Handbook H

Page	CIPAC No.	Active	Formulations	Extraction	Filtration	Technique	Column	Column type	Mobile Phase	I.S.	Fit for purpose	Comments
5	338	Acephate	TC/SL	DCM	no	GC-FID	SP 2401 or equivalent	Packed Column	Nitrogen	Diisobutyl Phthalate	?	Use of chlorinated solvent. GC packed column - **obsolete**
10	215	Aldicarb	TC/GR	DCM	no	i.r.	n/a	n/a	n/a	n/a	?	Using the carbamate peak at 1740cm^{-1} with solvent compensation. Use of chlorinated solvent - **obsolete IR method**
14	454	α-Cypermethrin	TC/WP/EC/SC/UL	THF/5% Citric Acid	no	GC-FID	DB-1	Capilliary column	He	Dioctyl Phthalate	√	Method uses He as make up gas, given supply problems suggest change to N2
22	133	Ametryn	TC/WP	$CHCl_3$	yes	GC-FID	Carbowax 20M	Packed Column	N_2 or He	Dieldrin	?	Use of Chloroform not ideal. GC packed column method - **obsolete**
26	240	Asulam	TC/SL/SG	Acetonitrile	no	HPLC-UV - 270nm	Sperisorb 5 ODS	RP	Dihydrogen Phosphate buffer / ACN	4-Methoxybenzyl alcohol	√	
33	91	Atrazine	TC/WP/WG	$CHCl_3$	yes	GC-FID	Carbowax 20M	Packed Column	N_2 or He	Dieldrin	?	GC packed column - **obsolete**
38	501	Benfuracarb	TC/GR/EC	Acetonitrile	no	HPLC-UV - 280nm	Zorbax C_{18}	RP		Nonaphenone	√	
43	482	β-Cyfluthrin	TC/EC/SC	Tetra ButylMethyl Ether (TBME) / n-Heptane	no	HPLC-UV - 235nm	LiChrospher Si 60	NP	n-Heptane / TBME	none	√	
52	203	Bioallethrin	TC/SL/EC	Acetone	no	GC-FID	OV-1	Packed Column	N_2	Diisobutyl Phthalate	?	GC packed column - **obsolete**
57	87.407	Bromoxynil Heptanoate	TC/EC	Acetone	no	GC-FID	OV-101	Packed Column	N_2	Diphenyl Phthalate	?	GC packed column - **obsolete**
61	263	Carbendazim	TC/WP/WG	Aqueous HCl	no	HPLC- 282nm	Partisil 10 ODS	RP	MeOH / Aqueous H_2SO_4	none	√	
67	88	Chlorfenvinphos	TC/WP/EC/GR/DP/XX	Acetone	no	GC-FID	OV 225	Packed Column	N_2	Di-n-Butyl Phthalate	?	E and Z isomers quantitated seperately and summed to give the overall content. GC packed column - **obsolete**
76	111	Chloridazon	WG									
77	143	Chlormequat Chloride	TK/SL	Water	no	HPLC-Cond Det	Zorbax SCX	Cation exchange	Oxalic acid dihydrate / Ethylene Diamine / H2O / Acetone	none	?	Could be a candidate for renewal with RP or Hilic type column
81	119	Chlorbenzilate	TC/WP	Acetone	no	GC-FID	Carbowax 20M	Packed Column	N_2 or He	Dibenzyl succinate	?	GC packed column - **obsolete**
85	120	Chloropropylate	TC/WP/EC	Acetone	no	GC-FID	Carbowax 20M	Packed Column	N_2 or He	Dibenzyl succinate	?	GC packed column - **obsolete**
89	391	Chlorsulfuron	TC/WG	Acetonitrile	yes	HPLC-UV	Zorbax SC C_{18}	RP	ACN / H_2O pH = 3	Phenyl Sulfone	√	
96	44 + 34	Copper compounds + Mancozeb	WP	HCl	no	Titration	n/a	n/a	n/a	n/a	?	copper -CIPAC E p.42- electrogravimetry or volumetric method works very well . The iodometric titration method for mancozeb is time consuming but this method is the only one which CIPAC has.
