1.0 Purpose

The purpose of this procedure is to define responsibilities and documentation requirements for new and/ or revisions to all finished products manufactured at Ion Labs, Inc.

2.0 Scope

This procedure applies to finished products manufactured at Ion Labs, Inc.

3.0 Responsibility

3.1 It is the responsibility of the QC Laboratory to test all finished products as defined in the Product Profile. The QC Laboratory is also responsible for providing certain information required to create a product profile.

3.2 It is the responsibility of R&D to create product profiles, FPTDs, and FPTTs.

3.3 It is the responsibility of Quality Management to review and approve product profiles, FPTDs, FPTTs, and COAs.

3.4 It is the responsibility of the QC Laboratory to input and verify the results on the Ingredient Addition Verification Specification and Results Form (refer to SOP D-403 Calculations for Ingredient Addition Verification Specification and Results Form for Finished Products).

3.5 It is the responsibility of Sales to provide customer specific requested information required for customer's COA.

3.6 It is the responsibility of Quality to create a customer's COA.

3.7 It is the responsibility of DC to issue all Ingredient Addition Verification Specification and Results forms. DC is also responsible for maintaining approved product profiles, FPTDs, and FPTTs.

4.0 Definitions

4.1 **Product Profile** – Establishes the product formula and all in-process, finished product, and stability specifications which ensures the identity, purity, strength, and composition of the finished product

4.2 **FPTD** – Finished Product Test Details; document which provides detailed instructions for the preparation of standard and sample solutions for the required analytical tests and the assay calculation.

4.3 **FPTT** – Finished Product Test Ticket; an internal COA that contains the finished product specifications derived from the product profile, used to record finished product test results

4.4 **Identity** – A specific unique characteristic of a finished product; a positive match between an established/standardized characteristic and a tested finished product attribute

4.5 **Purity** – Absence of impurities and contamination

4.6 **Strength** – Quantity of an identified ingredient

4.7 **Composition** – An evaluation to confirm the stated constituent(s) of any raw material or finished product, i.e. pH, density, moisture, FTIR.

4.8 **FTIR** – Fourier Transform Infra-Red Spectroscopy Analysis

4.9 **Marker Chemical** – A chemical constituent in a finished product that has been identified for analytical testing

4.10 **TAPC** – Total Aerobic Plate Count

4.11 **OOS** – Out of Specification

4.12 **OOT** – Out of Trend

4.13 **IAV** – Ingredient Addition Verification Specification and Results Form; document which contains quantitative ingredient specifications associated with label claim support

4.14 **COA** – Certificate of Analysis

4.15 **Quality** – Comprises all Quality Departments

4.16 **QA** – Quality Assurance

4.17 **QC** – Quality Control

4.18 **DC** – Document Control

4.19 **R&D** – Research and Development

4.20 **MBR** – Master Batch Record

4.21 **BPR** – Batch Production Record

4.22 **SCCP** – Scientific Committee of Consumer Products

5.0 References

5.1 D-403, SOP, Calculations for Ingredient Addition Verification and Results Form for Finished Product

5.2 C-601, SOP, New Product Approval Process

5.3 D-401-F1-XXXXXXXX, Form, Finished Product Test Details

5.4 D-401-F2-XXXXXXXX, Form, Finished Product Test Ticket

5.5 USP <2023>, Monograph, Microbial Attributes of Nonsterile Nutritional and Dietary Supplements

5.6 NSF/ASNI 173, Standards, Dietary Supplements

5.7 USP <1111>, Pharmacopeial Monograph, Microbiological Examination of Nonsterile Products: Acceptance Criteria for Pharmaceutical Preparations and Substances for Pharmaceutical Use

5.8 D-902, SOP, Establishment of Specifications

5.9 D-105, SOP, Out of Specification/Out of Trend Investigation

5.10 C-502, SOP, Record Storage, Retention, and Destruction

5.11 C-601, SOP, New Product Approval Process

5.12 C-601-F1, Form, New Product Approval Form

5.13 D-715, SOP, Microbial Limit Testing using the 3M™ Petrifilm™ System

5.14 D-715.0, SOP, Microbial Limit Testing using Agar Plates

6.0 Procedure

6.1 A sales order is received for a new product prior to the manufacture of the first production batch. Quality must assess and establish that the new product can be manufactured and tested without issues. The supportive rationale will be documented in a new product approval report and attached to Form C-601-F1 New Product Approval Form (refer to SOP C-601 New Product Approval Process).

