FoodQS GmbH

food analytics & quality control

Analytical services for beeswax

status: February 2023

1. Adulteration (chemical-physical parameters)

code	description	technology	LOQ
45808	appearance	optical	---
45000	acid number [a)]	titration	1
45807	colour	RAL	---
45801	density [a)]	gravimetry	---
45804	dropping point	ubbelohde	---
45810	fat, Japan wax, resins and soaps	optical	pos./neg.
45805	glycerol-/ polyole	optical	pos./ neg.
45803	insoluble impurities	gravimetry	0,1%
45800	melting point	melting apparatus	---
45802	moisture	azeotropic destillation	0,3%
45806	paraffine-/ ceresin	optical	pos./ neg.
45100	peroxide number [a)]	titration	0,5
45200	saponification number [a)]	titration	10
45809	solubility	---	---
45600	total hydrocarbons [a)]	gravimetry	5%
	packages	**description**	
316	parameters according RAL-GZ 041 (code 300, 45600, 45804)	acid number, saponification number, ester number (calculated), ratio number (calculated), dropping point, total hydrocarbons	
317	parameters according Pharm Eur. (code 300, 45801, 45804, 45806, 45805)	appearance, solubility, density, acid number, saponification number, ester number (calculated), dropping point, glycerol/ polyole, ceresin/ paraffine	
320	parameters according EU VO 231/2015 (Art. 45808, 45809, 45801, 45000, 45200, 45100, 45804, 45806, 45805, 45810)	appearance, solubility, density, acid number, saponification number, peroxide value, dropping point, paraffin /ceresine, glycerol/ polyols, fat/Japan wax/resins and soaps	
300	wax numbers (code 45000, 45200)	acid number, saponification number, ester number (calculated), ratio number (calculated)	

2. Adulteration (gaschromatography)

code	description	technology	LOQ
45400	hydrocarbons (paraffin) [a)]	GC	1%
45500	fatty acids (cerotic acid, palmitin acid, stearin acid, vegetal and animal fats) [a)]	GC	---
45550	Addition of jojoba oil [a)]	GC	pos./ neg.(5% Jojoba oil)
	packages	**description**	
301	Adulteration of beeswax 1 GC [a)] (code: 45400, 45500)	hydrocarbons (paraffin), fatty acids, triglycerides	

