

PESTICIDE MULTIRESIDUE METHOD

SCOPE OF ACTIVE SUBSTANCES IN HONEY, SYRUPS (AGAVE, COCONUT, MAPLE) AND SUGAR

Substance name	Limit of quantification (LOQ) [mg/kg]				
2	0.01	Carbetamide (sum of isomers) ¹	0.01	Dichlorvos ²	0.01
		Carbofuran ¹	0.01	Dicloran ²	0.01
		Carbofuran (incl. Metabolites calc. as Carbofuran)	0.01	Dicofol, p,p'- ²	0.01
		Carbofuran, 3-hydroxy ¹	0.01	Dieldrin ²	0.01
4	0.01	Carbophenothion (-ethyl) ²	0.01	Diethofencarb ¹	0.01
		Carbophenothion-methyl ²	0.01	Difenoconazole ¹	0.01
		Carbosulfan ¹	0.01	Diflubenzuron ¹	0.01
		Chlordane, cis- (alpha-) ²	0.01	Diflufenican ²	0.01
A	0.01	Chlordane, Oxy- ²	0.01	Dimethachlor ¹	0.01
		Chlordane, trans- (gamma-) ²	0.01	Dimethoate ¹	0.01
		Chlorfenapyr ²	0.01	Dimethomorph ¹	0.01
		Chlorfenson ²	0.01	Dimoxystrobin ¹	0.01
	0.01	Chlorfenvinphos ²	0.01	Diniconazole ¹	0.01
		Chlormephos ²	0.01	Dinotefuran ¹	0.01
		Chlorobenzilate ²	0.01	Diphenylamin ²	0.01
		Chloroneb ²	0.01	Disulfoton ¹	0.01
	0.01	Chloropropylate ²	0.01	Disulfoton-sulfone ¹	0.01
		Chlorothalonil ²	0.01	Disulfoton-sulfoxide ¹	0.01
		Chloroxuron ¹	0.01	Ditalimfos ²	0.01
		Chlorpropham ²	0.01	Dithianon ¹	0.01
	0.01	Chlorpyrifos (-ethyl) ²	0.01	Diuron ¹	0.01
		Chlorpyrifos-methyl ²	0.01	DMST (Tolylfluand metabolite) ²	0.01
		Chlorthal-dimethyl ²	0.01	Dodine ¹	0.01
		Chlorthion ²	0.01		
	0.01	Chlorthiophos (sum of isomers) ²	0.01	E	
		Chlozolinate ²	0.01	Endosulfan, -alpha ²	0.01
		Clofentezine ¹	0.01	Endosulfan, -beta ²	0.01
		Clomazone ¹	0.01	Endosulfan-sulfate ²	0.01
	0.01	Clopyralid ¹	0.01	Endosulfan (sum of isomers expressed as Endosulfan)	
		Clothianidin ¹	0.01	Endrin ²	0.01
		Coumaphos ^{1, 2}	0.01	EPN ²	0.01
		Cyanofenphos ²	0.01	Epoxiconazole ¹	0.01
B	0.01	Cyanophos ²	0.01	Ethiofencarb ¹	0.01
		Cyantraniliprole ¹	0.01	Ethiofencarb-sulfone ¹	0.01
		Cyfluthrin (sum of isomers) ²	0.01	Ethiofencarb-sulfoxide ¹	0.01
		Cyhalothrin, -lambda ²	0.01	Ethion ²	0.01
	0.01	Cymiazole ²	0.01	Ethoprophos ²	0.01
		Cymoxanil ¹	0.01	Ethoxyquin ¹	0.01
		Cypermethrin (sum of isomers) ²	0.01	Etofenprox ²	0.01
		Cyproconazole ¹	0.01	Etridiazole ²	0.01
	0.01	Cyprodinil ¹	0.01	Etrimfos ²	0.01
		Cyromazine ¹	0.01		
				F	
				Famoxadone ¹	0.01
	0.01	D		Famphur ²	0.01
		Daminozide ¹	0.01	Fenamiphos ¹	0.01
		DDD, o,p'- ²	0.01	Fenamiphos-sulfone ¹	0.01
		DDD, p,p'- ²	0.01	Fenamiphos-sulfoxide ¹	0.01
	0.01	DDE, o,p'- ²	0.01	Fenarimol ¹	0.01
		DDE, p,p'- ²	0.01	Fenazaquin ¹	0.01
		DDT, o,p'- ²	0.01	Fenbuconazole ¹	0.01
		DDT, p,p'- ²	0.01	Fenchlorphos ²	0.01
	0.01	DEET (Diethyltoluamid) ¹	0.01	Fenchlorphos-oxon ²	0.01
		Deltamethrin ²	0.01	Fenchlorphos (sum of Fenchlorphos and Fenchlorphos-oxon calc. as Fenchlorphos) ²	
		Demeton-S-methyl ¹	0.01	Fenhexamid ¹	0.01
		Demeton-S-methyl-sulfoxide ¹	0.01	Fenitrothion ²	0.01
	0.01	Demeton-S-methyl-sulfoxide (Oxydemeton-S-methyl) ¹	0.01	Fenoxycarb ¹	0.01
		Diafenthiuron ¹	0.01	Fenpropathrin ²	0.01
		Diazinon ²	0.01	Fenpropimorph ¹	0.01
		Dichlobenil (2,6-Dichlorobenzonitrile, DCBN) ²	0.01	Fenpyroximate ¹	0.01
C	0.01	Dichlofenthion ²	0.01	Fenson ²	0.01
		Dichlofluanid ²	0.01		
	0.01				

