NSF International Standard /
American National Standard

NSF/ANSI 173 - 2022

Dietary Supplements



NSF International, an independent, not-for-profit, nongovernmental organization, is dedicated to being the leading global provider of public health and safety-based risk management solutions while serving the interests of all stakeholders.

This standard is subject to revision.
Contact NSF to confirm this revision is current.

Users of this standard may request clarifications and interpretations, or propose revisions by contacting:

Chair, Joint Committee on Dietary Supplements
c/o NSF International
789 North Dixboro Road, P.O. Box 130140
Ann Arbor, Michigan 48113-0140 U.S.A.
Phone: (734) 769-8010 Fax: (734) 769-0109
Email: info@nsf.org
Web: <www.nsf.org>

NSF International Standard /
American National Standard
for Dietary Supplements –

Dietary Supplements

Standard Developer
NSF International

Designated as an ANSI Standard
April 29, 2022
American National Standards Institute

Prepared by
The NSF Joint Committee on Dietary Supplements

Recommended for adoption by
The NSF Public Health Council

Adopted by
NSF International
January 2003

Revised July 2006	Revised August 2006	Revised July 2007
Revised April 2008	Revised September 2008	Revised April 2009
Revised November 2010	Revised September 2011	Revised August 2012
Revised February 2014	Revised April 2016	Revised February 2019
Revised October 2019	Revised September 2020	Revised July 2021
Revised May 2023		

Published by
NSF International
P.O. Box 130140, Ann Arbor, Michigan 48113-0140, U.S.A.

For ordering copies or for making inquiries with regard to this Standard, please reference the designation "NSF/ANSI 173 – 2022."

Disclaimers[1]

NSF International (NSF), in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of NSF represent its professional judgment. NSF shall not be responsible to anyone for the use of or reliance upon this standard by anyone. NSF shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this standard. It is the responsibility of the user of this standard to judge the suitability of the ANS for the user's purpose.

Participation in NSF standards development activities by regulatory agency representatives (federal, state, or local) shall not constitute their agency's endorsement of NSF or any of its standards.

Preference is given to the use of performance criteria measurable by examination or testing in NSF standards development when such performance criteria may reasonably be used in lieu of design, materials, or construction criteria.

A dual-unit technical standard may use both non-SI (English System of Measurement) and SI units of measure (SI is the International System of Units, commonly known as the metric system). Unless stated otherwise, whichever system provided in the primary position is the official and normative unit value. Units may be provided in parentheses immediately following the primary units when required for clarity or informational purposes. As such, these values stated are not interchangeable, should be regarded separately, and used independently. Interchanging values from both unit systems may result in errors.

The illustrations, if provided, are intended to assist in understanding their adjacent standard requirements. However, the illustrations may not include all requirements for a specific product or unit, nor do they show the only method of fabricating such arrangements. Such partial drawings shall not be used to justify improper or incomplete design and construction.

At the time of this publication, examples of programs and processes were provided for general guidance. This information is given for the convenience of users of this standard and does not constitute an endorsement by NSF International. Equivalent programs and processes may be used.

Unless otherwise referenced, the annexes are not considered an integral part of NSF standards. The annexes are provided as general guidelines to the manufacturer, regulatory agency, user, or certifying organization.

[1] The information contained in this disclaimer is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this disclaimer may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.

Abbreviations

The following table is provided as a reference for unit abbreviations for common forms of measurement used within NSF documents.

time	second	s
	minute	min
	hour	h
	day	d
	week	wk
	month	mo
	year	yr
length	inch	in
	foot	ft
	yard	yd
	micrometer	µm
	nanometer	nm
	millimeter	mm
	centimeter	cm
	meter	m
	kilometer	km
liquid measure	milliliter	mL
	liter	L
	liters per day	LPD
	liters per minute	LPM
	ounce	oz
	pint	pt
	quart	qt
	gallon	gal
	gallons per minute	GPM
	gallons per day	GPD
weight	microgram	µg
	picogram	pg
	nanogram	ng
	milligram	mg
	centigram	cg
	gram	g
	kilogram	kg
	pounds	lb
	tons	t
concentration	parts per million	ppm
	parts per billion	ppb
miscellaneous	colony forming units	CFU

Contents

Foreword[2]

The purpose of NSF/ANSI 173 is to serve as an evaluation tool for analyzing dietary supplements. Certification to this standard serves as a communication tool between manufacturers of ingredients and finished product, retailers, healthcare practitioners, and consumers. This standard provides test methods and evaluation criteria to allow for the determination that a dietary supplement contains the ingredients claimed on the label, either qualitatively or quantitatively, and that it does not contain specific undeclared contaminants. In some instances, validated laboratory methods are not yet available for analyzing certain ingredients. In such cases, new methods will be added to this standard as they become available.

