strongin, Anna K. Duell, David H. Peyton

“

Methods/Main results

Three e-cigarette devices were used: the JUUL TM “pod” system (provides no user accessible settings other than flavor cartridge choice), and two refill tank systems that allowed a range of user accessible power settings. Benzene in the e-cigarette aerosols was determined by gas chromatography/mass spectrometry. Benzene formation was ND (not detected) in the JUUL system. In the two tank systems benzene was found to form from propylene glycol (PG) and glycerol (GL), and from the additives benzoic acid and benzaldehyde, especially at high power settings. With 50:50 PG+GL, for tank device 1 at 6W and 13W, the formed benzene concentrations were 1.9 and 750 $\mu\text{g}/\text{m}^3$. For tank device 2, at 6W and 25W, the formed concentrations were ND and 1.8 $\mu\text{g}/\text{m}^3$. With benzoic acid and benzaldehyde at ~ 10 mg/mL, for tank device 1, values at 13W were as high as 5000 $\mu\text{g}/\text{m}^3$.

For tank device 2 at 25W, all values were ≤ 100 $\mu\text{g}/\text{m}^3$. These values may be compared with what can be expected in a conventional (tobacco) cigarette, namely 200,000 $\mu\text{g}/\text{m}^3$. Thus, the risks from benzene will be lower from e-cigarettes than from conventional cigarettes. However, ambient benzene air concentrations in the U.S. have typically been 1 $\mu\text{g}/\text{m}^3$, so that benzene has been named the largest single known cancer-risk air toxic in the U.S. For non-smokers, chronically repeated exposure to benzene from e-cigarettes at levels such as 100 or higher $\mu\text{g}/\text{m}^3$ will not be of negligible risk.

”

As a result, there was not detected harmful concentration level of benzene and the risks from benzene will be lower from e-cigarettes than from conventional cigarettes.

NICOTINE SALT | Vaping with nicotine salt e-juice

Vaping with an e-juice that contains nicotine salt is different than vaping with an e-juice that contains freebase nicotine. This is mostly because nicotine salt e-juices have very high nicotine levels in them.

But when user use a device that operates at a low wattage, he will not feel like using an e-juice with a high nicotine level, although the saturation of nicotine in the body will be rapid. Because throat hit and nicotine level will be too high, manufacturers of e-liquids end devices not recommend use nicotine salt e-juices with sub ohm devices, and instead use devices with low wattage, less vapor production and higher than ohm coil resistance.



- ☁ LOW VAPOR PRODUCTION
- Ω HIGH OHM COIL RESISTANCE
- ▶ ◀ STEALTH SIZE
- 💧 CONVENIENCE FOR REFILLING

NICOTINE SALT | Most popular nicotine salt e-liquid devices in 2017 in USA

CLOSED SYSTEMS

- Pax Labs Juul
- MLV Phix
- Vape Forward Cync
- Von Erl Myblu
- ALD Vfire
- BO Vape BO One
- VO Tech Zeal
- SMPO
- EONSMOKE
(Compatible with Juul pods)



SEMI-CLOSED (REFILLABLE) SYSTEMS

- Aspire Breeze
- LMC Pulse
- Sourin Air
- Sourin Drop
- KandyPens Feather
- Eleaf Icare
- KandyPen Rubi
- Limitless Pulse



NICOTINE SALT | Devices for nicotine salt e-liquid in 1H 2018 in USA

NICOTINE SALTS E-LIQUID
OVERVIEW



CLOSED SYSTEMS

- CLIC VAPOR POD MOD SYSTEM
- KILO 1K POD SYSTEM
- ALTRIA MARKTEN ELITE E VAPOR POD KIT (OEM Smoore MLV PHIX)
- THE BYRD POD KIT
- LNK VAPOR LNK POD SYSTEM STARTER KIT
- DEUCE POD SYSTEM
- FLAIR XTREME (OEM Joecig Eavalon)
- STLTH STARTER KIT
- SMOKEPOD KIT
- Z&G E-PEN SENSES AIO KIT (OEM Smoore Pod)
- EDGE POD SYSTEM
- VAPEEZ JUSTVAPE
- MIGHTY VAPORS SOL POD SYSTEM
- HANGSEN IQ LEVEL AIR POD SYSTEM
- SHANLAAN LAAN LITE POD KIT
- AIRBENDER Starter Kit
- MYTHOLOGY E-CLOUD THOR (OEM Sbody iBuddy Bpod)
- MYTHOLOGY E-CLOUD ODIN (OEM Sbody Elite)

Compatible with Juul pods: _____

- ZIIP POD SYSTEM STARTER KIT
- AIRBENDER Starter Kit

AIO DEVICES DESIGNED FOR NICOTINE SALT E-LIQUID

- ASPIRE BREEZE 2 AIO
- FOXCONN ICUB 2 CARD KIT
- ELEAF ICARD STARTER KIT
- WELLON RIPPLE STARTER KIT
- VAPORESSO NEXUS AIO STARTER KIT

SEMI-CLOSED SYSTEMS

- SMOK ROLO BADGE STARTER KIT
- SMOK INFINIX KIT
- SMOKJOY AMOS MINI KIT
- SMOK FIT STARTER KIT
- JUSTFOG MINIFIT STARTER KIT
- ASMODOUS FLOW ULTRA PORTABLE POD
- KANGERTECH UBOAT
- THUNDERHEAD CREATIONS VO THC STARTER KIT
- SUTRA VAPE DASH POD VAPORIZER (OEM iBuddy Bpod)
- SMOANT S8 POD SYSTEM KIT
- IVAPE.IN CIRRUS POD SYSTEM
- SUORIN EVA POD SYSTEM
- RUNE POD MOD (OEM Warlock Peas Pod)
- TESLA SLIVER POD KIT
- FIN E CIG ELITE POD SYSTEM (OEM Sbody eLite)
- HANGSEN IQ O.V.S. POD SYSTEM
- HANGSEN IQ ORIGIN POD SYSTEM
- HANGSEN IQ 3 S.E.C.S POD SYSTEM
- JOYETECH TEROS
- KOMGE CASHEW POD SYSTEM (Chinese market for now)
- KHREE UFO (Chinese market for now)

Compatible with Juul pods: _____

- UPTOWN-TECH JILI VAPE PEN

DISPOSABLE CLOSED SYSTEMS

- VGOD STIG DISPOSABLE POD DEVICE
- GAOMEITE GTRS POD MOD (Chinese market for now)
- KOMGE K1 AIO (Chinese market for now)

NICOTINE SALT | SWOT analysis

Nicotine Effect Increased
Time to Effectiveness Decreased
Nicotine Stability Increased
Hardware Affordability
Cost per dose Reduced

Strengths



Reduced Throat Hit
Development Learning Curve
Lack of Information/Misinformation
Cost of Manufacturing Increased
Lack of Supporting Devices

Weaknesses

Opportunities



Combustion Cigarette Users Adoption
Hardware and Software (E-Liquid) Development

Threats

Competition From Heat-Not-Burn
Regulations Limiting Nicotine Content (%)
Nicotine Salt Products from Misinformed Manufacturers

Chart provided by CRFT,INC

Freebase e-liquid

- Freebase nicotine molecule is more volatile but less biocompatible with human mucosa
- Impossible to achieve the level of nicotine in the blood to the level of an ordinary cigarette for the same time and simultaneously provide the comfort of inhalation
- Freebase liquid nicotine is more prone to oxidation than e-salt which reduces the storage time
- User need to use a powerful device to produce a large amount of vapor that attracts attention
- User use a large amount of e-liquid which is more expensive

Nicotine salt e-liquid

- Inhalable substance form of salt is more biocompatible for human cell membranes than delivery of the freebase. As a result, absorption of nicotine is much faster and reaches the maximum level of saturation in the blood comparable to a normal cigarette for the same time
- Nicotine salt is a much more stable compound than freebase
- Nicotine salts have also been reported to have much smoother throat hit due to pH level
- Salt e-liquid can be more effective for hardcore smokers who wants instant and strong effect of nicotine
- No need to compensate with high a powerful device, as a result a device has small size and is cheaper to maintain
- User use less juice, so it saves money

KEY CHANGES IN 2018

- In March 2018, new devices appeared on the market, which are completely **disposable devices** with tank integrated into the housing. The cost of one device is about \$ 6 (for example, already released in the US market - Vgod Stig). Capacities 1.2, 1.3 ml. (200 puffs, which is roughly equivalent to 1 pack of conventional cigarettes) What will be the demand for devices of this type is still unknown.

The advantages are already clear:

- + almost complete absence of leaks;
- + competitive price (no need to produce pods)

Disadvantages:

- limited choice of tastes of e-liquid
- user need to carry a spare device
- the allowable shelf life of such devices in warehouses is unknown (li-ion charge)



- Also it is necessary to note the growth of cheap **devices compatible with cartridges of JUUL** (EONSMOKE, ZIIP, AIRBENDER). It is very convenient in the US market, and allows to get a wider choice of flavors from the list of manufacturers of pre-filled Juul and Juul-like pods.