Fensulfothion ²	0.01	Isofenphos-methyl ¹	0.01	Phosmet-oxon ²	0.01
Fensulfothion-oxon ¹	0.01	Isoproturon ¹	0.01	Phosmet (phosmet and phosmet oxon expressed as phosmet) ²	
Fensulfothion-oxon-sulfone ¹	0.01	Isoxathion ²	0.01	Phosphamidon ²	0.01
Fensulfothion-sulfone ¹	0.01			Piperonyl butoxide ²	0.01
Fensulfothion (sum of isomers calculated as Fensulfothion) ^{1,2}		K		Pirimicarb ¹	0.01
Fenthion ¹	0.01	Kresoxim-methyl ¹	0.01	Pirimicarb, Desmethyl- ¹	0.01
Fenthion-oxon ¹	0.01			Pirimicarb, Desmethylformamido- ¹	0.01
Fenthion-oxon-sulfone ¹	0.01	L		Pirimiphos-ethyl ²	0.01
Fenthion-oxon-sulfoxide ¹	0.01	Leptophos ²	0.01	Pirimiphos-methyl ²	0.01
Fenthion-sulfone ¹	0.01	Lindane (gamma-HCH, gamma-BCH) ²	0.01	Prochloraz ¹	0.01
Fenthion-sulfoxide ¹	0.01	Linuron ¹	0.01	Prochloraz BTS44595 ¹	0.01
Fenthion (fenthion and its oxygen analogue, sulfoxides and sulfone expr. as parent)		Lufenuron ¹	0.01	Prochloraz BTS44596 ¹	0.01
Fenvalerate/Esfenvalerate (sum of isomers) ²	0.01	M		Prochloraz (sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz)	
Fipronil ²	0.002	Malaoxon ¹	0.01	Procymidone ²	0.01
Fipronil-sulfone ²	0.002	Malathion ¹	0.01	Profenofos ²	0.01
Fipronil (sum of Fipronil + sulfone metabolite expr. as Fipronil) ²		Matrine ¹	0.01	Profluralin ²	0.01
Fluazifop-P ¹	0.01	Mecarbam ²	0.01	Propamocarb ¹	0.01
Fluazifop-P-butyl ¹	0.01	Mefentrifluconazol ¹	0.01	Propargite ¹	0.01
Fluazinam ¹	0.01	Mepanipyrim ¹	0.01	Propetamphos ²	0.01
Fluchloralin ²	0.01	Mepronil ¹	0.01	Propiconazole ¹	0.01
Flucythrinate (sum of isomers) ²	0.01	Mesotrione ¹	0.01	Propoxur ¹	0.005
Fludioxonil ¹	0.01	Metalaxyl ¹	0.01	Propyzamide ¹	0.01
Flufenoxuron ¹	0.01	Metalaxyl-M ¹	0.01	Prothioconazole ¹	0.01
Fluopyram ¹	0.01	Metalaxyl (sum of isomers) ¹	0.01	Prothioconazole-Desthio ^{1,2}	0.01
Flupyradifurone ¹	0.01	Metamitron ¹	0.01	Prothioconazole: Prothioconazole-desthio(sum of isomers) ^{1,2}	
Fluquinconazole ¹	0.01	Metazachlor ¹	0.01	Prothiofos ²	0.01
Flusilazole ¹	0.01	Methacrifos ²	0.01	Pymetrozine ¹	0.01
Flutriafol ¹	0.01	Methamidophos ^{1,2}	0.01	Pyraclostrobin ¹	0.01
Fluvalinate, Tau- ²	0.01	Methidathion ²	0.01	Pyrazophos ²	0.01
Fluxapyroxad ¹	0.01	Methiocarb ¹	0.01	Pyridaben ¹	0.01
Folpet ²	0.01	Methiocarb-sulfone ¹	0.01	Pyridaphenthion ¹	0.01
Fonofos ¹	0.01	Methiocarb-sulfoxide ¹	0.01	Pyrifenoxy ¹	0.01
Formothion ²	0.01	Methomyl ¹	0.01	Pyrimethanil ¹	0.01
