



Food and Agriculture
Organization of the
United Nations



World Health
Organization

FAO
PLANT
PRODUCTION
AND PROTECTION
PAPER

228

Manual on development and use of FAO and WHO specifications for pesticides

First edition - third revision

March 2016

PESTICIDE SPECIFICATIONS

Manual on development and use of FAO and WHO specifications for pesticides

First edition - third revision

March 2016

AVAILABLE ONLY ON THE INTERNET

Prepared by the
FAO/WHO Joint Meeting on Pesticide Specifications (JMPS)

WORLD HEALTH ORGANIZATION



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS



Geneva and Rome, 2016

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) or of the World Health Organization (WHO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these are or have been endorsed or recommended by FAO or WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters. All reasonable precautions have been taken by FAO and WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall FAO and WHO be liable for damages arising from its use.

The views expressed herein are those of the authors and do not necessarily represent those of FAO or WHO.

© WHO and FAO, 2016

All rights reserved. WHO and FAO encourage the use, reproduction and dissemination of material in this information product. Except where otherwise indicated, material may be copied, downloaded and printed for private study, research and teaching purposes, provided that appropriate acknowledgement of WHO and FAO as the source and copyright holder is given and that WHO and FAO's endorsement of users' views, products or services is not implied in any way

Publications of the World Health Organization are available on the WHO web site (www.who.int) or can be purchased from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to WHO Press through the WHO web site (http://www.who.int/about/licensing/copyright_form/en/index.html).

All requests for translation and adaptation rights, and for resale and other commercial use rights should be made via www.fao.org/contact-us/licence-request or addressed to copyright@fao.org. FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org.

CONTENTS

	Pages
Disclaimer	VIII
Procedures for handling confidential proprietary data and potential conflicts of interest	IX
Background to FAO and WHO specifications for pesticides	XI-XIV
1. Introduction	
1.1 Scope of specifications	1-2
1.2 The JMPS	2
1.3 Liaison with other international organizations	2-5
1.4 Participation by the pesticide industry	5
1.5 Purpose and use of specifications	5-7
1.6 Access to FAO and WHO specifications	7
2. The process of developing FAO/WHO specifications	
2.1 Categories of specification and their status	8-9
2.2 Submission of proposals and data	9
2.3 Meetings and functions of the JMPS	9-10
2.4 Confidentiality of information	10
2.5 Timetable and principles for the development of specifications	11-14
2.6 Publication of specifications	14-15
2.7 Review of specifications	15-16
2.8 Overview of information required for specifications	16
2.9 Acceptability of analytical and physical test methods	16-17
3. Data requirements and procedures for development of FAO/WHO specifications	
3.1 Minimum data requirements for support of the reference specification for an active ingredient	19
A Data requirements for pure and technical grade active ingredients (TC/TK)	20-23
B Data requirements for formulations	23
C Methods for the analysis and testing of TC/TK and formulations	23-24
D Determination of the relevance or non-relevance of impurities	24-26
3.2 Minimum data requirements for extension of an existing specification to an additional manufacturer or a new manufacturing route	26-27
E Data requirements for the determination of equivalence	27-28
F Determination of equivalence	28-30
3.3 Extension of slow release specifications	30-31
3.4 Evaluation reports	31-34
3.5 Decision making and action procedures for dealing with submissions from initial and subsequent proposers	34-35
3.6 Prioritization criteria for development and review of specifications	35-36
4. Aims, applicability, and requirements of specification clauses	
Introduction	37-38
4.1 Title and code	38-39
4.2 Description	39-40
4.3 Active ingredient	
4.3.1 Identity tests	40-41
4.3.2 Content of active ingredient	41-43
4.3.3 Expanded tolerances for active ingredient content of mixed solid formulations	43
4.3.4 Tablet dose uniformity	43

