Thank you for your interest in Bloom Farms™ medical cannabis oil. Understanding exactly what is in each Highlighter should be important to anyone interested in our products. Bloom Farms is committed to quality, consistency, and integrity.

Why use any additive?

Our CO_2 extracted oils are sourced from small family farms in different growing regions throughout the State of California. Individual strains and terroirs create an oil of individual flavor, viscosity, and potency. We carefully blend these together with a maximum of 10% diluent to create formulation that both works well in the Highlighter™ cartridge and has a consistent THC content. It is our belief that this consistent product with a pleasurable flavor creates the most predictable and positive experience for our patients.

What is this additive?

We have chosen to use United States Pharmacopeia (USP) grade poly(ethylene glycol) 400, or PEG-400, as a diluent in our Highlighter™ pens. This pharmaceutical grade product we use is a clear, odorless, inert liquid, *not* suspected as a carcinogen by the State of California, and which the FDA considers Generally Regarded As Safe (GRAS). Commonly found in creams, shampoos, therapeutic drugs formulations, eye drops, vitamins, and suppositories, PEG is a compound many people are regularly exposed to. Our USP grade PEG-400 should not be confused with propylene glycol (PG), or vegetable glycerine (VG). These much smaller and lighter compounds are the major components of the 'e-juice' found in vaping devices.

What about the research?

With the rapid rise in the use of e-cigs as an alternative to smoking tobacco, research has shown e-cigs be much less harmful than traditional cigarettes[1]. Most e-cigs use PG / VG blends to suspend the flavors and nicotine. Studies have shown that when heated and 'vaped', the e-juice can produce toxic molecules at trace levels, though 9-450 times lower than found in tobacco smoke[2]. A different study[3] examining the solvents and voltage used in e-cigs (PG, VG, PEG) found that the formulation with PEG did not produce detectable levels of toxic carbonyl compounds compared with PG / VG blends. The same authors demonstrated that even with PG / VG blends, lower voltage systems (4V and below), dramatically reduced or did not produce the toxins they were studying. To provide some perspective, it should be noted that several of the compounds in these studies can be found in the exhale of a healthy human[4]. Bloom Farms(™) is committed to monitor this research and modify our processes and formulations as new information becomes available.

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[1] Farsalinos K, Polosa P. Safety evaluation and risk assessment of electronic cigarettes as tobacco cigarette substitutes: a systematic review. *Ther Adv Drug Saf* 2014;**5**:67-86.

[2] Gonieweicz, ML, *et al*. Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. *Tob Control* 2013;**0**:1-7.

[3] Kosmider L, *et al.* Carbonyl Compounds in Electronic Cigarettes Vapors: Effect of Nicotine Solvent and Battery Output Voltage. *Nicotine & Tobacco Research* 2014;**10**:1319-1326.

[4] Fenske J, Paulson S. Human Breath Emissions of VOCs. *J. Air & Waste Manage. Assoc.* **49**:594-598.