6.2 R&D will create a product profile for the new approved product based on the information provided in the new product approval report.

6.2.1 The product profile will define the finished product specifications, including the specifications required to support the label claim, support stability and to

determine if there are any test exemptions, and define a reduced testing program if applicable.

6.2.2 All finished product specifications are selected to encompass the identity, purity, strength, and composition of the final product. Additional performance related specifications, although not mandatory for each product, may be included in the finished product specifications. In addition, the appropriate stability tests are also specified.

6.3 R&D will obtain templates from DC and complete the required fields for Form D-401-F2-XXXXXXXX (reference attachment 1) and Form D-401-F1-XXXXXXXX (reference attachment 2).

Note: The XXXXXXXX represents the unique formulation number given to each formula.

6.4 All required finished product tests for which there are scientifically valid test methods will be performed in-house or by a third party laboratory. The testing criteria with specifications will be outlined in the product profile. The product specific test detail form(s) will provide instructions for each analytical method. When necessary, the product profile will specify the rationale for test exemptions when there is no scientifically valid method for testing an analyte in the finished product matrix and identifies appropriate controls and other tests to justify this approach. A reduced testing program may also be defined in the test exemption section when applicable.

6.5 Purity specifications and testing are associated with microbial contaminants, are dependent upon the finished product type, and are derived from recognized standard guidelines. For dietary and pet supplements USP <2023> and NSF/ANSI 173 guidance is used to define specifications. For cosmetics SCCP guidance is used to define specifications. For OTC pharmaceuticals USP <1111> guidance is used to define specifications. Minimum purity testing for dietary and animal companion animal supplements includes TAPC, E. coli, Salmonella and Yeast / Mold and the methods and

specifications are defined in SOP D-715 Microbial Limit Testing using the 3M™ Petrifilm™ System. Specifications for cosmetics and pharmaceuticals are defined in SOP D-715.0 Microbial Limit Testing using Agar Plates.

6.6 SOP D-902, Establishment of Specifications, should be referenced and followed for specification creation and defining testing requirements.

6.7 DC will generate an IAV that will include the following information:

6.7.1 Ingredient Name

6.7.2 Label Claim

6.7.3 Specifications

6.7.4 Results & Calculated By/Date

6.7.5 Signature/Date of DC, R&D, and Quality approvals when the form is issued and completed

6.8 Once R&D completes the product profile, FPTD, and FPTT, they are submitted for interdepartmental review and approval.

6.9 Once approved, the IAV, product profile, FPTD, and FPTT will become part of the MBR.

6.10 Once a batch is issued, a copy of the FPTT and product specific test details forms will be submitted to the QC Laboratory. The QC Laboratory will perform the specified testing in accordance with the specified method and document the test results on the FPTT and all associated testing and results in the QC laboratory notebooks.

6.11 The completed IAV, completed FPTT (with reference to any laboratory notebook containing the testing performed), a completed customer COA, and any OOS/OOT investigations are collected by Quality and included in the executed BPR.

6.12 All documents will be maintained as outlined in SOP C-502 Record Storage, Retention, and Destruction.

7.0 Revision History

Revision	Date	Description of Changes	CCR #	By
0	07/23/10	New	-	-
1	06/10/11	Made SOP more detailed, added form	-	-
2	08/08/11	Made some minor changes	-	-
3	01/9/12	Added section 5.2	-	-
4	07/18/12	Made SOP more detailed. Made some clarifications, made changes to table for microbial limits.	-	-
5	09/07/12	Added section 3.14, added in section 4.3 "...to enter results on Ingredient Addition Verification Specification and Results Form", added in section 4.4 "...issue Ingredient Addition Verification Specification and Results Form, added in section 5.5 "...testing to support the label claims...and (2) the verification of ingredient addition.", added section 5.6, added in section 5.8 "...the Ingredient Addition Verification Specification and Results Form...", added in section 5.14 "...completed Ingredient Addition Verification Specification and Results Form..."; changes in Form D-401-F1, D-401-F2, D-401-F3	-	-
6	12/31/12	Added [2] in table 5.5.1	-	-
7	09/30/13	Improved clarity, removed pet products, medical food, and cosmetics, added definitions, added responsibility for product profile, clarified and updated instructions and responsibilities, removed tables and generic forms	13-426	J. Mix
8	04/01/16	Biennial review: updated SOP format.	16-0206	B. Johns
9	11/10/16	Addition of OTC Pharmaceutical processes	16-1003	B. Johns
10	06/24/19	Removed reference to obsolete documents. Updated responsibilities.	19-0402	K. Burris
11	11/20/19	3 year review. Changed title to reflect SOP contents. Minor clarifications in document.	19-0884	J. Sassman
12	02/02/23	Added finished product test details. Updated logo and format. Added attachment 2.	CC-23-0064	K. Burris