- In general, it can be summarized that nicotine salt is now universally used by almost all manufacturers of nicotine containing e-liquid. Several new nicotine salt suppliers and DIY shops start to offer nicotine salt and bases in 2018 in USA. Manufacturers of vape devices are aimed at creating cheaper disposable systems and special semi-closed AIO systems for long term use (large tank capacity, as nicotine salt e-liquid supposed to be more stable).

Pub. No.	Date of publ. (filing) [priority]	Claimer Name	Name	Short description
US 9215895 B2	Dec 22, 2015 (Oct 10, 2014) [May 6, 2013]	Pax Labs, Inc.	Nicotine salt formulations for aerosol devices and methods thereof	A nicotine salt liquid formulation for generating an inhalable aerosol in an electronic cigarette comprising nicotine salt that forms about 0.5% to about 20% nicotine is provided.
WO 2006004646 A1(US20060018840)	Jan 12, 2006 (Jun 28, 2005) [Jun 28, 2004]	Nektar Therapeutics	Aerosol formulation comprising nicotine salt	An aerosolizable formulation comprises free-base nicotine, an organic acid, and a hydrofluoroalkane propellant. The organic acid is present in a mole ratio with said nicotine in a range of about 0.25:1 (organic acid:nicotine) to about 4:1 (organic acid:nicotine). The organic acid and said free-base nicotine form a nicotine salt. An equivalent mixture of free-base nicotine and organic acid in water has a pH between about pH 3.0 and about pH 9.0. The aerosolizable formulation is aerosolizable, for example, by a metered dose inhaler for administration to a user.
US 9738622 B2	Aug 22, 2017 (May 26, 2015) [May 27, 2014]	R.J. Reynolds Tobacco Company	Nicotine salts, co-crystals, and salt co-crystal complexes	The invention provides certain nicotine salts, co-crystals, and salt co-crystals and provides novel polymorphic forms of certain nicotine salts.
US 9724341 B2	Aug 8, 2017 (Jul 11, 2014) [Jul 11, 2013]	Alexza Pharmaceuticals, Inc.	Nicotine salt with meta-salicylic acid	The present disclosure relates generally to the field of nicotine delivery. The disclosure teaches a nicotine meta-salicylate. More specifically, the disclosure teaches a condensation nicotine aerosol where nicotine meta-salicylate is vaporized. This disclosure relates to aerosol nicotine delivery devices. The delivery devices can be activated by actuation mechanisms to vaporize thin films comprising a nicotine meta-salicylate. More particularly, this disclosure relates to thin films of nicotine salt with meta salicylic acid for the treatment of nicotine craving and for effecting smoking cessation.
EP 1136487 B1	May 25, 2005 (Mar 14, 2001) [Mar 20, 2000]	Nutrinova Nutrition Specialties & Food Ingredients GmbH	Nicotine salts with improved taste, process for their preparation and use thereof as smoking cessation agents	A salt of nicotine, anion-forming sweetener or anion-forming sweeteners and/or their physiologically acceptable salts and, if appropriate, a physiologically acceptable acid.
US 9556142 B2	Jan 31, 2017 (Oct 22, 2015) [Oct 22, 2014]	Next Generation Labs, LLC	Process for the preparation of (R,S)-nicotine	A method of preparing (R,S)-nicotine, comprising reacting a nicotinate ester with N-vinyl-2-pyrrolidinone in the presence of a base and a solvent to form a first mixture, combining the first mixture with an acid to form a second mixture comprising an aqueous layer, separating the aqueous layer from second mixture, combining the separated aqueous layer with an acid to form a third mixture, combining the third mixture with a base to form a fourth mixture comprising myosamine, reducing myosamine to normicotine using a reducing agent, and methylating the normicotine to yield R,S-nicotine.

Pub. No.	Date of publ. (filing) [priority]	Claimer Name	Name	Short description
P 1061901 B1	Nov 10, 2004 (Mar 10, 1999) [Mar 11, 1998]	Nico Puff Corporation	Nicotine inhaler	A method of producing a nicotine medicament for use in an inhaler comprises combining a nicotine formulation, a sugar and a liquid carrier including water to produce a flowable mixture and drying the flowable mixture at conditions to produce particles of the nicotine medicament suitable for delivery to the alveoli and lower airways of the person...The method as claimed in claim 2 wherein said nicotine composition comprises a nicotine salt formulation. The method as claimed in claim 6 wherein the nicotine salt formulation comprises at least one salt selected from the group consisting of nicotine sulphates, nicotine tartrates and mixtures thereof.
Wo2011139684 A3	Mar 8, 2012 (Apr 26, 2011) [Apr 28, 2010]	Niconovum Usa, Inc.	Nicotine-Containing Pharmaceutical Compositions	A composition intended to be employed for therapeutic purposes incorporates a source of nicotine and at least one levulinate moiety. Representative forms of nicotine include free base (e.g., as a mixture of nicotine and microcrystalline cellulose), a nicotine salt (e.g., as nicotine bitartrate) or nicotine polacrilex. The levulinate moiety can have the form of an acid (e.g., levulinic acid), a levulinate salt (e.g., sodium levulinate), or an ester of levulinic acid (e.g., methyl levulinate or ethyl levulinate). The composition can incorporate nicotine and levulinic acid in a salt form (e.g., nicotine levulinate). The composition can be composed of at least two forms of nicotine, and one of the forms of nicotine is in the form of nicotine levulinate. The composition is useful for treatment of central nervous system conditions, diseases, and disorders, and as a nicotine replacement therapy.

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Wo2018064032	5 Apr, 2018 (Sept 29, 2017)	BOND STREET MANUFACTURING, LLC.	Vaporizable tobacco wax compositions and container thereof	This invention is directed towards tobacco wax, including methods of manufacture, tobacco wax compositions, and the vaporization of tobacco wax for use in a vaporizer-inhalation device. The present invention also relates to a portion-sized container ("pod") of a tobacco wax composition for administration to a mammal or person. The pod is intended for use in a personal (or other) vaporizer. Nicotine salts may be employed in certain embodiments. This involves complexing nicotine with an acid, to form a salt. The nicotine salt may also be mixed with glycerin and then mixed with the wax. In still other embodiments, the acid is complexed with the wax partition to form the salt. Crystallization inhibitors may be employed, including inter alia to avoid precipitation of the nicotine salt when the acid is complexed with the nicotine.
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Pub. No.	Date of publ. (filing) [priority]	Claimer Name	Name	Short description
US D776338 S1	Jan 10, 2017 (Apr 14, 2016) [Jul 25, 2014]	Pax Labs, Inc.	Electronic vaporization device	The ornamental design for an electronic vaporization device - JUUL
US 9549573 B2	Jan 24, 2017 (Feb 25, 2016) [Dec 23, 2013]	Pax Labs, Inc.	Vaporization device systems and methods	Vaporization devices and methods of operating them. In particular, described herein are methods for controlling the power applied to a resistive heater of a vaporization device by measuring the resistance of the resistive heater at discrete intervals. Changes in the resistance during heating may be used to control the power applied to heat the resistive heater during operation. Also described herein are vaporization devices that are configured to measure the resistance of the resistive heater during heating and to control the application of power to the resistive heater based on the resistance values.
EP 3046431 A2	Jul 27 2016 (Sep 19, 2014) [Sep 19, 2013]	Philip Morris Products S.a.s.	Aerosol-generating system for generating nicotine salt particles	An aerosol-generating system comprising: a nicotine source; a volatile delivery enhancing compound source downstream of the nicotine source, wherein the volatile delivery enhancing compound comprises an acid; heating means configured to heat the nicotine source to a temperature of between 80°C and 150°C; and a physically separate heat transfer barrier between the nicotine source and the volatile delivery enhancing compound source, wherein the heat transfer barrier is configured so that in use the temperature of the volatile delivery enhancing compound source is below 60°C when the nicotine source is heated to a temperature of between 80°C and 150°C by the heating means.
US 8322350 B2	Dec 4, 2012 (Dec 14, 2005) [Dec 30, 2004]	Philip Morris Usa Inc.	Aerosol generator	An aerosol generator for delivering an aerosol of a nicotine salt is provided. In an embodiment, the aerosol generator device for delivering an aerosol of a nicotine salt, comprises (i) a mouth end; (ii) a first chamber containing a porous material wetted with liquid nicotine; (iii) a second chamber containing a porous material wetted with a solution of a volatile acid; (iv) a third chamber in fluid communication with both the first and second chambers, and leading to the mouth end, and (v) an outer housing defining a passageway for air through said device. The outer housing preferably contains at least the first and second chamber, and may also contain the third or any additional chambers as well.