100	44 + 61	Copper compounds + Maneb	WP	HCl	no	Titration	n/a	n/a	n/a	n/a	?	copper -CIPAC E p.42- electrogravimetry or volumetric method works very well. The iodometric titration method for maneb is the same as for mancozeb
100	44 + 25	Copper compunds + Zineb	WP	HCl	no	Titration	n/a	n/a	n/a	n/a	?	copper -CIPAC E p.42- electrogravimetry or volumetric method works very well. The iodometric titration method for maneb is the same as for mancozeb
101	44 + 31	Copper compounds + Ziram	WP	HCl	no	Titration	n/a	n/a	n/a	n/a	?	copper -CIPAC E p.42- electrogravimetry or volumetric method works very well. The iodometric titration method for ziram is the same as for mancozeb
102	214	Cycloate	TC/EC/GR	CS_2/$CHCl_3$/MeOH	no	GC-FID	SE 30 or OV 1	Packed Column	N_2	Pebulate	?	Poor choice of solvent. GC packed column - **obsolete**
106	385	Cyfluthrin	TC/WP/EC/EW	TBME / n-Heptane	no	HPLC-UV - 235nm	LiChrospher Si 60	NP	n-Heptane / TBME	none	√	
122	15	Diazinon	TC/WP/EC/SL/GR	Acetone	yes	GC-FID	10% DC 200	Packed Column	N_2 or He	Aldrin	?	GC packed column - **obsolete**
127	85	Dicamba	TC	CS_2	no	i.r.	n/a	n/a	n/a	n/a	?	**obsolete** IR method, CIPAC K, p.32 HPLC method works well
		Dicamba + Dimethylamine (DMA)	SL	Acetone	no	i.r.	n/a	n/a	n/a	n/a	?	**obsolete IR method**, CIPAC K, p.32 HPLC method works well

		Dicamba + MCPA DMA	SL	$HCl/CHCl_3$/Acetone	no	i.r.	n/a	n/a	n/a	n/a	?	Use of Chloroform. **obsolete IR method**, CIPAC K, p.32 HPLC method works well
		Dicamba + 2,4-D DMA	SL	Water	no	i.r.	n/a	n/a	n/a	n/a	?	**obsolete IR method**, CIPAC K, p.32 HPLC method works well
135	11	Dichlorvos	TC/EC/SL/HN	Acetone	no	GC-FID	OV-225	Packed Column	N2	Diethyl Pimelate	?	GC packed column - **obsolete**
141	339	Diflubenzuron	TK/WP	Dioxane/Acetonitrile	no	HPLC-UV - 254nm	Zorbax TM_{80}-C_8 or Sperisorb ODS or Bondapak C_{18}	RP	ACN/H_2O/Dioxane	Linuron	√	
147	462	Diflufenican	TC/SC	Acetonitrile	no	HPLC-UV - 280nm	Sperisorb ODS	RP	H2O/ACN/MeOH	Fluoranthrene	√	
153	59	Dimethoate	TC/SL/EC	Acetone	no	GC-FID	Chromosorb G	Packed Column	N2	Di-n-Butyl Phthalate	?	GC packed column - **obsolete**
161	55	Diquat salt - free bipyridyl	SL	$CHCl_3$/HCl/MeOH	no	GC-FID	Sodium Dodecylbenzene sulphonate	Packed Column	N2	5,6-Benzoquinone	?	Chloroform not an ideal solvent. GC packed column - **obsolete**
	55 + 56	Diquat + Paraquat - free bipyridyl	SL/SG	$CHCl_3$/HCl/MeOH	no	GC-FID	Sodium Dodecylbenzene sulphonate	Packed Column	N2	5,6-Benzoquinone	?	Chloroform not an ideal solvent. GC packed column - **obsolete**
165	373	Ethephon	TK/SL	Water	no	Titration	n/a	n/a	n/a	n/a	?	Non specific method - **obsolete**
171	435	Flusilazole	TC/WG/EC/EW	Acetonitrile	no	GC-FID	HP-17 or equivalent	Capilliary column	He	Benzophenone	?	
