

# CIPAC PUBLICATIONS

The CIPAC Handbooks are indispensable to all who work in the field of pesticide formulation analysis. Not only do they contain analytical methods for more than 250 pesticides and their formulations; they also include methods for relevant impurities and above all, physical methods for testing the physical performance of formulations.

The methods are reliable because they have been tested through international collaborative trials, carried out and evaluated according to ISO and IUPAC guidelines. Thus FAO specifications refer to CIPAC analytical methods and physical tests and registration authorities in the European Union accept the methods.

A short section listing physico-chemical properties precedes the method for each pesticide. Other features are identity tests, which form an integral part of the method, and the inclusion of repeatability and reproducibility data derived from the collaborative trials.

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## CIPAC HANDBOOKS

Standard Methods of Analysis for Technical and Formulated Pesticides

### Handbook 1 (1970)

Out of print.

Handbook 1A. A partial reprint of Handbook 1A. (1980)

279 pp from 1091 to 1369. Hard cover, clear PVC jacket. ISBN 0 902951 04 1

This handbook will not be reprinted after the present stocks have run out.

### *Contents*

Methods of analysis for aldicarb, d-trans-allethrin, ametryn, atrazine, carbaryl, chlordane, chlorfenvinphos, chlorobenzilate, chloropropylate, chlorotoluron, chlorthiamide, copper oxychloride + mancozeb, copper oxychloride + maneb, copper oxychloride + zineb, copper oxychloride + ziram, cuprous oxide + maneb, cuprous oxide + zineb, cuprous oxide+ziram, cycloate, 2,4-D + dicamba, diazinon, dicamba, dicamba + MCPA, dichlorprop, dichlorvos, dimethoate, diuron, fenitrothion, fentin compounds, formothion, lead arsenate, lime sulphur, linuron, mancozeb, mecoprop, methoprotryne, metoxuron, monuron, petroleum oils, piperonyl butoxide, prometryn, propazine, propoxur, simazine, terbutryn, thiometon, trifluralin. (See also Handbook H for revised methods. Revised methods are given in *Italics*).

### **Handbook 1B (1983)**

264 pp from 1702 to 1965. Hard cover, clear PVC jacket. ISBN 0 902951 03 3.

### *Contents*

Methods of analysis for aldrin, amitrole, amitrole + linuron, amitrole + simazine, benfluralin, benzoylprop-ethyl, bromophos, butylate, chloramben, chloroxuron, water soluble copper, 2,4-D + picloram, DDT + endrin, desmetryne, dichlobenil, dichlofluanid, dieldrin, dimefox, dimefox + schradan, dinoterb, dodine, endrin, EPTC, ethion, fenthion, fentin + maneb, fluometuron, folpet, malathion, mecoprop, metam-sodium, methoprotryne, molinate, nabam, oxydemeton-methyl, parathion, parathion-methyl, pebulate, phorate, picloram, simetryne, terbutylazine, tetradifon, vernolate, isomalathion.

### **Handbook 1C (1985)**

410 pp from 1967 to 2377. Hardcover, clear PVC jacket. ISBN 0 902951 05

### *Contents*

Methods of analysis for azinphos-methyl, bentazone, brodifacoum, bromacil, bromoxynil, bromoxynil-octanoate, bupirimate, captan, chinomethionat, chlorpropham + propham, chlorpyrifos, chlorthal-dimethyl, cyanazine, cypermethrin, 2,4-D, dazomet, 2,4-DB, dichlofluanid, dichlorprop, diclofop-methyl, disulfoton, dithianon, endosulfan, ethylene dibromide, fenitrothion, fenoprop, fensulfothion, formaldehyde, glyphosate, lindane, MCPA, MCPA + TBA, MCPB, mecoprop, MGK 326, parathion CS, parathion-methyl CS, permethrin, phenmedipham, phoxim, piperonyl butoxide, pirimiphos-methyl, potassium cyanate, prometon, pyrazophos, pyrethrins + piperonyl butoxide, quintozone, rotenone, 2,4,5-T, TBA, temephos, thallos sulfate, triadimefon and ETU.

### **Handbook D (1988)**

256 pp. Hardcover, clear PVC jacket. ISBN 0 902951 06 8

Handbook D contains the methods adopted from 1985 to 1987 and an index to all previous Handbooks and Proceedings.

### *Contents*

Methods of analysis for alachlor, aminocarb, bendiocarb, benomyl, butachlor, carbofuran, cartap hydrochloride, chlordimeform, chloridazon, chlormequat, chlorphoxim, cyhexatin, 2,4-D + dicamba + mecoprop, dalapon, deltamethrin, dicofol, ethirimol, fenbutatin oxide, fenobucarb, fensulfothion, fenvalerate, fluazifop-butyl, iprobenfos, isofenphos, isoprocarb, maneb + fentin, metamitron, methiocarb, metolachlor, metribuzin, phosalone, pirimiphos-ethyl, propachlor, propoxur, thiobencarb, thiophanate-methyl and thiram together with methods for the preparation of pure ethirimol, pirimicarb and pirimiphos-ethyl. Guidelines for the definition, preparation and determination of purity of reference material for the analysis of pesticide products.