Pub. No.	Date of publ. (filing) [priority]	Claimer Name	Name	Short description
US 9446004 B2	Sep 20, 2016 (May 18, 2015) [Sep 23, 2005]	Alza Corporation	Transdermal nicotine salt delivery system	A transdermal nicotine salt delivery system to an individual. The system has a high nicotine salt loading to effect therapeutic flux rate. Acrylate polymeric drug reservoir with the high nicotine salt dissolved therein provides desirable adhesive characteristics and effective transdermal therapeutic properties.
US 9161908 B2	Oct 20, 2015 (Mar 28, 2012) [Mar 29, 2011]	Per-Gunnar Nilsson	Pouch containing nicotine in free salt form	The invention relates to a product for oral delivery of nicotine containing a core comprising a powder of at least one free nicotine salt, at least one pH adjusting agent and at least one filler, and a water insoluble pouch, wherein said pouch is permeable for saliva and therein dissolved parts of the powder, wherein said product upon contact with purified water gives a pH of at least 6. The invention also relates to a method to manufacture such a product. at least one free nicotine salt wherein said nicotine salt is selected from the group consisting of nicotine hydrochloride, nicotine dihydrochloride, nicotine monotartrate, nicotine bitartrate, nicotine bitartrate dihydrate, nicotine sulphate, nicotine zinc chloride monohydrate and nicotine salicylate, and mixtures thereof
US 9402810 B2	Oct 20, 2015 (Mar 28, 2012) [Mar 29, 2011]	Nyz Ab, Wm17 Holding Ag	Pouch containing nicotine in free salt form	The invention relates to a product for oral delivery of nicotine containing a core comprising a powder of at least one free nicotine salt, at least one pH adjusting agent and at least one filler, and a water insoluble pouch, wherein said pouch is permeable for saliva and therein dissolved parts of the powder, wherein said product upon contact with purified water gives a pH of at least 6. The invention also relates to a method to manufacture such a product. at least one free nicotine salt wherein said nicotine salt is selected from the group consisting of nicotine hydrochloride, nicotine dihydrochloride, nicotine monotartrate, nicotine bitartrate, nicotine bitartrate dihydrate, nicotine sulphate, nicotine zinc chloride monohydrate and nicotine salicylate, and mixtures thereof
EP 1951074 B1	Jul 2, 2014 (Nov 7, 2006) [Nov 7, 2005]	Swedish Match North Europe AB	Method for producing nicotine with a reduced content of nitrosamines	The invention relates to methods producing nicotine comprising less than 0.1 ug nitrosamines/ mg nicotine..A reduction method give rise to a healthier nicotine and nicotine product, since these products are carcinogenic or otherwise harmful to the body or giving the nicotine product a bitter taste. The nicotine may be substantially free from tobacco fibres, i.e., the insoluble fibres. The nicotine produced may be stabilised by the formation of a salt such as with an organic acid. Examples of acids are sulphuric acid.
US 3422819 A	Jan 21, 1969 (Mar 30, 1966) [Mar 30, 1965]	Imp Tobacco Co Ltd	Cigarettes and paper therefor	This disclosure concerns treating paper for use in the manufacture of cigarettes by adding to the paper a nicotine salt in which the molecular ratio of acid to nicotine is at least 1:1. The cigarette made from such paper is thus nicotine enriched whereby the cigarette will retain its flavour even when the smoke is filtered to remove undesirable tars.
US 4830028 A	May 16, 1989 (Feb 10, 1987) [Feb 10, 1987]	R. J. Reynolds Tobacco Company	Salts provided from nicotine and organic acid as cigarette additives	A tobacco cigarette having incorporated therein as an additive at least one salt consisting of nicotine and an organic acid, wherein at least one of the salts has a molar ratio of nicotine to organic acid of 1:3, and at least one of the salts is a salt of nicotine and a gamma keto aliphatic monocarboxylic acid.

Pub. No.	Date of publ. (filing) [priority]	Claimer Name	Name	Short description
EP 1578422 B1	Apr 11, 2007 (Dec 19, 2003) [Dec 20, 2002]	NicoNovum AB	A physically and chemically stable nicotine and microrcrystalline cellulose containing particulate material	A nicotine-containing particulate material for release of nicotine, the material comprising a combination of nicotine or a pharmaceutically acceptable salt, complex or solvate thereof and a microcrystalline cellulose. The particulate material is stable upon storage and releases nicotine relatively fast. The particulate material can be used in the manufacture of nicotine-containing pharmaceutical composition, wherein the release of nicotine can be designed to be relatively fast so as to obtain a fast onset of action. The available nicotine salts are more stable compounds but are not as readily absorbed as the free base. In order to deal with the volatility and stability problems of the free base different techniques are possible.
US 6344222 B1	Feb 5, 2002 (Sep 2, 1999) [Sep 3, 1998]	Jsr Llc	Medicated chewing gum delivery system for nicotine	The nicotine delivery system of the invention also comprises one or more active ingredients. At least one active ingredient is selected from the group consisting of tobacco alkaloids. Tobacco alkaloids include nicotine and nicotine-like or related pharmacologically active compounds such as nor-nicotine, lobeline and the like, as well as the free base substance nicotine and all pharmacologically acceptable salts of nicotine, including acid addition salts.
US 9585835 B1 (Grant)	Mar 7, 2017 (Sep 16, 2015) [Sep 16, 2015]	Sansa Corporation (Barbados) Inc.	Inhalable nicotine formulations and methods of making and using the same	"The present invention provides dry powder formulations comprising nicotine, methods of using the same, and methods for making the same. The dry powder formulations may further comprise excipients, therapeutic agents, and flavor components. The dry powder formulations may be manufactured by dry processes and wet processes. A dry powder nicotine formulation comprising nicotine, lactose, and leucine, wherein the concentration of nicotine is between 0.5% and 10%, and wherein the formulation is suitable for inhalation. The formulation of claim 1, wherein the nicotine comprises at least one nicotine salt. The formulation of claim 2, wherein the at least one nicotine salt is nicotine tartrate."
WO 2015166344 A1 (Application)	Nov 5, 2015 (Apr 23, 2015) [Apr 28, 2014]	Philip Morris Products S.A.	Nicotine powder inhaler	This disclosure relates to nicotine powder inhalers where the nicotine powder is delivered at air flow rates that mimic a smoking regime. The inhaler can include a piercing element or pair of opposing piercing elements that are configured to pierce the capsule of nicotine powder. The piercing element or pair of opposing piercing elements fluidly connect the airflow channel with the dose of nicotine powder. The piercing element or pair of opposing piercing elements can engage with the capsule of nicotine powder upon loading the capsule of nicotine powder into the nicotine powder receptacle or upon demand by an actuator on the body of the inhaler. In many embodiments the nicotine powder is a pharmaceutically acceptable nicotine salt or nicotine salt hydrate. Useful nicotine salts or nicotine salt hydrates include nicotine bitartrate, nicotine salicylate, nicotine fumarate, nicotine mono-pyruvate, nicotine glutamate or nicotine hydrochloride, for example. The compound combining with nicotine to from the salt or salt hydrate can be chosen based on its pharmacological effect.

MANUFACTURERS | Nicotine salts manufacturers and suppliers

NICOTINE SALTS E-LIQUID
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Company	Country	Product Name	Description of company or/and products
CRFT, Inc.	USA	Psalt	CRFT, Inc. specializes in flavor development and manufacturing with freebase nicotine, tobacco free nicotine (TFN), and nicotine salts to create e-liquid products for open format, closed system devices. Established in 2013.
Nude Nicotine	USA	“Signature,” “Hit,” and “Smooth” Nicotine Salts	“Signature,” “Hit,” and “Smooth” Nicotine Salt formulations are designed around harnessing the differing properties of nicotine inhalation character. Each of these three formulae are a differing blend of multiple cationic acids known to bind electro-negative nicotine on the tobacco leaf, and others that we have unique IP in-development at the laboratory!
Next Generation Labs, LLC	USA	TFN Nicotine Salts, Pharmanic	TFN® Nicotine is the purest, cleanest nicotine available not derived from tobacco leaf, stem, or waste dust. All current E-cig/Vaping brands and e-liquids use tobacco derived nicotine. TFN® Nicotine is devoid of many of the impurities that tobacco derived nicotine contains. Most important, TFN® Nicotine is virtually tasteless and odorless, dramatically improves e-juice flavors, while providing the same biological impact as tobacco derived nicotine. With TFN® Nicotine, there is no need to mask the foul flavor and aroma of the nicotine. TFN® Nicotine will allow you to craft a truly tobacco free vaping product!
Medical Isotopes, Inc.	USA	Nicotine Salicylate (CAS 29790-52-1)	Medical Isotopes, Inc. provides stable isotope chemicals and research compounds, both labeled and unlabeled worldwide to universities, laboratories, hospitals, and government agencies. We produce a wide range of compounds labeled with Deuterium, Nitrogen-15, Carbon-13, Oxygen-18 and stable metal isotopes. We also specialize in custom synthesis.
City Chemical, LLC.	USA	Nicotine Salicylate (CAS 29790-52-1)	City Chemical LLC, headquartered in the U.S.A., is the manufacturer of rare and unusual chemicals, many of which cannot be found anywhere else in the world. Over 14,000 organic and inorganic chemicals in stock and ready for immediate delivery.
Enfuse Vapory	USA	Enfuse Vapory	All e-liquids are not created equal. Traditional nicotine e-liquids and nicotine salt e-liquids are noticeably different in how nicotine is absorbed into one’s bloodstream. Nicotine salt e-liquids more accurately resemble the impact provided by actual cigarettes than traditional nicotine e-liquids. If you’re looking for an e-liquid to fill your closed-ended system, Enfuse Vapory nicotine salt e-liquids maintain amazing flavor while consistently satisfying your nicotine craving
Pfaltz & Bauer, Inc.	USA	Nicotine Salicylate (CAS 29790-52-1)	Pfaltz & Bauer has been a name known around the world since 1900. Our mission is to supply rare & hard to find research chemicals and laboratory chemicals, as well as a complete product range, to researchers in industry, government and academia
Spectrum Chemical Mfg. Corp.	USA	Nicotine Salt	Founded in 1971 as a fine chemical manufacturing company, Spectrum Chemical Mfg. Corp., a division of Spectrum Laboratory Products, Inc., has grown into the chemical industry’s leading customer-focused global supplier of high quality chemicals, laboratory supplies and equipment. All our U.S. chemical manufacturing facilities are ISO 9001:2015 certified. The California and New Jersey plants are also FDA registered drug establishments and operate under current Good Manufacturing Practices (cGMP).
Santa Cruz Biotechnology (Shanghai) Co., Ltd.	USA / China	Nicotine Salicylate (CAS 29790-52-1)	The company was originally headquartered in Santa Cruz, California, and began offering antibodies to the research community Other products lines were added over the years – siRNAs in 2007, shRNAs in 2009, and laboratory supplies in 2010. Nicotine Salicylate has been studied for its effects on nicotine addiction and withdrawal.