4.3.5	Rate of release, or wash retention index, of active ingredient ...	44-45
4.3.6	“Free” active ingredient	45-46
4.4	Relevant impurities	
4.4.1	By-products of manufacture or storage	46-47
4.4.2	Water.....	47
4.4.3	Insolubles	47-48
4.5	Physical properties	
	Introduction	48
4.5.1	to 10 Density (pour and tap bulk density)	49
4.5.11	to 20 Surface (wettability, persistent foam)	49-50
4.5.21	to 30 Volatilization (volatility)	50-51
4.5.31	to 40 Particulate, fragmentation and adhesion (wet sieve, dry sieve, nominal size range, dustiness, attrition resistance or degree of attrition, tablet integrity, adhesion to seeds, particle size range, tablet hardness).....	51-55
4.5.41	to 50 Dispersion (dispersibility and spontaneity of dispersion, disintegration time, suspensibility, dispersion stability, emulsion stability)	55-58
4.5.51	to 60 Flow (flowability, pourability, viscosity)	58-59
4.5.61	to 70 Solution and dissolution (acidity, alkalinity, pH range, miscibility with oil, dissolution of water-soluble bags, degree of dissolution, solution stability)	59-61
4.6	Storage stability (at 0°C, at elevated temperature)	61-64
5.	Specification guidelines for technical materials and technical concentrates (except microbial TKs)	
	Introduction.....	65
5.1	Technical materials (TC)	66-67
5.2	Technical concentrates (TK)	68-69
6.	Specification guidelines for solid formulations	
	Categorization of solid formulations.....	70
6.1	to 6.10 solid formulations for direct use	
6.1	Dustable powders (DP)	70-71
6.2	Powders for dry seed treatment (DS)	72-74
6.3	Granules (GR).....	75-77
6.4	Tablets for direct application (DT)	78-80
6.11	to 6.20 solid formulations for dispersion	
6.11	Wettable powders (WP and WP-SB)	82-88
6.12	Water dispersible powders for slurry seed treatment (WS)	89-91
6.13	Water dispersible granules (WG and WG-SB).....	92-100
6.14	Water dispersible tablets (WT)	101-103
6.15	Emulsifiable granules (EG).....	104-106
6.16	Emulsifiable powders (EP)	107-109
6.21	to 6.30 solid formulations for dissolution	
6.21	Water soluble powders (SP).....	110-113
6.22	Water soluble powders for seed treatment (SS).....	114-116
6.23	Water soluble granules (SG)	117-120
6.24	Water soluble tablets (ST).....	121-123
7.	Specification guidelines for liquid formulated pesticides	
	Categorization of liquid formulations.....	124

7.1 to 7.10	Simple solutions	
7.1	Soluble concentrates (SL).....	125-127
7.2	Solutions for seed treatment (LS)	128-130
7.3	Oil miscible liquids (OL)	131-132
7.4	Ultra low volume liquids (UL)	133-135
7.5	Gel for direct application formulation (GD)	136-137
7.11 to 7.20	Solutions for dispersion	
7.11	Emulsifiable concentrates (EC)	138-140
7.12	Dispersible concentrates (DC)	141-143
7.21 to 7.30	Emulsions	
7.21	Emulsions, oil in water (EW)	144-146
7.22	Emulsions for seed treatment (ES).....	147-149
7.23	Micro-emulsions (ME)	150-152
7.31 to 7.40	Suspensions	
7.31	Suspension concentrates (SC).....	153-156
7.32	Suspension concentrates for seed treatment (FS)	157-160
7.33	Capsule suspensions (CS).....	161-164
7.34	Oil-based suspension concentrates (OD).....	165-168
7.41 to 7.50	Multi-character liquid formulations	
7.41	Aqueous suspo-emulsions (SE)	169-172
7.42	Mixed formulations of CS and SC (ZC)	173-177
7.43	Mixed formulations of CS and EW (ZW).....	178-182
7.44	Mixed formulations of CS and SE (ZE).....	183-187
8.	Specification guidelines for pesticides formulated and/or prepared as devices	
	Categorization of formulated/prepared devices	188
8.1	Mosquito coils (MC).....	189-193
8.2	Vaporizing mats (MV)	194-196
8.3	Liquid vaporizers (LV)	197-200
8.11	Aerosol dispensers (AE).....	201-207
8.21	Long-lasting insecticidal nets or netting (LN).....	206-215
8.22	Matrix release formulation (MR)	216-219
8.23	Long lasting storage bag (LB)	220-225
9.	Specification guidelines for microbial pesticides	
	Categorization of microbial pesticides	226
	Introduction.....	227
9.1	Bacterial larvicide technical concentrates (TK).....	228-232
9.11	Bacterial larvicide wettable powders (WP)	233-238
9.12	Bacterial larvicide water-dispersible granules (WG)	239-244
9.13	Bacterial larvicide water-dispersible tablets (WT)	245-250
9.21	Bacterial larvicide suspension concentrates (SC).....	251-256
Appendix A	Check-list for submission of application for development of FAO and or WHO specifications.....	257-262
Appendix B	Supply and certification of reference substances.....	263
Appendix C	Glossary of terms	264-270
Appendix D	Coding of active ingredients, specifications and method status..	271
Appendix E	CropLife International codes for technical and formulated pesticides	272-277
Appendix F	Declarations of interests and confidentiality by FAO/WHO experts ...	278-286

Appendix G	Recommended letter of access to confidential information.....	287
Appendix H	Calculation of worst-case-possible contribution by an impurity to the toxic hazards of the active ingredient.....	288-289
Appendix J:	Calculation of expanded tolerances for the active ingredient content of mixed solid formulations	290-291

预览已结束，完整报告链接

<https://www.yunbaogao.cn/report/index/repo>