### **Handbook E (1993)**

416 pp. Hardcover, clear PVC jacket. ISBN 0 902951 07 6

Handbook E contains the methods adopted from 1988 to 1991 and a complete revision of the Reagents sections of all previous volumes (including Handbook 1).

### *Contents*

Methods of analysis for alachlor, anilazine, azinphos-methyl, bensultap, bromadiolone, carbetamide, carbosulfan, copper, lambda-cyhalothrin, p,p'-DDT, dichlobenil, dimethoate, diquat, diquat + paraquat, edifenphos, ethiofencarb, fentin, imazalil, ioxynil, isoprothiolane, isoproturon, maneb, metalaxyl, metam sodium, metazachlor, methamidophos, monocrotophos, nabam, nitrothal-isopropyl, omethoate, oxydemeton-methyl, paraquat, parathion-methyl, pencycuron, phosphamidon, propamocarb, propetamphos, sethoxydim, sodium chlorate, sulphur, thiabendazole, thiometon, tolylfluanid, triadimenol, zineb, ziram. An up-dated reagent (RE) section with methods for the preparation of special reagents.

### **Handbook F (1995)**

472 pp. Hard cover, clear PVC jacket. ISBN 0 902951 08 4.

### *Contents*

Handbook F contains new physical methods adopted from 1985 to 1994 (up to MT 177) and a complete revision of the Miscellaneous Sections of all previous volumes, including those of CIPAC Handbook 1 and the Symposium series.

### **Handbook G (1995)**

160 pp. Hard cover, clear PVC jacket. ISBN 0 902951 09 2.

Handbook G contains the methods adopted from 1992 to 1994.

### *Contents*

Alpha HCH in lindane, amitraz, bifenox, clofentezine, coumatetralyl, dichlorprop-P, dimethomorph, diquat (identity tests), dithianon, etofenprox, fenpropimorph, fenvalerate, fluazifop-P-butyl, fosetyl-Al, glufosinate, ioxynil-octanoate, iprodione, mecoprop-P, methabenzthiazuron, oxadixyl, paraquat (identity tests), propiconazole, pyridate.

### **Handbook H (1998)**

358 pp. Hard cover, clear PVC jacket. ISBN 0 902951 13 0.

Handbook H contains the methods adopted from 1995 to 1997 and revisions of some methods of CIPAC Handbook 1A and the CIPAC Proceedings 1980 and 1981.

#### *Contents*

Acephate, aldicarb, alpha-cypermethrin, ametryn, asulam, atrazine, benfuracarb, beta-cyfluthrin, bioallethrin, 2,2'-bipyridyl in diquat, 4,4'-bipyridyl in paraquat, bromoxynil, carbendazim, chlorfenvinphos, chloridazon, chlormequat, chlorobenzilate, chloropropylate, chlorsulfuron, copper + mancozeb, copper + maneb, copper + zineb, copper + ziram, cycloate, cyfluthrin, diazinon, dicamba, dicamba + 2,4-D, dicamba + MCPA, , diflufenican, dimethoate, ethephon, flusilazole, formothion, glyphosate, imidacloprid, mancozeb, methomyl, metsulfuron-methyl, mevinphos, pirimicarb, profenofos, prometryn, propineb, propazin, pyrethrins + piperonyl butoxide + MGK264, quinclorac, simazine, sulfotep, tebuconazole, terbufos, terbutryn, thiodicarb, thiometon, triazophos, trifluralin, triforine, MT 18.5 (Standard Waters. Simplified method of preparing stock solutions), MT 178 (Attrition resistance of granules), MT 179 (Degree of dissolution and solution stability), MT 180 (Dispersion stability of suspo-emulsions), MT 181 (Solubility in organic solvents).

### **Handbook J (2001)**

192 pp. Hard cover, clear PVC jacket. ISBN 0 902951 14.9.

Handbook J contains the methods adopted from 1998 to 1999 and a cumulative index to Handbooks 1B to J.

#### *Contents*

Amitrole (HPLC), bitertanol, cymoxanil, cyproconazole, dazomet (HPLC), ethofumesate, fenoxaprop-P, fipronil, fosetyl-Al (HPLC), hexazinone, mepiquat, niclosamide, phenmedipham (revised), pyridaben, quinmerac, sulfometuron-methyl, triflumuron, MT 30.5 (Water, Karl Fischer method using pyridine free reagents), MT 39.3 (Low temperature stability of liquid formulations), MT 46.3 (Accelerated storage test, combined method), MT 75.3 (pH of diluted and undiluted solutions), MT 148.1 (Pourability of suspension concentrates, revised), MT 182 (Wet sieving using recycled water), MT 183 (Determination of the stability of dilute emulsions using the agrochemical emulsion tester (AET)).