178	160	Formothion	TC/EC	Toluene/Acetic Anhydride	no	GC-FID	Choromsorb W-HP	Packed Column	N2	Ethion	?	GC packed column - **obsolete**
182	284	Glyphosate	SG	Potassium Dihydrogen Phosphate/H20/MeOH/Phosphoric acid	no	HPLC-UV - 195	Anion exchange resin	IEC	Potassium Dihydrogen Phosphate/H20/MeOH/ Phosphoric acid	none	√	
185	582	Imidacloprid	TC/WP/SC/GR/XX	Acetonitrile/Methanol	no	HPLC-UV	Octadecyl silane bonded silica gel	RP	ACN/H_2O	Propiophenone	√	
194	34	Mancozeb	TC/WP/WG/SC/DP	Water	no	EDTA Titration	n/a	n/a	n/a	n/a	?	the same iodometric titration method as for maneb CIPAC E p.116
199	264	Methomyl	TC/WP/SL/UL	Methanol/Acetonitrile	no	HPLC-UV - 254nm	Zorbax ODS	RP	ACN/H_2O	Benzamide	√	
204	441	Metsulfuron-methyl	TC/WG	Acetonitrile	no	HPLC-UV - 254nm	Zorbax SD C_8	RP	ACN/H_2O	Phenyl Sulfone	√	
212	45	Mevinphos	TC/EC	Methanol	no	HPLC-UV - 245nm	Lichrosorb RP_{18}	RP	H_2O/MeOH	none	√	
216	56	Paraquat salt - free 4,4-bipyridyl	SL	$CHCl_3$/HCl/MeOH	no	GC-FID	Sodium Dodecylbenzene sulphonate	Packed Column	N_2	5,6-Benzoquinone	?	GC packed column - **obsolete**
217	231	Pirimicarb	TC/WP/WG/EC/FU	$CHCl_3$	no	GC-FID	SE-30	Packed Column	N_2	n-Nonadecane	√	GC packed column - **obsolete**
222	461	Profenophos	TC/EC	Acetone	no	GC-FID	OV-210	Packed Column	N_2	Di-(2-ethylhexyl) adipate	?	GC packed column - **obsolete**
		4,4-Bromo-2-chlorophenol	Impurity in TC	DCM	no	GC-FID	OV1701	Capilliary column	H_2	Lindane	√	
228	93	Prometryn	TC/WP	$CHCl_3$	no	GC-FID	Carbowax 20M	Packed Column	N_2 or He	Dieldrin	?	GC packed column - **obsolete**
232	92	Propazine	TC/WP	$CHCl_4$	no	GC-FID	Carbowax 20M	Packed Column	N_2 or He	Dieldrin	?	GC packed column - **obsolete**
236	177	Propineb	TC/WP/DP	Water	no	EDTA Titration	n/a	n/a	n/a	n/a	?	the same iodometric titration method as for maneb CIPAC E p.116
239	32 + 33	Pyrethrum + Piperonyl Butoxide	TK/AK	Propan-2-ol	no	GC-FID	Durabond-1	Capilliary column	He	Hexadecane + Octadecane	√	
244	493	Quinclorac	TC/WP/WG/SC	THF/H_2SO_4	yes	HPLC-UV-238nm	Sperisorb ODS	RP	THF/H_2SO_4/H_2O	NONE	√	
250	22	Simazine	TC/WP/GR	DMF	yes	GC-FID	Carbowax 20M	Packed Column	N_2 or He	Di-(2-ethylhexyl) Phthalate	?	Poor choice of solvent. GC packed column - **obsolete**
255	198	Sulfotep	TC/FD	1,2-Dichloroethane	no	GC-FID	SE 52 on Chromosorb G-AW DMCS	Packed Column	He	Dimethyl Phthalate	?	Chlorinated solvent. GC packed column - **obsolete**
261	494	Tebuconazole	TC/WG/EW/SC/FS/ES	Acetone	no	GC-FID	Fused silica coated with methyl silicone	Capilliary column	He	Dicyclohexyl Phthalate	√	
269	459	Terbufos	TC/GR/XX	Methanol	no	GC-FID	DB-1	Packed or Capilliary column	N_2	Dipropyl Phthalate	√	
275	212	Terbutryn	TC/WP	$CHCl_3$	no	GC-FID	Carbowax 20M	Packed Column	N_2 or He	Dieldrin	?	Chlorinated solvent. GC packed column - **obsolete**
279	543	Thiodicarb	TC/WP/WG/SC	DCM/Methanol	no	HPLC-UV - 254nm	LiChrospher C_8 ODS	RP	H_2O/MeOH	Dimethyl Phthalate	√	