MANUFACTURERS | Nicotine salts manufacturers and suppliers

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Company	Country	Product Name	Description of company or/and products
United Excel Technology Limited	China 	Nicotine Salt	Most popular nicotine supplier in China.
Hangzhou Yuhao Chemical Technology Co., Ltd	China 	Nicotine Salicylate (CAS 29790-52-1)	Yuhao Chemical is a chemistry based company specializing in the design and custom synthesis of novel organic compounds, research of new drugs, and the development of new chemical production technologies. We are dedicated to the design and synthesis of novel organic compounds, process development and manufacturing of fine chemicals and pharmaceuticals from gram to ton scale for pharmaceutical, drug discovery, agrochemical and biotechnology industries. Our research lab is located in Hangzhou and devoted to new product development and scale-up.
Hubei Heno Biological Engineering Co.,Ltd	China 	Nicotine Salt	Nicotine salt is a salt produced by the reaction of nicotine with organic acid and itself is in the form of nicotine salts in the tobacco leaves, rather than the presence of free nicotine. Heno Biological's nicotine salt is a solid and the production of nicotine salt by our self high purity nicotine (99.7%) Organic acid is food grade and the reagents used for purification are food grade or pharmaceutical grade. The nicotine salt to prepare e-liquid will not affect their own flavor (taste), (taste), It is odourless and practically neutral for the taste of ready made e-liquid which constitutes the valuable advantage
BGP Group	India 	Nicotine Salt	BGP Group is a leading Nicotine/salts manufacturer & supplier. Superior & consistent quality products. Get high quality active pharma ingredients & nicotine derivatives at comfortable market prices.
Pharmaffiliates Analytics & Synthetics (P), Ltd.	India 	Nicotine Salicylate (CAS 29790-52-1)	Pharmaffiliates Analytics & Synthetics (P) Ltd, is an integrated Contract Research Organisation (CRO) services provider offering its expertise in Custom synthesis (Reference standards, Impurities, Metabolites, Deuterated compounds and Phyto standards), Analytical research (PH Buffer Solutions, Method development, Validation), Stability studies, Formulation & Development (New Drug Delivery System), Quality assurance and Regulatory services with a right blend of competent people, state of the art infrastructure facilities, cutting-edge technology and certified processes to pump your development pipeline with time and cost advantages. Our expertise will also enable you to combat in the highly competitive markets and also in acquiring the niche segments. We desire to be your strategic partner for outsourcing and help you right from strategic planning of CMC blue-print to accelerating the filing and representation for NDAs and ANDAs submitted in any regulated and semi-regulated markets which can reduce your time and efforts for focusing them in your core areas of operations.
CLEARSYNTH LABS, LTD.	India / Canada  	Nicotine Salicylate (CAS 29790-52-1)	Clearsynth is a technology based, research driven enterprise with the World's Largest Inventory of Reference Standards & Research Chemicals. We aim to enable the research community in accelerated discovery via synthesis of complex and difficult to make compounds.
Carbosynth Limited	India / UK  	Nicotine Salicylate (CAS 29790-52-1)	Carbosynth Limited was established to provide the most comprehensive product range in the fields of carbohydrates and nucleosides for the international Life Science R&D communities. Carbosynth aims to support its clients from discovery to launch by offering cost effective solutions to their carbohydrate and nucleoside requirements. We produce many products in our own laboratories and distribute for CMS Chemicals Limited.
Alchem International Pvt. Ltd	India / USA / UK   	"NicSelect" premium nicotine for e-liquid	Alchem International Pvt. Ltd. is a leading global manufacturer of Natural Nicotine and Nicotine complexes for use in Tobacco substitutes including E-cigarettes, Nicotine patches, Nicotine gums and Nicotine lozenges. Our Nicotine is highly pure, stable and naturally derived. Manufactured at our WHO GMP licensed pharmaceutical production plant, Alchem's Nicotine is available at our European and USA warehouses.

MANUFACTURERS | Nicotine salts manufacturers and suppliers

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Company	Country	Product Name	Description of company or/and products
Toronto Research Chemicals, Inc.	Canada 	Nicotine Salicylate (CAS 29790-52-1)	"Toronto Research Chemicals, TRC was founded in 1982 to manufacture and supply researchers in the biomedical fields with specialized complex organic small molecules not otherwise commercially available. Today, Toronto Research Chemicals Inc. employs more than 200 full time staff, of which approximately 100 are PhD's and MSc's, operating in 68,000 square feet of facilities, including 15 production laboratories, in Toronto, Canada. Nicotine-d3 Salicylate Salt is a labelled form of (S)-(-)-Nicotine (N412450) which is a prototype nicotinic acetylcholine receptor agonist. (S)-(-)-Nicotine is the naturally occurring isomer. Nicotine can be absorbed through the alimentary canal, respiratory tract and intact skin. Nicotine is used in the treatment of smoking withdrawal syndrome. Nicotine has been used as an anthelmintic."
Merck KGaA	Germany 	Merck KGaA nicotine salt	Merck is a science and technology company in healthcare, life science and performance materials.
Chemos GmbH&Co.KG	Germany 	Nicotine Salicylate (CAS 29790-52-1)	Chemos® is a leading supplier of chemical specialties for your research and development, as well as your production. Every idea starts small and needs special solutions while scaling from small to large. With over 25 years of experience in the rapidly changing fine chemicals market, Chemos® supports research facilities and companies in Europe and the Americas. Chemos® specializes in the procurement and distribution of chemical specialties. Our growing network of contract manufacturing companies and chemical specialty manufacturers worldwide enables us to make exceptional products available in high quality. Our excellent service and our desire to understand your need complete our offer.
Soltnik LTD	Russia 	Saltbase booster	SALTBASE - liquid for refilling cartridges of compact devices up to 18 watts with a new generation of nicotine. Designed specifically for pragmatic adult smokers who want to abandon the bad habit.
Nicoblast SP z.o.o.	Poland 	Nicoblast Nicotine Salicylate (CAS 29790-52-1)	Nicoblast SP - nicotine salt manufacturer from Poland.
A-Sense Sp. z o.o	Poland 	A-Sense Nicotine Salicylate (CAS 29790-52-1)	The health effects of nicotine salts are much better tested than nicotine in the form in which they are used on a daily basis, because nicotine is present in tobacco in the form of salt (citrate and maleate), and the impact of nicotine in this form is sacrificed many scientific careers and non-chemical works, and it was possible to study the effects of taking nicotine in this form. While the lethal impact of smoking on human health has proved a taboo of scientists, and everyone knows about it without writing doctorates, we are not familiar with scientific work, which prove the pernicious effect of nicotine salts on health, kills smoking, not nicotine.

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Salt Nicotine Co	UK 	Salt Nicotine	Salt Nicotine available in 100ml, 5kg, 25kg and 100kg - 100%PG or 100%VG
Nanjing Bangnuo Biotechnology Co., Ltd.	China 	Nicotine Salt C10H14N2	Established in 2016, Nanjing Bonno Biotech Co., Ltd. is located in the beautiful Jiangning Free Trade Zone of Nanjing. The factory is headquartered in Wuhan. It is a professional company engaged in research, development, production and sales of plant extracts, pharmaceutical raw materials and intermediates. High-tech private enterprises. The company's products are subject to corporate OA system management, inventory of high-quality products, real-time inventory and continuous updates, can call for inventory screenshots.