### **Handbook K (2003)**

211 pp. Hardcover, clear PVC jacket. ISBN 0 902951 15 7.

Handbook K contains the methods adopted from 2000 to 2002 and a cumulative index to Handbooks 1B to K.

#### *Contents*

alpha-Cypermethrin (SC (oil enhanced)), WG), bensulfuron-methyl (HPLC), chlorothalonil (GC), chlorpyrifos (UL), chlorsulfuron (WP), cycloxydim (HPLC), dicamba (HPLC), epoxiconazole (GLC, capillary column), esfenvalerate (GLC, capillary column)

and chiral HPLC), etofenprox (GLC, capillary column), HCB (in chlorothalonil), icaridin (GLC, capillary column), imidacloprid (TC, WG, SC, WS, FS) (HPLC), kresoxim-methyl (GLC, capillary column), lambda-cyhalothrin (CS), Malathion (TC, EC, EW, DP (GLC, capillary column)), metsulfuron (WP) HPLC), niclosamide (SC) (HPLC), oxydemeton-methyl (HPLC, new), procymidon (GLC, capillary column), thifensulfuron (HPLC), transluthrin, tribenuron -methyl. MT 36.3 (Emulsion characteristics and re-emulsification properties) MT 178.2 (Attrition resistance of dispersible granules), MT 184 (Suspensibility of formulations forming suspensions on dilution with water), MT 185 (Wet sieve test) MT 186 (Bulk density) MT 187 (Particle size analysis by laser diffraction)

### **Handbook L (2005)**

214 pp. Hardcover, clear PVC jacket. ISBN 0 902951 16 5.

Handbook L contains the methods adopted from 2002 to 2005 and a cumulative index to Handbooks 1B to L.

#### *Contents*

Acetamiprid (HPLC normal phase method: TC, EC; HPLC reversed phase method: TC, WP, SP, SG and SL), d-allethrin (method, TC, VL) azimsulfuron (HPLC, TC and WG), bioallethrin (method, TC, LV), S-bioallethrin (method), deltamethrin (method, TC, WG, WP, EC, SC, DP, WT, EG, EW, UL), diflovidazin (method, TC and SC), dinotefuran (method TC, WP and SC), esbiothrin (method), ethofumesate (method, SE), fenthion (method, GC TC, EC, EW, WP and GR), imidacloprid (method, SL, OD), iprodione (method, WG) novaluron (HPLC method), d-phenothrin (GC method), picloram (HPLC method, TC, SL), prallethrin (method), spinosad (HPLC method, TC, SC and GR), transluthrin (GC method, TC, VL). MT 188 (Free parathion-methyl in CS formulations), MT 189 (free lambda-cyhalothrin in CS formulations) MT 190 (lambda-cyhalothrin, release properties of CS formulations) MT 191 (Acidity or alkalinity of formulations), MT 192 (Viscosity of liquids by rotational viscometry) MT 193 (Friability of tablets).

### **Handbook E to L on CD-ROM (2005)**

This CD-ROM contains the methods and documents as published in Handbooks E through L and the indexes of Handbook L as Acrobat files (pdf-format). Using a web-browser based technique, it allows easy navigation and searches to rapidly access documents of interest. It also supports advanced search functions based on the Adobe Acrobat: virtually all documents and indexes can be searched for keywords. Methods can be viewed and printed.

## **PESTICIDES - CIPAC METHODS AND PROCEEDINGS SERIES**

(formerly CIPAC Proceedings, Symposium Series)

These volumes include the papers presented at the annual meetings together with methods adopted and reports of the collaborative studies.

### **CIPAC Proceedings 1979**

Baltimore (U.S.A.) Symposium papers 1979, 263 pp. Hard covers. ISBN 0 902951 10 6.  
Edited by Warren R. Bontoyan.

#### *Contents*

Papers presented at the symposium.

### **CIPAC Proceedings 1980**

Out of print.

### **CIPAC Proceedings 1981**

Out of print.

## **CIPAC MONOGRAPHS**

### **Monograph 1 (1972). Standard waters.**

Out of print.

### **Monograph 2 (1978). Seed treatment.**

Out of print.

## **FAO SPECIFICATIONS FOR PESTICIDES**

The methods of analysis quoted in the FAO specifications are published in CIPAC Handbooks 1B (1983), 1C (1985), D (1988), E (1993), F (1995), G (1995), H (1998), J (2001) K (2003) and L (2005). The specifications are available from FAO, Plant Production and Protection Service, Viale delle Terme di Caracalla, 00100, Rome, Italy, or from the FAO-internet site:

<http://www.fao.org/waicent/FaoInfo/Agricult/AGP/AGPP/Pesticid>