Furathiocarb ²	0.01	Methoxychlor ²	0.01	Pyriproxyfen ¹	0.01
		Methoxyfenozide ¹	0.01		
		Metobromuron ¹	0.01		
		Metolcarb ¹	0.01		
		Metoxuron ¹	0.01		
		Metribuzin ¹	0.01	Q	
		Mevinphos (sum of E- and Z-isomers) ²	0.01	Quinalphos ²	0.01
		Mirex ²	0.01	Quinclorac ¹	0.01
		Monocrotophos ²	0.01	Quinoxyfen ¹	0.01
		Monolinuron ¹	0.01	Quintozene ²	0.01
		Myclobutanil ¹	0.01		
				R	
H				Rotenone ¹	0.01
Halfenprox ²	0.01	N			
Haloxyp ¹	0.01	Nitenpyram ¹	0.01	S	
HCH, alpha- (Hexachlorocyclohexane, alpha-BCH) ²	0.01	Nitrapyrin ²	0.01	S 421 (Octachlorodipropyl ether) ²	0.01
HCH, beta- (Hexachlorocyclohexane, beta-BCH) ²	0.01	Nitrofen ²	0.01	Spinosad (sum of isomers, Spinosyn A and Spinosyn D) ¹	0.01
HCH, delta- (Hexachlorocyclohexane, delta-BCH) ²	0.01	Nuarimol ¹	0.01	Spirodiclofen ¹	0.01
HCH, epsilon- (Hexachlorocyclohexane, epsilon-BCH) ²	0.01			Spiromesifen ¹	0.01
Heptachlor ²	0.01	O		Spirotetramat ¹	0.01
Heptachlor epoxide, cis- ²	0.01	Omethoate ¹	0.01	Spirotetramat-enol ¹	0.01
Heptachlor epoxide, trans- ²	0.01	Oxadixyl ¹	0.01	Spirotetramat-enol-glucoside ¹	0.01
Heptachlor (sum of heptachlor and heptachlor epoxide expressed as heptachlor) ²		Oxamyl ¹	0.01	Spirotetramat-ketohydroxy ¹	0.01
Heptenophos ²	0.01	Oxymatrine ¹	0.01	Spirotetramat-monohydroxy ¹	0.01
Hexachlorobenzene (HCB) ²	0.01			Spirotetramat (sum of isomers calculated as Spirotetramat)	
Hexaconazole ¹	0.01	P		Spiroxamine (sum of isomers) ¹	0.01
Hexaflumuron ¹	0.01	Paraoxon (-ethyl) ²	0.01	Sulfotep ²	0.01
Hexythiazox ¹	0.01	Paraoxon-methyl ²	0.01	Sulfoxaflor ¹	0.01
		Parathion (-ethyl) ²	0.01	Sulprofos ²	0.01
		Parathion-methyl ²	0.01		
		Penconazole ¹	0.01		
I		Pencycuron ¹	0.01		
Icaridin (Picaridin) ¹	0.01	Pendimethalin ²	0.01	T	
Imazalil ¹	0.01	Pentachloroaniline ²	0.01	Tebuconazole ¹	0.01
Imidacloprid ¹	0.01	Pentachloroanisole ²	0.01	Tebufenozide ¹	0.01
Indoxacarb (sum of isomers) ¹	0.01	Permethrin (sum of isomers) ²	0.01	Tebuflufenpyrad ¹	0.01
Iodofenphos ²	0.01	Phenthoate ²	0.01	Tecnazene ²	0.01
Iprobenfos ²	0.01	Phenylphenol, 2- (o-Phenylphenol) ²	0.01	Teflubenzuron ¹	0.01
Iprodione ²	0.01	Phorate ²	0.01	Tefluthrin ²	0.01
Iprovalicarb ¹	0.01	Phorate-sulfone ²	0.01	Terbufos ²	0.01
Isazofos ²	0.01	Phorate-sulfoxide ²	0.01	Terbutylazine ¹	0.01
Isocarbofos ²	0.01	Phosalone ²	0.01	Tetrachlorvinphos ²	0.01
Isodrin ²	0.01	Phosmet ²	0.01	Tetraconazole ¹	0.01
Isofenphos ²	0.01				