MANUFACTURERS | Nicotine salts manufacturers and suppliers

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Company	Country	Product Name	Description of company or/and products
Wuhan Yuancheng Technology Co.,Ltd. i	China 	Nicotine Salt	Hubei Yuancheng Saichuang Technology (the original Hubei Yuancheng Pharmaceutical Co., Ltd.) was founded by Wuhan Yuancheng Group with the investment of more than 50 million Yuan RMB in 2001.

MANUFACTURERS | Nicsalts & nicsalt eliquids manufacturers

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Company	Country	Product Name	Description of company or/and products
Xi'an Taima Biological Engineering Co. Ltd	China 	Xian Taima Nicotine Salt	Xi'an Taima Biological Engineering Co. Ltd. was founded in November 19th, 2008, consists of Nicotine/Flavors R&D centers, QC& QA center, Administrative Center and A High-Performing Sales Team. We specialize in the manufacture of Pure Nicotine, mixed unflavored liquid nicotine, various high concentrated flavors for E-Liquid in China.
Shaanxi ZhiYi biotechnology co., Ltd.	China 	ZHII Nicotine Salt	Shaanxi ZhiYi biotechnology co., LTD. was founded in 2007, consists of Nicotine/Flavors R&D centers, QC& QA center, Administrative Center and A High-Performing Sales Team. We specialize in the manufacture of Pure Nicotine, mixed unflavored liquid nicotine, various high concentrated flavors for E-Liquid in China. Since its inception, the company is aiming at providing every customer with top best quality products and superior service at a reasonable and competitive price, all the time. And in the past 9 years, we've gained great progress. Products are exported all over the world: USA, countries in North America, South America, European countries like UK, Germany, Sweden, Greece, Finland, Norway, France, Italy, Russia, Ukraine, Estonia, Spain, Latvia, etc. Asia countries like Malaysia, Indonesia, South Korea, Thailand, Philippines, Vietnam, Singapore, etc. Our products are selling very well in these areas. And other countries like Australia, Mexico, Salvatore, Costa Rica, and so on.
JAC Vapour Ltd.	United Kingdom 	JAC Vapours Nicotine Salt and Nicsalt Ejuice	Company produces devices and also produce all of our e-liquids, made to own specially concocted recipes.

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NICXIUM Research and Development	United States 	Nicxium nicotine salts, nicotine bases	Nicxium is a research, development and manufacturing company focusing on the production of the highest quality, pure nicotine. Their products include nicotine bases, nicotine salts and nicotine additives for the production of premium e-liquids. After an intense two year long research and development phase, under the umbrella of the finest chemists in the industry, Nicxium has announced a new proprietary nicotine extraction process that ensures the highest quality USP grade e-liquid available on today's market.
CHEMNOVATIC Sp. z o.o.	Poland, Spain 	NicBase, Nicotine Salt	CHEMNOVATIC is a manufacturer of highest quality pure nicotine, nicotine bases, e-liquid flavorings and additives. The company utilises its filling lines to manufacture e-cigarette liquids under company's own brands as well as OEM products for many recognized and respected brands from all over the world. In December 2017 Chemnovatic has been subjected to the certification audit by TbV Rheinland Polska Sp. z o. o., as a result we have been awarded the ISO 9001:2015, HACCP and GMP certificates.
Interchem Corporation (CNT Group: CONTRAF-NICOTEX-TOBACCO GmbH)	USA, Germany 	Nicotine E-liquid, Nicotine bitartrate dihydrate, Custom nicotine products	For over 30 years now CNT has been the world's largest supplier of highly purified tobacco derived Nicotine to the pharmaceutical industry. In recent years CNT has also emerged as a significant supplier of pharmaceutical grade Nicotine to the expanding e-Cigarette industry. The processing is done in Switzerland by CNT's exclusive contract manufacturer Siegfried AG under full pharmaceutical cGMP. Our Nicotine is filed and referenced for pharmaceutical use in almost every country of the world. This is achieved through the numerous governmental inspections of Siegfried's facilities by the health authorities of these countries including the US FDA.

MANUFACTURERS | Nicsalt e-liquids manufacturers

Company	Country	Product Name	Description of company or/and products
PAX Labs, Inc. (Ploom, Inc.)		Jull pods	To develop the nicotine salt e-liquid technology, the PAX Labs research team extensively explored the differences in chemical composition between cigarettes and e-cigarettes, demonstrating that the use of nicotine salts instead of free-base nicotine made an unequivocal difference in nicotine blood absorption profiles. Nicotine salts are the natural state of nicotine in the tobacco leaf. The PAX Labs team landed on a groundbreaking nicotine salt formulation and vaporizer system that delivers satisfaction akin to a traditional cigarette - a key factor lacking in current vapor products.
CRFT, INC.		Salt by CRFT	CRFT, INC. is a premium e-liquid manufacturer with a wholesale focus, combining handcrafted heritage with modern science to create a quality vaping product.
Mr. Salt		Mr. Salt-E	"Mr. Salt-E is bringing low output systems to life by providing higher nicotine levels with smooth flavor and throat hit not found in ordinary high nicotine e-liquids. The difference comes from using nicotine salts. «"Nic salts"" more closely resemble the feel of traditional cigarettes because of its quicker absorption into your bloodstream. Mr. Salt-E Liquids are NOT designed for high performance or sub-ohm devices. These products are specifically meant to be used in pod-based, closed systems and low-output atomizers/mods. We recommend these liquids for use with the Vapor Shark Minnow, Eleaf iCare, Wismec MyJet, or Suorin Air for optimum performance. The nicotine used in Mr. Salt-E is enhanced with ""nic salts"" which are purported to cause faster uptake of nicotine when vaped. "
Dr. Salt		Dr. Salt	Dr Salt Premium E-liquid. A unique e-liquid made in the UK and fully TPD. Salt based nicotine is used to create a perfect and quick hit of nicotine to the throat. Salt Nicotine eLiquid Refills are basically what their name suggests; eLiquids that use the natural salt that is found within the tobacco leaf as their basis for nicotine.
Solace Technologies, Ltd.		Solace	Over the years Solace Vapor has been developing a line of quality liquids specifically designed for low wattage devices. Using Nicotine Salts at the right nicotine mg amount, we have found an optimum solution for non SUB-OHM devices. Nicotine salts are an ideal flavorful alternative to conventional tobacco products such as cigarettes and are ideal for those trying to curb their nicotine intake.
Solace Technologies, Ltd.		Salty Man	Salty Man Vapor E-Liquid is an E-Juice company known for their twelve incredibly complex flavor profiles that are infused with smooth blends of Nicotine Salts.
CLOUD ALCHEMIST, LLC.		Pod Refill Collection	Pod Refill Collection line from Cloud Alchemist offers eight of their most popular flavors in a 30 mg/mL nicotine strength.
Airship Nicsalt		Airship Nicsalt	Airship is revolutionizing the way that we enjoy nicotine salts. With the recent peak in popularity of pre-filled devices, consumers across the world have been crying out for a delicious line that we can enjoy in our closed pod systems. Airship offers a growing line of unique juices that are specifically designed to deliver bold flavor in Juuls, MyJets, VonErls, or other compatible devices. Every aspect of this line has been meticulously crafted from the sensation of the nicotine salts to the aroma of the liquid itself. Most pre-filled pod flavors can be dull and unsatisfying. However, with Airship's new line of Nicotine Salt e-juice flavors opens the possibilities for closed system and regular devices.