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3. Pesticides/ Varroacides

code	description	technology	LOQ
33004	Amitraz as Dimethylphenylformamid (DMF)[a)]	LC-MS/MS	0,5mg/kg
32001	DEET [a)]	LC-MS/MS	0,1mg/kg
41851	Dithiocarbamates [aU)]	GC-MS	0,01 mg/Kg (CS_2)
60103	Glyphosate [a)]	LC-MS/MS	0,01mg/kg
310	Pesticides/ Varroacides (15 substances)[a)] beekeeping relevant Acrinathrin, Boscalid, Brompropylat, Chlorfenvinphos, Coumaphos, Cyfluthrin, Cyhalotrin, Cypermethrin, Deltamethrin, Fluvalinate, Iprodion, Myclobutanil, Tetradifon, Tolylfluanid, Vinclozolin	GC-MS/MS LC-MS/MS	0,5 mg/kg
321	Pesticides/ Varroacides incl. Flumethrin (16 substances) [a)] beekeeping relevant Acrinathrin, Boscalid, Brompropylat, Chlorfenvinphos, Coumaphos, Cyfluthrin, Cyhalotrin, Cypermethrin, Deltamethrin, Flumethrin, Fluvalinate, Iprodion, Myclobutanil, Tetradifon, Tolylfluanid, Vinclozolin	GC-MS/MS LC-MS/MS	0,5 mg/kg
336	Pesticides/ Varroacides incl. Flumethrin (16 substances) [a)] beekeeping relevant Acrinathrin, Boscalid, Brompropylat, Chlorfenvinphos, Coumaphos, Cyfluthrin, Cyhalotrin, Cypermethrin, Deltamethrin, Flumethrin, Fluvalinate, Iprodion, Myclobutanil, Tetradifon, Tolylfluanid, Vinclozolin	GC-MS/MS LC-MS/MS	0,1 mg/kg
323	Pesticides/ Varroacides (21 substances) [a)] beekeeping relevant Acrinathrin, Boscalid, Brompropylat, Chlorfenvinphos, Chlorpropylat, Chlorpyriphos, Coumaphos, Cyfluthrin, Cyhalotrin, Cypermethrin, DEET, Deltamethrin, Dichlofluanid, Dimoxystrobin, Flumethrin, Fluvalinate, Iprodion, Myclobutanil, Permethrin, Piperonylbutoxid (PBO), Propargit	GC-MS/MS LC-MS/MS	0,1 mg/kg
315	Pesticides/ Varroacides (69 substances)[a)] spectrum XL, 0,5mg/kg	GC-MS/MS LC-MS/MS	0,5 mg/kg
337	Pesticides/ Varroacides (69 substances)[a)] spectrum XL, 0,1mg/kg	GC-MS/MS LC-MS/MS	0,1 mg/kg
314	Pesticides/Varroacides[a)] Substances according to Pharm. Eur.	GC-MS/MS LC-MS/MS	depending on substance according to Pharm. Eur.
318	Pesticides/Varroacides (159 substances)[a)] (substances based on 314 + 315)	GC-MS/MS LC-MS/MS	depending on substance (see substance list)
334	specific analytics of pesticides [a)] max. 10 substances of spectrum pesticides code 318;	GC-MS/MS LC-MS/MS	0,5 mg/kg
335	specific analytics of pesticides [a)] max. 10 substances of spectrum pesticides code 318;	GC-MS/MS LC-MS/MS	0,1 mg/kg
505	Pesticides XXL (>700 substances) [aU)]	GC-MS/MS LC-MS/MS	depending on substance (see substance list)
46032	Polycyclic aromatic hydrocarbons (PAHs) [aU)] (16 substances, EPA-method) [a)] Acenaphthalene, Acenaphthylene, Anthracene, Benz(a)anthracene, Benzo(a)pyrene, Chrysene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene	GC-MS	0,1µg/kg; 0,3µg/kg Naphthalene

329	Pyrethroids (6 substances) [a)] Cyfluthrin, lamda-Cyhalothrin, Cypermethrin, Deltamethrin, Fenvalarate, Permethrin	GC-MS/MS	0,1 mg/kg
311	Treatment against waxmoth (2 substances)[a)] Dichlorbenzene (DCB), Thymol	GC-MS	0,5 mg/kg
	packages	**description**	
312	Residues of beeswax 1[a)] (code 310, 311)	Pesticides/ Varroacides, (code 310), Dichlorbenzene (DCB), Thymol	
313	Residues of beeswax 2[a)] (code 310, 32001)	Pesticides/ Varroacides (code 310), DEET	
324	Residues of beeswax 3[a)] (code 323, 33004, 311)	Pesticides/ Varroacides (code 323), Amitraz, Dichlorbenzene (DCB), Thymol	
325	Residues of beeswax 4[a)] (code 310, 32001, 33004, 311)	Pesticides/ Varroacides (code 310), DEET, Amitraz, Dichlorbenzene (DCB), Thymol	
326	Residues of beeswax 5[a)] (code 321, 32001, 33004, 311)	Pesticides/ Varroacides (code 321), DEET, Amitraz, Dichlorbenzene (DCB), Thymol	
327	Residues of beeswax 6[a)] (code 315, 33004)	Pesticides/ Varroacides (code 315; 0,5mg/kg), Amitraz	
338	Residues of beeswax 6a[a)] (code 337, 33004)	Pesticides/ Varroacides (code 337; 0,1mg/kg), Amitraz	
328	Residues of beeswax 7[a)] (code 321, 33004)	Pesticides/ Varroacides (code 321;), Amitraz	
330	Residues of beeswax 8[a)] (code 321,311, 33004)	Pesticides/ Varroacides (code 321; 0,5mg/kg), Amitraz, Dichlorbenzene (DCB), Thymol	
332	Residues of beeswax 8a[a)] (code 336,311, 33004)	Pesticides/ Varroacides (code 336; 0,1mg/kg), Amitraz, Dichlorbenzene (DCB), Thymol	
331	Residues of beeswax 9[a)] (7 specific pesticides, code 32001, 311, 33004)	Acrinathrin, Brompropylat, Coumaphos, Flumethrin, Fluvalinate, Malathion, Tetradifon (all 0,5 mg/kg), DEET, Amitraz, Dichlorbenzene (DCB), Thymol	
333	Residues of beeswax 10[a)] (code 315,311)	Pesticides/ Varroacides (code 315), Dichlorbenzene (DCB), Thymol	