Tetradifon ²	0.01
Tetrahydrophthalimid (THPI) ²	0.01
Tetramethrin ²	0.01
Tetrasul ²	0.01
Thiabendazole ¹	0.01
Thiacloprid ¹	0.01
Thiamethoxam ¹	0.01
Thiodicarb ¹	0.01
Thionazin ²	0.01
Thiophanat-methyl ¹	0.01
Tolclofos-methyl ²	0.01
Tolyfluanid ²	0.01
Transfluthrin ²	0.01
Triadimefon ¹	0.01
Triadimenol ¹	0.01
Triallate ²	0.01
Triazophos ²	0.01
Trichlorfon ¹	0.01
Trichloronat ²	0.01
Trifloxystrobin ¹	0.01
Triflumizole ¹	0.01
Trifluralin ²	0.01
Triforine ¹	0.01

V	
Vinclozolin ²	0.01

Technical equipment

¹: LC-MS/MS

²: GC-MS/MS

Method

ASU § 64 LFGB L 00.00-115 (DIN EN 15662),
QuEChERS

Additional residue analyses (included in pesticide multiresidue method)

Bee treatment agents by GC-MS/MS
Neonicotinoide by LC-MS/MS

Additional residue analyses (not included in pesticide multiresidue method)

Chlorate, Perchlorate by LC-MS/MS
Chlormequat, Mepiquat by LC-MS/MS
Diquat, Paraquat by LC-MS
Dithiocarbamates by GC-MS/MS
Ethephon by LC-MS/MS
Fentin by LC-MS/MS
Flumethrin by LC-MS/MS
Fosetyl-Al, Phosphonic acid by LC-MS/MS
Glyphosate (incl. AMPA), Glufosinate by LC-MS/MS
Maleic hydrazide by LC-MS/MS
Nicotine by LC-MS/MS
Organotin-Pesticides by LC-MS/MS
Phenoxyalkanoic acids by LC-MS/MS
Phosphane by GC-MS/MS
Quaternary ammonium compounds (QAVs) by LC-MS/MS
Beerepellents, wax moth control agents by GC-MS/MS
Total Inorganic Bromide, Bromate by LC-MS/MS