8.0 Attachments

8.1 Attachment 1 – Example of FPTT Template (Form D-401-F2-XXXXXXXX)

8.2 Attachment 2 – Example of FPTD Template (Form D-401-F1-XXXXXXXX)

ATTACHMENT 1 - EXAMPLE OF FPTT TEMPLATE (FORM D-401-F2-XXXXXXXX)

This is an example only. Actual test requirements will change based on the product the document applies to.

Product: *Product Name* *Batchmaster Revision X*

Formulation #: *XXXXXXXX* **Batch #:** _____

Category: *Dietary Supplement/Cosmetic/Companion Animal Supplement*

Dosage Form: *Tablet/Capsule/Powder/Liquid/Lotion/Cream*

Shelf Life: *Manufacturing Date or X Year Best By Date/Expiration Date*

IDENTITY

Test	Method	Release Specification	Results	Notebook Reference	Entered by/Date
Organoleptic – Appearance	D-722				
FTIR	D-823	NLT 0.90 correlation when compared to the raw material blend			

PURITY

Test	Method	Release Specification	Results	Notebook Reference	Entered by/Date
Total Aerobic Plate Count	D-715	NMT 10,000 cfu/g			
Total Yeast & Mold	D-715	NMT 1,000 cfu/g			
E. coli	D-715	Negative			
Salmonella	D-715	Negative			

STRENGTH PER UNIT DOSE by Analysis

Ingredients	Claim	Method	Release Specification	Results	Notebook Reference	Entered by/Date
Ingredient Name	*XX mg*	*D-XXX*	*NLT 100% of Claim*			

STRENGTH PER UNIT DOSE by Ingredient Addition Verification

Test	Claim	Release Specification	Results	Notebook Reference	Entered by/Date
Ingredient Name	*XX mg*	*NLT 100% of Claim*			

COMPOSITION

Test	Method	Release Specification	Results	Notebook Reference	Entered by/Date
Weight Variation	D-712	Conforms to USP <2091>			
Disintegration	D-703	NMT 30 minutes			

QC Reviewed By/ Date _____

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ATTACHMENT 2 - EXAMPLE OF FPTD TEMPLATE (FORM D-401-F1-XXXXXXXX)

This is an example only. Actual test requirements will change based on the product the document applies to.

Product: *Product Name*

Formula: *XXXXXXXX*

Test: *Elemental Impurities*

1.0 Summary

1.1 T

he following details have been verified as optimal for the Elemental Impurities of *Product Name*. Any detail listed below supersedes the testing instructions provided in D-777.

Topic	Instructions/ Details		
Reference	Elemental Impurities Validation Report		
Sample Amount	Grind in a mortar and pestle to obtain a homogeneous powder. Transfer 0.25 g to a digestion vessel. Record the weight of sample added to the vessel.		
Digestion Reagents	5 mL nitric acid 1 mL hydrochloric acid		
Digestion Wait Time	Wait at least 5 min after adding reagents before starting digestion		
Digestion Temperature Program	Ramp (min) 5 5 5	Temp (°C) 75 120 180	Hold (min) 5 5 10
Stock Sample Volume	50 mL		
EI Dilution	5.0 mL of Stock Sample / 15 mL		

2.0 Calculation

$$\mathbf{EI}\left(\frac{\mu g}{day}\right) = R_u \div R_s \times \frac{1\mu g}{1000\ ng} \times \mathbf{Dilution\ Factor\ (mL)} \times \frac{\mathbf{Max\ Daily\ Dose}\left(\frac{kg}{day}\right)}{\mathbf{Sample\ Wt\ (g)}} \times \frac{1000g}{kg}$$

R_u = Instrument response for target element in the Sample Preparation

R_s = Slope of the calibration curve (mL/ng)

Max Daily Dose = 0.00637268 kg/day (4 tablets)