Company	Country	Product Name	Description of company or/and products
Bombies Automatic	USA 	Bombies After Dark	"In 2012, the majority of vendors treated e-liquids as a commodity. These single note flavors were run-of-the-mill and could barely pass off as tolerable to the average consumer. As the vaping industry continued to grow, so did the amount of vendors rehashing the same flavors: a variation of strawberry milk, a twist on custard, or another take on cereal. We envisioned e-liquid in a different light -- that flavors should evoke new and exciting experiences, undefinable in any other form. With the rise in popularity of low wattage and pod-style devices, many vapers have been converting over to nicotine salt e-liquids. We've heard your calls, and have made all of our original line of Bombies flavors available in 15mg, 30mg, and 40mg nicotine salt options. If you've never used them before, e-liquids with nicotine salt vary slightly from their standard nicotine counterparts. Many users report a quicker "hit" or faster nicotine absorption. We would recommend starting at one of the lower nicotine strengths and taking small puffs from a low-wattage device to avoid taking in too much nicotine, gradually larger puffs or increasing wattage as needed. Please note: the nicotine salt options may taste slightly different from their standard counterparts due to the nicotine salt having a different flavor than our standard nicotine. 15 & 30MG strengths are available in 50/50 VG/PG ratio while 40MG is 40/60 VG/PG ratio."
Level Up Vapor, LLC.	USA 	Level Up Vapor	Our nicotine salts e-juices is made for lower wattage, higher resistance devices such as the Juul, Limitless Pulse, Suorin Air, and MyJet. Nicotine salts allow for higher concentrations of nicotine without the harshness that would normally be associated with high nicotine strengths. We absolutely do not advise using these in sub-ohm setups. Please see any of our other juices for your sub-ohm needs. Size: 30ml glass bottle. Ratios of our nic-salts are 70/30 (VG/PG). Our nicotine salts do not contain diacetyl. Only the Custard contains a small amount of AP if that sort of thing concerns you.
Fill My Pod	USA 	Fill My Pod	Fill My Pod Nicotine Salts - Fillmypod - nicotine salt e-juice that is designed for low power devices and offers a kick in the pants nicotine hit!
Nicotine River LLC	USA 	Nicotine River Nicotine Salts	This product is a no-brainer for mixers that want to appreciate an even smoother product and go higher up the strength ladder and not feel the horrible throat hit. The color change is normal for this compound because of its complexity. Nicotine Salts are formulated at 100mg/ml concentration and are diluted in PG or VG blend and are ready for use immediately. Please see below for answers to some common nicotine salt questions.
Salt Lake	USA 	Salt Lake	Looking for a refreshing and smooth e-liquid? look no further. This Salt Lake e-liquid is a salt based nicotine mixture of flavors and high nicotine levels but without the harsh throat hit. Tropical ice mixes the cool tones of menthol with the sweet yet mouthwatering flavors of tropical fruits like mango, guava, and orange. Salt Lake e-Liquids use salt nicotine, a type of nicotine blend that uses a crystalline based nicotine similar to what is produced in traditional tobacco leaves. Users that prefer salt nicotine praise it for its smoother inhale, which allows them to intake more nicotine per puff, creating a uniquely satisfying vaping experience. Salt Lake liquids are mixed and bottled in the United States.
Veteran Liquids, LLC	USA 	Salted Salt Drops	These are made with nicotine sale solution, instead of standard nicotine base. These are NOT intended for use with higher ohm devices. We do not recommend using these nicotine strengths in RDA's or sub ohm tanks, due to the high nicotine concentration.
BRU JUICE LLC	USA 	Pod Drops	Pod Drops contain high nicotine content (nicotine salts). We do not recommend using in sub-ohm devices or RDAs. We recommend using Pod Drops with the Limitless Pulse Pod System (can be found on our website under "Hardware"), or other closed system pod devices (JUUL, MyJet, Von Erl, etc.)

MANUFACTURERS | Nicsalt e-liquids manufacturers

Company	Country	Product Name	Description of company or/and products
USA Vape Lab		NKD 100 Salt	Nkd 100 Salt E-Liquid takes your favorite Naked 100 flavors and perfects them to precisely match the Naked 100 experience when used in a pod based system! Specially formulated with Salt Nicotine, Nkd 100 Salt offers a consistently smooth and flavorful experience perfect for compact, ultra low wattage systems. Take and experience Naked 100 on the go like never before with Nkd 100 Salt!
Savage Enterprises, LLC		Savage Nic Salts Series, Vape100 Ripe Collection	Savage E-Liquid is a premium e-liquid company founded in Orange County, California. We began this journey with a desire to help people stop smoking. Using only the best manufacturing practices and U.S.A. made ingredients Savage E-Liquid takes pride in crafting unique, quality flavors at an affordable price.
Blue Dot Vapors		Left Coast E-liquid	"Left Coast Eliquid provides top quality Eliquid at a reasonable cost. All Left Coast products are produced in an ISO7 grade clean lab that is virtually free of dust and other contaminants. 90 air changes per minute flow through over a dozen 6" thick HEPA filters in a room operated by our highly trained laboratory staff to ensure a safe and clean product. Blue Dot Vapors is a California based company dedicated to production of the highest quality Eliquids at the most competitive prices available. All of our Eliquid is produced with Certified USP ingredients in our HEPA filtered clean production facility. We are proud to use American made flavor extracts and nicotine extract made from US grown tobacco.
Liquid EFX, Inc.		Liquid EFX	Liquid EFX Vape is a premium e-liquid manufacturer.
Beyond Vape		Aria Elixers	SAGE NICOTINE SALTS IN 3MG AND 6MG PROVIDE INSTANT SATISFACTION, INTENSE FLAVOR, AND ARE SUBOHM FRIENDLY. Aria Built is managed by Beyond Vape
Slammin		Slammin	Slammin' Series brings you the next wave in vaping, its delicious new flavor style packs rich and long lasting flavors you will find extremely hard to put down. When all day vapes were created, they aimed to be this good.
Marina Vape Manufacturing, LLC.		Alternativ E Liquid	Alternativ is a subsidiary of the world-renowned Marina Vape E-Juice Company, which is highly-coveted for their selection of award-winning lines, such as Alpha
Syntheticcloud Tech, LLC.		Hi-Nic	Hi-Nic is a salted, high nicotine juice that was made for MTL (Mouth To Lung) styled vaping. This product is specifically designed for use in pod based devices and other low output atomizers. View quick links for compatible devices.
KeyJuice Laboratories, LLC.		Dr. Sugar Chitz	Salty Chitz is the nicotine salt version of their award-winning flavor.
Gods of Egypt Salts		Gods of Egypt Salts	Among the variety of available fruity blends, Gods of Egypt Salts Baset nicotine salt e-juice stands out thanks to a perfect blending of refreshing flavors. Created especially for use with pod-based systems and other low output atomizers.
Frisco Vapor Salts		Frisco Vapor Salts	Smoother and not as harsh on the throat, even at high nicotine concentrations 2. Tastes better, minimal influence on flavor, allowing flavor to stand out even at high nicotine concentrations 3. Provides better nicotine satisfaction "salts" are acids added to the E-liquid to neutralize the alkalinity of nicotine

MANUFACTURERS | Nicsalt e-liquids manufacturers

Company	Country	Product Name	Description of company or/and products
VGOD Saltnic		VGOD Saltnic	VGOD has partnered with SaltNic to introduce the VGOD juices.
KURE Corp		Salt On Tap	Why waste money on pods where you can only buy 4 different flavors... Try our Salt on Tap where you can create your own liquid that goes into many closed end devices! Perfect for the iCare, Penguin, The Fitt and much more!
The Vape Cult LLC		TAB Premium Salts	This product is not meant for use in devices that reach sub-ohm resistance. We recommend this liquid to be used in pod-based, closed systems devices, and ultra low-output atomizers/mods. Every salt-based nicotine e-juice contains significantly higher levels of nicotine per milliliter.
LCF Labs Inc		BLVK Unicorn	BLVK Unicorn is a premium e-juice manufacturer and wholesaler based in Southern California. Established in 2016, BLVK Unicorn confidently strives to bring clients and end-users with the top vaping experience with their flavorful product lines: BLVK, WYTE, FRZN, CHBY, & SLTY. Combined with years of experience in the vaping industry, superb customer service and powerful marketing, BLVK Unicorn is a majestic force of flavors to be reckoned with. All BLVK Unicorn e-juice products are proudly produced in the United States in a FDA-registered facility. All ingredients are sourced domestically in the US and bottled in child-resistant, 15ML, 60ML, or 100ML Chubby Gorilla Bottles. Both General Conformity Certificates and MSDS reports for BLVK Unicorn E-juice can be provided upon request.
The Clean Vape		The Clean Vape	The Clean Vape is an vaping company that specializes in dikotone-free e-liquid, which means no diacetyl, acetyl propionil or acetoin.
Kegger Vaporcraft Brewery		Kegger Polar Nic Salt	NICOTINE SALTS: 35 NOT FOR USE WITH SUBOHM DEVICES
Coval Vapes		8816 Liquids Nicotine Salts	Nicotine salts are nicotine that has had a blend of 5 cations added to deliver a smoother, less harsh vape. The salt solution will accelerate the color change of the eLiquid. Decadence uses the same nicotine salt in all of its nicotine strengths. Not for sub-ohm use. Designed for use with low wattage devices.
Strong Island Vapes		Salt Collection	Enjoy your favorite Strong Island flavors with high salt base nicotine without losing any of the taste.
Enfuse Vapory		Enfuse Vapory	All e-liquids are not created equal. Traditional nicotine e-liquids and nicotine salt e-liquids are noticeably different in how nicotine is absorbed into one's bloodstream. Nicotine salt e-liquids more accurately resemble the impact provided by actual cigarettes than traditional nicotine e-liquids. If you're looking for an e-liquid to fill your closed-ended system, Enfuse Vapory nicotine salt e-liquids maintain amazing flavor while consistently satisfying your nicotine craving
Beyond The Pod		Beyond The Pod E-liquid	Nicotine Salts based e-liquid. Our e-juice contains 60mg/ml. The pods for devices like Juul and Phix contain 59mg/ml (5% by weight per 0.7ml). Other companies fall short by only selling a max strength of 45mg/ml and 50mg/ml. We add Benzoic Acid to provide a smoother throat hit and for better absorption.