285	115	Thiometon	TC/EC	CS_2	no	i.r.	n/a	n/a	n/a	n/a	?	**Obsolete IR method**
288	353	Triazophos	TK/EC	Toluene/Isooctane/Water	no	HPLC-UV - 254nm	HIBAR	NP	Iso-octane/Dioxane/Water	Monolinuron	√	
292	183	Trifluralin	TC/EC/GR	Acetone	no	GC-FID	5% dc 200 on Chromosorb W-HP	Packed Column	N_2	Diisobutyl Phthalate	?	GC packed column - **obsolete**
299	360	Triforine	EC	Methanol	no	HPLC-UV - 220nm	LiChrosorb RP-8	RP	ACN/H_2O	none	√	

Miscellaneous Techniques

Page			Comments		
302	MT 18	Standard waters	MT 18.5 - temperature 105°C for drying calcium chloride is not enought. Anhydrous calcium chloride is obtained after drying at higher temperature than 200°C. Magnesium chloride hexahydrate is hygroscopic		
304	MT 178	Attrition resistance of granules	This method, as published, was initially applicable to all Granular Formulations. It was later supplemented by MT 178.2 which is titled in such a way as to be specifically applicable to Dispersible Granules. It would appear that the original method (MT 178) would then only be applicable to Granules for Dry Application while the revised version (MT 178.2) should be applicable to other Granular Formulations.		
307	MT 179	Degree of dissolution and solution stability	a. Change the Reagent from Standard Water C (MT 18.1.3)to Standard Water D (MT 18.1.4). b. Change the time intervals for Residue Calculation from 5 minutes and 18 hours to 5 minutes and 24 hours. This change would be consistent with a recent change made to CIPAC MT 41 (Dilution Stability of Aqueous Solutions) in which the revised version (MT 41.1) increased the standing time for recording any separated material from 18 to 24 hours.		
310	MT 180	Dispersion stability of suspo-emulsions	Originally published for use with SE Formulations. The Scope was later extended to other Formulation types. The procedure as written requires testing at a 2% concentration. This is exactly the concentration tested in the collaborative trial many years ago. Note that the results of this test depend upon a visual assessment, and even at the 2% concentration, sediment and cream formation can be very difficult to see. The recommendation made by the PRAPeR Expert Group in 2007, advising that this test should be conducted at high and low concentrations recommended on the label is simply not practical. For example, imagine trying to assess the sediment in on OD Formulation containing 10% insoluble solids at a concentration of less than 1%. Recommendation: Conduct the test at a 2% concentration. In cases where the maximum use rate is greater than 2%, conduct the test at the maximum recommended concentration.	Recommendation: Conduct the test at a 2% concentration. In cases where the maximum use rate is greater than 2%, conduct the test at the maximum recommended concentration.	instead of 25°C is more convenient temperature 30±5°C
314	MT 181	Solubility in organis solvents	instead of 25°C is more convenient temperature 30±5°C		