NSF/ANSI 173 was developed with participation from the dietary supplements industry, public health regulators, and distributors of dietary supplements. Participation and technical guidance were provided by representatives of the American Herbal Products Association (APHA), the American Pharmaceutical Association (APA), the Consumer Healthcare Products Association (CHPA), the Council for Responsible Nutrition (CRN), the National Institutes of Health (NIH), and the National Nutritional Foods Association (NNFA).

This edition of the standard contains the following revisions:

Issue 66

This revision adds language regarding probiotics in Sections 4.2, 5.1, and 5.2, and created new sections 6.2.4 and 8.7. It also added a definition for *probiotics* in Section 3 and updated a normative reference in Section 2.

Issue 91

This revision reorganizes the tables in Section 5 for clarity.

Issue 92

This revision removed Section 7.3.9: *Pseudomonas aeruginosa* due to the determination that the pathogen is not of significant public health concern as a food borne pathogen. This change brings the standard in line with other public health documents.

Issue 95

This revision removes reference to *Pseudomonas aeruginosa* in Section 5.3.3: *Microbiological contaminants* to reflect the change made in Issue 92.

Issue 97

This revision modifies the language in Sections 5.3 and 7.2 regarding pesticide evaluation to permit alternate means of evaluation.

Issue 98

This revision updates language in Section 4.1 regarding caffeine to that currently in use by the American Herbal Products Association (AHPA).

[2] The information contained in this foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.

Issue 99

This revision will update Section 7.3.7.1: *Generic E. Coli.*

Issue 101

The proposed revision amends Section 5.3.1.2 to specify methylmercury as well as total mercury levels.

Issue 102

This revision removes “shall” from informative notes, adds missing references, changes “must” to “shall” in normative sections, and moves a requirement that is currently in a note.

Issue 103

This revision removes and/or statements throughout the standard.

Issue 106

This revision updates Section 1.2 to clarify that both finished dietary supplement products and dietary ingredients may be evaluated under the scope of the standard.

Issue 108

This revision corrects language in Section 7.2.1. An inadvertent overlap in balloted language was caused by the same section being in two different ballots open at the same time.

This standard was developed by the NSF Joint Committee on Dietary Supplements using the consensus process described by the American National Standards Institute.

This standard and the accompanying text are intended for voluntary use by certifying organizations, regulatory agencies, and/or manufacturers as a basis of providing assurances that adequate health protection exists for covered products.

Suggestions for improvement of this standard are welcome. This standard is maintained on a continuous maintenance schedule and can be opened for comment at any time. Comments should be sent to: Chair, Joint Committee on Dietary Supplements at standards@nsf.org, or c/o NSF International, Standards Department, P.O. Box 130140, Ann Arbor, Michigan 48113-0140, U.S.A.

NSF/ANSI Standard
for Health Sciences –

Dietary Supplements

1 General

1.1 Purpose

This standard provides test methods and evaluation criteria for dietary supplement products to allow for the determination that the ingredients in the product are accurately identified, that the product contains the quantity of dietary ingredients and marker constituents declared on the product label, and that the product does not contain unacceptable quantities of contaminants.

This standard provides criteria for determining that good manufacturing practices (GMP) were followed in the production of dietary supplements.

1.2 Scope

This standard contains requirements for dietary supplements and dietary ingredients that contain one or more of the following: a vitamin, a mineral, an herb or other botanical, an amino acid, a dietary substance for use by humans to supplement the diet by increasing the total dietary intake, or a concentrate, metabolite, constituent, extract, or combinations of these ingredients.

Products and ingredients deemed a hazard to public health or safety by a regulatory agency having jurisdiction shall be excluded from the scope of this document. Conventional foods are excluded from the scope of this standard.

Manufacturers shall exercise due diligence to ensure compliance with all applicable regulatory requirements, but compliance with this standard in itself does not imply that all regulatory requirements have been met.

1.3 Formulation submission

The manufacturer shall submit, at a minimum, the following information for each product:

— complete formulation information, which includes the following:

  — the composition of the formulation (in percent or parts by weight for each ingredient in the formulation including excipients);

    NOTE — Ranges may be considered acceptable.

  — the reaction process, if applicable;

  — the component ID number (if applicable), chemical / material name, trade name and supplier(s) for each chemical present in the formulation;

  — a list of known or suspected impurities associated with the finished product; and