MANUFACTURERS | Nicsalt e-liquids manufacturers

Company	Country	Product Name	Description of company or/and products
Vape Crusaders Premium E-Liquid, LLC	 USA	Get Salty Line	Get Salty is also nice for the veteran vapor (like us) who just wants something small when going out in a public gathering to be able to cover a craving in a couple small puffs. Nic salts are becoming extremely popular in the vape industry and we wanted to bring our high quality ingredients and dead on flavor approach to the space early on. We believe this is some of our best work yet.
Artist Labs	 USA	Nic Salt Line	E-liquid manufacturer founded in 2016.
PGVG LABS	 USA,  Canada	RIPE VAPES SALT NIC	These blends are nicotine salt infused e-Liquids formulated for pod systems and other similar low power devices. Not recommend for use with RDA's or sub-ohm tanks and devices.
CANADA, INC.	 Canada	Salt Nix	SALT NIX allows for the body to absorb nicotine almost instantly, as the body metabolizes salt quickly. Perfect for new vaper's who are dissatisfied with the wait time of nicotine absorption with standard freebased nicotine e-liquids (nicotine carried in VG or PG). SALT NIX provides vapers a sensation closer to a cigarette.
Element E-liquid	 United Kingdom	Element NS20	Since its inception in 2014, Element has established itself amongst the top e-liquids on the market today. A recipient of numerous award-winning accolades, they have garnered an international reputation as the influential standard for quality and performance, regarding new product releases including the launch of Ns20 in 2017.
The Fuu	 France	Minimal E-liquid	Minimal, is the first range of Nicotine Salts E Liquids which has come out on the French Market. Present in it's natural state in tobacco leaves, the Nicotine
Hangsen International Group Ltd.	 China	Replacement pods & e-liquids	A wide range of e-liquids in different PG/VG ratios for your selection. Our OEM e-liquid is made from high quality USA sourced raw materials and stays tuned to the market trend.
Shenzhen Easy Vapor Solution Technology Co., Ltd.	 China	Happy Solution Nicotine Salt E-liquid	Strength of Nicotine salt compared with nicotine: 1, Adjustable Harshness(Throat hit) 2,Strength can reach 50mg. 3,Easier to be absorbed than nicotine. 4,more cigalike. Specification: 1, Available nicotine strength: =<50mg 2 ,Available flavour: Tobacco, Mint, Menthol, vanilla, mango, apple, fruit mix, cola, Tea, and so on. Flavour can be customized if needed.

Update 26.04.2018

Yami Vapes, LLC	 USA	Yami Salt E-liquid	About Yami Vapor specialize in hand crafted fine eliquid. All of our eliquid are crafted in ISO 7 clean room in California
Sugoi, LLC.	 USA	Sugoi Vapor Nic Salt E-liquid	Sugoi LLC is founded by group of vaping enthusiasts with extensive network and experience in the vaping industry. Sugoi Vapor eliquid are meticulously crafted in ISO7 clean room in USA. We go though extensive testing for each and every flavor.
Ruthless Vapor Corporation	 USA	Ruthless Nic Salt	Ruthless Vapor is a Southern California sweet candy e-juice manufacturing company that has transformed the vaping industry since 2011.

MANUFACTURERS | Nicsalt e-liquids manufacturers

Company	Country	Product Name	Description of company or/and products
Roll UPZ, INC.		Roll Upz Salt	JRU was established in April 2015 in Ontario, California with the intention of creating great quality products. From the outset, we were determined to provide the best quality products and the best vaping experience to our customers. We have emphasized on excellence and high-quality from the time our company came into existence; we created our first e-liquids in a medical cleaning room with expert care and attention to detail. Our first liquids were packaged in rich green glass bottles that have now become our signature. They're a representation of our brand so they make us easily identifiable in the market. Our green bottle has come to be associated with high-quality and great flavors.
FRISCO VAPORS		FRISCO VAPORS Salt	San Francisco's award winning eLiquid manufacturer.
PREMIER NIC SALTS E-liquid		Premier Nic Salts	Brand of nicotine salts e-liquid from 2016.
Gost Vapor		Gost Vapor Nic Salt	The GLQST Mob consists of vapers who have been in the scene since the beginning. The constant search for new tastes inspired us to develop flavors the vaping community has never tasted before. GLQST's flavors and bottling have been in development for over a year pinpointing flavors that would change the game with a bottle unlike anything on the market. All GLQST e-juice products are proudly produced in the United States in a FDA-registered facility. All ingredients are sourced domestically in the US and bottled in child-resistant, 30ML or 100ML Chubby Gorilla Bottles. Both General Conformity Certificates and MSDS reports for GLQST e-juices can be provided upon request.
Milkshake Liquids		Milkshake Liquids Salt Nicotine	Milkshake Liquids creamy flavor line up gets a dash of salt with a Nicotine Salt Line, Milkshake Liquids Salt. Creamy, rich Milkshake Liquids Salt is a Nicotine salt infused e-Liquid, which has a higher nicotine hit than it's bigger brother but has all that sweet delicious milkshake taste that you've come to love from Milkshake Liquids.
Royal Bishop, LLC.		SUPERB Salt Nic Collection	Superb Salt Nic Collection presents the Nectarberry, Nectarberry by Royal Bishop is a classic parfait layered with peaches, nectarines, and strawberry flavored e-liquid. This product is specifically designed for use in pod based devices and other low output atomizers. View quick links for compatible devices.
Humble Juice, Co., Solace Technologies, Ltd.		SVLT Vapor	SVLT Vapor is a brand collaboration between award-winning eLiquid manufacturers, Humble Juice Co and Solace Salts. Launched to great fanfare in 2015, Humble Juice Co is internationally respected for its quality products, pricing and branding. Solace Vapor, established in 2016, rose to prominence and prestige through the vision of open bottle nicotine salt products. Humble Juice Co and Solace Salts have joined forces to deliver directly to the consumer, large quantities of great juice at the best prices while cutting out the middleman!
Mighty Vapors, LLC		SOL	SOL Pods are built to satisfy and perform. Each POD contains 2ml of juice with 5% nicotine by weight. Not to mention, the flavors are delicious! Masterfully crafted and produced in California by e-juice industry leaders.
Salt Galaxy		Salt Galaxy Salt Nicotine	Salt Line if handcrafted e-liquid.

MANUFACTURERS | Nicsalt e-liquids manufacturers

Company	Country	Product Name	Description of company or/and products
River Reserve	 USA	River Reserve Salt Series	Here at River Reserve, our mission is to provide the most enjoyable and safe to consume e-liquids conceivable. We began this operation with our local customers at heart. Originally operating out of a local B&M here in Vancouver, WA, we used our customer's ideas and input to sculpt our first 7 flavors. Here at River Reserve, quality means 2 things. It means finding the highest quality of ingredients to formulate our recipes, and using the highest level of packaging equipment in an ISO 7 equivalent lab space.
Rebels and kings, LLC.	 USA	Rebels and Kings Salt Line	Crafted by Rebels, fit for Kings. Our mission at Rebels & Kings is to share delectable flavors with the world while making sure that they are affordable for the average vaper is our mission. Extracts are essential to every e-liquid flavor. Rebels & Kings is handcrafted with only the best US made extracts. RK even set out to make proprietary extracts just for their e-liquid. Our nicotine is extracted from some of the finest ingredients in the US. USP kosher grade nicotine that is VG based adds great flavor to all our blends of flavors
VapeCo Distribution, LLC. (Mad Hatter Juice)	 USA	I Love Salts Line	Founded in Los Angeles, California, Mad Hatter Juice is the company behind the popular Max VG eliquids I Love Donuts, and I Love Cookies. A refreshing addition to the wide range of dessert flavoured e-liquids already on the market, both have excellent vapour production without compromising on flavour.
OKAMI BRAND, LLC.	 USA	Okami Salt	OKVMI BRAND was founded in 2013 in Las Vegas Nevada, USA as lifestyle brand & also a boutique graphic design agency. 2015 Winner Vape Summit III WINNER *Best Coffee Flavor e-juice* HAUTE MOCHA
Goldleaf Drip	 Canada	Goldleaf Drip Salt Series	Salt Series Line of fruit and dessert flavours. Brand till 2016.
Salt King	 USA	Salt King	Nicotine Salt E-liquid line.
REFILL SALT EJUICE	 USA	REFILL SALT Based Nicotine E-Juice	Nicotine Salt E-liquid line.
Propaganda Premium E-liquid	 USA	PROPAGANDA Salts Collection	Propaganda E-Liquid was founded in March 2014 with \$200 and a clear goal: to become one of the top-selling e-liquid companies in the industry. Co-Founder Nicholas DeNuccio, just 18 at the time, spent hours on research and design to develop flavors featuring high-quality ingredients at just the right percentages to create what is known in the industry as an "all-day vape". DeNuccio, now 22, then launched an instantly recognizable brand with a memorable, edgy name and a powerful logo that reads clearly across every platform. Today, Propaganda offers four distinct e-liquid lines featuring 15 flavors, employs 25 enthusiastic millennials, boasts more than 2 million units sold and is available in 5,000+ U.S. vape shops and over 40 countries around the globe.
Nujuice	 USA	NUJUICE NICOTINE SALT	Nicotine Salt E-liquid line. NuJuice Nicotine Salt is a premium salt-based eliquid available in two flavors: Strawberry and Creamy Tobacco.