4. Antibiotics/ pharmacologically active substances

code	description	technology	LOQ
26003	Amphenicoles (3 substances)[a)] Chloramphenicol (CAP), Florfenicol, Thiamphenicol	LC-MS/MS	0,1 µg/kg (CAP), 0,5 µg/kg
27005	Chinolones (13 substances) [a)] Ciprofloxacin, Difloxacin, Enoxacin, Enrofloxacin, Fleroxacin, Flumequin, Lomefloxacin, Marbofloxacin, Norfloxacin, Ofloxacin, Oxolinsäure, Sarafloxacin, Sparfloxacin	LC-MS/MS	0,01 mg/kg
24003	Macrolides (4 substances) [a)] Erythromycin, Spiramycin, Tilmicosin, Tylosin	LC-MS/MS	0,01 mg/kg
21009	Sulfonamides (20 substances) [a)] Ormethoprim, Trimethoprim, Succinylsulfathiazol, Sulfabenzamid, Sulfachlorpyridazin , Sulfaclozin, Sulfadiazin, Sulfadimethoxim, Sulfadoxin, Sulfamerazin, Sulfameter, Sulfamethazin, Sulfamethoxazol, Sulfamethoxypyridazin, Sulfamonomethoxim, Sulfamoxol, Sulfapyridin, Sulfaquinoxalin, Sulfathiazol, Sulfisoxazol,	LC-MS/MS	0,01 mg/kg
20008	Tetracyclines (5 substances) [a)] Chlortetracyclin, Demeclocyclin, Doxycyclin, Oxytetracyclin, Tetracyclin	LC-MS/MS	0,01 mg/kg

5. metals /elements

code	description	technology	LOQ
51004	sample preparation [2)]	acid hydrolysis	---
code	**description**	**technology**	**LOQ**
50204	arsenic [a)]	ICP-MS	0,05 mg/kg
50404	cadmium [a)]	ICP-MS	0,05 mg/kg
50303	lead [a)] (e.g.: RAL- GZ041)	ICP-MS	0,05 mg/kg
50604	mercury [a)]	ICP-MS	0,05 mg/kg
	packages	**description**	
704	heavy metals 1 [a)] (e.g.: VO EU 231/2015) (Art.: 51004, 50204, 50303, 50604)	arsenic, lead, mercury incl. acid hydrolysis	

a) accredited method

2) for metal analysis, it is important to make the sample preparation first. Afterwards it is possible to analyze up to 10 different metals per sample.

note: Before starting some analyses an aliquot of each sample would be homogenized by melting. For generating mix- samples there would be a standard price of €10/mixed sample charged (code 45999).

Further analyses on request

All prices in EURO excluding VAT

Conditions of payment: 14 days from date of invoice

Sample amount: minimum 100g per sample, for GMO analysis additionally min. 100g per sample.

Processing time: - normally 2-3 days for analysis of adulteration
- normally up to 5 days for residues

Storage: samples will be stored until 6 months