Testing Tables

Tables of Requirements

TESTING TABLES follow below

12. Tables of Requirements

12.1 Table 1. Sampling guidance for laboratories

Sample type	Representative sampling scheme	Recommended quantity for lab testing (AOAC reference is method 2018.11)
Harvest Lot	Labs develop a comprehensive sampling plan for submitted samples, which followed the Hemp Pre-Harvest Sampling Protocol.	AOAC recommends a minimum of 5g for grinding (homogenization), then 0.5g for potency extraction.
Liquids, including concentrates,	AOAC recommends thorough homogenization.	AOAC recommends a dilution using 0.05g for concentrates and tinctures, or

tinctures, and oils		0.5g of oil, with a final volume of 25ml of solvent for all products.
Solids, including salves, pressed material, dried trim flower, etc	Mix uniform material in a product container; otherwise representative sampling.	Several references recommend 2g for 95% confidence level; for dried trim flower AOAC recommends 5g (see harvest lot above).
Infused products	Follow FDA GLP guidelines or other guidelines from recognized sources in section 4.2.	Develop lab SOPs from guidelines from recognized sources in section 4.2.

NOTE: Hemp registration for personal use only requires potency and moisture testing from the harvest lot requirements.

12.2 Table 2. Testing requirements for hemp (N/A = not applicable)

	Potency	**Moisture or Water Activity**	**Microbiological (mycotoxins, total aerobic microbial, total combined yeast & mold)**	**Heavy Metals**	**Pesticides**	**Residual solvents**
Harvest lot						
	Each lot	Each lot	N/A	Note 5	Each Lot Note 6	N/A
Plant material						
Trim flower	Note 1	Each process lot	Each process lot	Note 1	Note 1	N/A
Concentrates						
Liquids	Each process lot	N/A	Each process lot	Each process lot	Each process lot	Note 3
Solids	Each process lot	N/A	Each process lot	Each process lot	Each process lot	Note 3
Products and Infused products						
Liquids, including infused products (tinctures, and water based)	Note 4	N/A	Note 2	Note 1 or Note 2	Note 2	Note 2 or Note 3
Solids, including infused edibles, tablets	Note 4	N/A	Note 2	Note 1 or Note 2	Note 2	Note 2 or Note 3

Note 1: Harvest lot testing is sufficient to show compliance.

Note 2: Trim flower or hemp concentrate testing is sufficient to show compliance.

Note 3: Residual solvents are tested whenever solvent based extraction techniques are used.

Note 4: Please apply the standards articulated in Vermont Hemp Program Rule Section 8.3 (a) for potency compliance. (Summarized, a hemp product or hemp-infused product process lot complies when a CoA demonstrates that the product meets the acceptable potency level or the processor's formulation demonstrates compliance with the acceptable potency level.) Please apply the standards articulated in Vermont Hemp Program Rule Section 6 for processors. (Summarized: all claims of a specific quantity of any cannabinoid must be analyzed at least once to confirm formulation).

Note 5: Testing for heavy metals is required whenever the hemp crop land was used for orchard crops or any land use other than farming as defined in the Required Agricultural Practices Rule, unless a recent soils test demonstrates that the heavy metals are within the authorized action limits for soils.

Note 6: No pesticide testing required if crop is certified organic.

Note 7: Testing for other contaminants is necessary when the Agency of Natural Resources has approved biosolids applications to the hemp crop land.

12.3 Table 3. Potency parameters and limits for hemp: crops, trim flower, products and infused-products

Parameter	Action limits (%)
d9-THC	0.3
Total THC	1.0

12.4 Table 4 Moisture parameters and limits (either analysis) for hemp and cannabis

Parameter	Action limits for trim flower
Moisture content	13 %
Water activity	0.65

12.5 Table 5. Microbiological parameters and limits for hemp and cannabis

Parameter	Action limits for trim flower	Action limits for concentrates	Action limits for products and infused-products
Total Aerobic Microbial Count (CFU per gram or ml) *	100,000	10,000	1000
Total Combined Yeast and Mold Count (CFU per gram or ml) *	10,000	1000	100
Mycotoxin: the total of Aflatoxin B1, B2, G1, and G2	20 ppb	20ppb	20ppb
Mycotoxin- Ochratoxin A	20 ppb	20ppb	20ppb

*CFU = Colony Forming Unit per gram or milliliter (CFU/g or CFU/ml)

12.6 Table 6. Metal parameters and limits for hemp and cannabis

Parameter	Action limits for harvest lot and trim flower (ppm, mg/kg)	Action limits for concentrates, products and infused-products (ppm, mg/kg, mg/l)	Action limits for soil (ppm, mg/kg) for agricultural use (additional levels for Cr, Cu, Ni, and Zn, see Note 1)
Arsenic	0.200	1.500	---
Cadmium	0.200	0.500	0.43
Lead	0.500	1.000	200
Mercury	0.100	1.500	---

Note 1: Soil action limits for Agricultural use, (NYSDEC) as referenced in UVM table 2 : http://www.uvm.edu/vtvegandberry/factsheets/interpreting_heavy_metals_soil_tests.pdf
Additional levels must also be met for Chromium (11 ppm), Copper (270), Nickel (72 ppm) and Zinc (1100 ppm).

12.7 Table 7. Pesticide parameters and limits for hemp and cannabis

Parameter	Action limits for harvest lots, trim flower, concentrates, products and infused-products (ppm, mg/kg, mg/l)
Acephate	0.1
Acequinocyl	0.1
Abamectin (each isomer)	0.1
Azoxystrobin	0.1
Bifenazate	0.1
Bifenthrin	3.0

Carbaryl	0.5
Chlorpyrifos	0.04
Cypermethrin (zeta) sum of isomers	1.0
Etoxazole	0.1
Imazalil	0.04
Imidacloprid	5.0
Myclobutanil	0.1
Pyrethrins I and II (sum of isomers)	0.5
Spinosyn (each for Spinosad A & D)	0.1

12.8 Table 8. Residual solvent parameters and limits for hemp and cannabis

Parameter	Action limits for concentrates, products and infused-products (ppm, mg/kg, mg/l)
Acetone	5000
Acetonitrile	410
Benzene	2
Chloroform	60
Ethanol	5000
Heptanes (total)	5000
Hexanes (total)	290
Isopropyl alcohol	5000
Methanol	3000
Methylene Chloride	600
Toluene	890
Xylenes (total)	2170
Any solvent not permitted for extraction in the hemp rule (butane, propane, or other hydrocarbons) each	5000

12.9 Table 9. Cannabinoid labeling requirements for hemp and cannabis

Parameter	Hemp: trim flower, products and infused products	Hemp concentrate	Cannabis and cannabis products
Cannabinoids	Within 20% of label value	Within 10% of label value	Within 10% of label value