MANUFACTURERS | Nicsalt e-liquids manufacturers

NICOTINE SALTS E-LIQUID
OVERVIEW



Company	Country	Product Name	Description of company or/and products
SF Vape, Co. (Milk Pops, Fruit Pops, Kandi, Stand, Leaf, Frut Salt, Double Stuffed)		Salt Nicotine Line	Nicotine Salt E-liquid lines.
Salt Bae 50		Salt Bae 50 Salt nicotine E-liquids	Founded in 2017 curator of a revolutionary salt based nicotine for closed pod systems.
Chain Vapez		Chain Vapez salt Ejuice	Formulated out of the south, mixologist lee & his team of chainvaperz wanted to create a brand and lifestyle that represented the culture at its current state. The uphill battle with regulations and big tobacco trying to stop the culture at every turn. aping was created as a healthier alternative, to help people quit smoking to break free from our imprisonment of cigarettes.
East Coast Liquids		East Coast Salt Nicotine Line	The leader in small batch E-liquids out of South Carolina. Started in 2015, East Coast Liquids is a small batch E-liquid company based out of South Carolina's Capitol City, Columbia. Our main focus is to provide the vaping community with the highest quality and flavor E-liquid. We take pride in providing a premium E-Liquid, with highest quality ingredients. All E-Liquid manufacturing is done in a clean room, and every precaution is taken to provide quality assurance.
Juicy Co.		Juicy Co. Salt Nicotine	Nicotine Salt E-liquid line. For an authentic tasting fruit juice experience, look no further. Juicy Co. E Liquid makes phenomenal, realistic fruit based blends that are packed with bold, refreshing flavor that will make you feel fresh, clean and keep your taste buds interested. No collection is complete without a solid fruit flavored blend in it and the flavors from this wonderful liquid line are the perfect options. For an authentic tasting fruit juice experience, look no further. Juicy Co. E Liquid makes phenomenal, realistic fruit based blends that are packed with bold, refreshing flavor that will make you feel fresh, clean and keep your taste buds interested. No collection is complete without a solid fruit flavored blend in it and the flavors from this wonderful liquid line are the perfect options.
Savage Enterprises, LLC (Prophet Premium Blends)		Prophet Nicotine Salt	From the mixer of Savage Eliquid. Iso-7 lab, the finest high quality ingredients and the freshest blends.
13th Floor Elevapors		13th Floor elevapors salt line	13th Floor Elevapors is a premium eliquid that stands for forward thinking, and the next evolution of a smoke-free lifestyle.
SALTD		SALTD Ultra Premium Nicotine Salts	Nicotine Salt E-liquid line.
ACAI EJUICE		ACAI Ejuice	Nicotine Salt E-liquid line.

MANUFACTURERS | Nicsalt e-liquids manufacturers

NICOTINE SALTS E-LIQUID
OVERVIEW



Company	Country	Product Name	Description of company or/and products
High Class Vape Co. (Bombshell)		Bombshell Nicotine Salt Based Line	Bombshell ejuices by High Class Vape Co is the best new eliquid line on the market. Between the high quality flavors, premium nicotine, and low prices
Inked Up E-Liquid Co. (Feelin Salty, Inked UP, Strudel'd, Busted Knuckle)		Salty Line	Inked Up E-Liquid is a line made for the tattooed vaper.
BLUEBIRD ELIQUID		Salty Bluebird Line	Nicotine e-liquid line available in 25/45 mg/ml.
X2O Vapes		x2o Rush Salt line	Founded in 2013, X2O Vapes is a leading brand name in the vapor industry out of Dallas, Texas. X2O Vapes is known for its user-friendly hardware and high quality E-liquids that merge extraordinary style and world-class quality into a unique design. Available in 25/50 mg/ml
Simple Vape Co., Ltd.		Simple Essentials	With a design studio in East London, Simple Vape Co's creative team are charged with providing the vaping world with a lifestyle brand. Sleek packaging and contemporary graphics help us to create a product the style-conscious customer both wants and enjoys. Critical to realising this, is our ISO9001 high tech pharma grade UK lab. Being at the very forefront of science allows Simple Vape Co to be ahead of the competition, in both product development and quality control.
Pod Inc.		Pod Juice	All of our salt juice is manufactured locally in Los Angeles, USA. Pod Juice is made in a super clean, FDA-compliant, ISO laboratory using the highest quality ingredients including our special smooth nicotine salt solution to get you domed. Available in 55mg/ml
AZ Swagg Sauce, LLC.		Swagg Sauce Salt Nerd Nicotine	Introducing Swagg Salt Nerd Nicotine! If you have not heard about nicotine salt, we will fill you in! Nicotine salt is a liquid compound that has been modified from its freebase form to its salt form, in this case, known as its acidic form. Swagg Sauce Salt Nerd is FEMA/GRAS food grade, USP grade. Nicotine salts permit the ability to vape at a much higher nicotine strength without the harshness or throat hit that would traditionally occur if using normal nicotine solution. This product is specifically designed for use in pod based devices and other low output atomizers. Do not use in Sub-Ohm style tanks and atomizers.
Ohm Brew			Brewed in the heart of Belfast, we specialise in producing the finest E Liquids for modern vapers. Ohm Brew Badass Blends are High Capacity 50ml Liquids in a 60ml bottle for use with or without Nicotine shots (sold separately) . 70Vg and available in a mouth watering array of flavours. Produced right here in Northern Ireland UK to the highest standards.
VELO VAPE, LLC.		CAFÉ RACER VAPE, INC.	Our founder's introduction to vaping started all the way back in 2007 (an eternity in vape years) when he left a high profile marketing job at Red Bull to join a scrappy start-up vaporizer company called Ploom (who went on to to release the massively successful Pax Vaporizer in 2012 and later the JUUL by Pax in 2014). Today, Cafe Racer has established itself as one of the leading global e-liquid brands. Lucky 13 took the Best in Show award for the tobacco category at Vape Summit IV in Houston TX and products are sold on 4 continents and at over 100 top vape retailers in the United States.

MANUFACTURERS | Nicsalt e-liquids manufacturers

Company	Country	Product Name	Description of company or/and products
VaporTech USA	 USA	Vaportech Strata	Headquartered in Phoenix, Arizona, VaporTech™ is pioneering the advancement of electronic cigarettes, vaporizers and ultra premium e-liquids by offering affordable, premium quality, innovative products paired with outstanding customer service, all designed to suit a wide variety of consumer needs.
Endo Brands	 USA	Kwit salt nicotine	Nicotine salt e-liquid and starter kits from CBD company Endo. 30/50 mg nicotine versions.
DripMore	 USA	Candy King Salt line	Available in 30mL e-liquid bottle and utilizes salt nicotine to achieve high nicotine level. Recommended for use with closed devices like the MyJet, Mi-One, Suorin Air/Drop, etc.
Dynamic Creations, Inc.	 USA	Dynamic Creations	Dynamic Creations formulates nic-salt based e-liquids for private label on the foundation of our successful nicotine salt e liquid brands. If you have your own recipe, our chemists will review and provide feedback for quality improvements, if necessary. Otherwise, we will custom formulate your nicotine salt e-liquid line based on your brand concept and flavor profile choices.
Independent Vapor Company	 USA	pod. Sophisticated Salt Solutions	Pod. Nicotine Salt Solutions is a project that has been in development since July of 2016 before most manufacturers had even heard of salt nicotine. Nicotine Salts are absorbed by the body differently than traditional free base nicotine products, offering a more satisfying hit at higher milligram strengths. These liquids are designed specifically for mouth to lung setups such as the Suorin Air or Aspire Breeze devices and are not recommended for subohm use.
Apollo Future Technology, Inc.	 USA	Apollo	Apollo E-Cigs is much more than just a supplier of electronic cigarettes and e-liquid. Apollo E-Cigs is a community, Apollo E-Cigs is an innovator, Apollo E-Cigs is a force for good championing the cause of e-cigarettes and e-liquid worldwide. We are very proud of our products, our reputation and above all our commitment to our loyal customers.
Drawed Hermit	 China	Raggae	Nicotine Salt E-liquid line.
First Union Group	 China	Kingsong Salt E-liquid	Established in 2004, FirstUnion Group is the largest manufacturer of electronic cigarettes in the world based in Shenzhen, Guangdong, China. Employing more than 10,000 staff, we now possess three factories with areas of 120,000 square meters equipped with LEAN production line that meets dust-free requirement.
Feellife Medical Inc	 China, USA	Nicotine Salt E-liquid	Feellife Medical Inc, established in 2013, is an international medical corporation specializing in R&D, manufacturing and marketing of portable mesh nebulizers with the concept of "the third way of dosing for human".

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Dmitri Churakov,
CEO Wingle Group

Phone: +852 51759256

E-mail: dev@winglegroup.com

winglegroup.com