



PRODUCTSCHAP DIERVOEDER

GMP⁺ Certification Scheme Animal Feed Sector 2006

Product standards (Including Residue Standards)

Appendix 1

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PART A: PRODUCT NORMS

1. INTRODUCTION TO THE PRODUCT NORMS

There are references in the various GMP⁺ standards to the product norms.

This part of this appendix contains the statutory and GMP⁺ norms with respect to contaminants. The product norms included in this appendix are

- a. based on the statutory norms for products in the European Union or nationally (the Netherlands), or
- b. as determined within the framework of the GMP⁺ Certification Scheme for the Animal Feed Sector 2006 in consultation with the subsequent links in the animal production chain.

The following standards apply in addition to those in the tables:
the list of permitted additives in the Netherlands in accordance with Directive (EC) No. 1831/2003 and the residue norms in part B of this appendix.

DISCLAIMER: The Product Board Animal Feed has adopted this list in order to inform interested parties with respect to the norms in the legislation (European Union and national) and additional GMP⁺ norms. The list will be regularly updated. The Product Board Animal Feed is not liable for any errors in this list.

2. CONDITIONS

In arriving at the standards a distinction has been made between action and rejection limits. The action limits for undesirable contaminants is appreciably lower than the rejection limit.

Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. Where the **action limit** is exceeded an investigation must be carried out into the:

- source of the contamination and measures must be taken to
- remove or limit the source of the contamination.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If the **rejection limit** is exceeded then the product is not suitable for use as a feed material or animal feed.

In the various GMP⁺ standards it is stated that the participant must ensure that deviations (in the product or process) from the requirements in this standard are recorded and controlled in order to prevent unintentional use or delivery of the product.

3. SUMMARY OF STATUTORY AND SUPPLEMENTARY GMP⁺ PRODUCT NORMS FOR THE ANIMAL FEED SECTOR

	Contaminant	Product	Action limit ⁽¹⁾	Rejection limit ⁽¹⁾	Source	Supplementary requirements	Analysis method
Microbiological							
M1	Antibacterial inhibition	- Feed materials of animal origin for delivery to livestock farmers, and - Wet mixes of animal origin for delivery to cattle farmers	-	< 15 mm	GMP	According to the 5-plate test MB003, derived from EG-4-plate test, product basis (RIVM report no. 206; Archiv für Lebensmittelhygiene 31 (1981) page 97-140.	OZM Part 1; O-1
M3	Enterobacteriaceae	Feed for pets and dog bones	-	300 kve/gram	Reg. 1774/2002	n = 5, c = 2, m = 10, M = 300 in 1 gram , ¹⁴ Tinned feed for pets which has been subjected to heat treatment with a Fc value of at least 3 does not necessarily have to be sampled and tested for <i>Salmonella</i> and <i>Enterobacteriaceae</i> .	OZM Part 2; M-3
M4a	Salmonella	Consumption chick feed: end products and feed materials for:			GMP		OZM Part 2; M-2a to M2e
		- Top breeding consumption chicks	-	0 ⁺ % ²⁰ (approaching 0%)			
		- Breeding increase consumption chicks	-	0 ⁺ % ²⁰ (approaching 0%)			
		- Increase consumption chicks	-	0 ⁺ % ²⁰ (approaching 0%)			
		- Consumption chicks	-	0 ⁺ % ²⁰ (approaching 0%)			
		Laying poultry feed: end products and feed materials for:			GMP		
		- Top breeding laying poultry	-	0 ⁺ % ²⁰ (approaching 0%)			
		- Raising increase laying poultry	-	0 ⁺ % ²⁰ (approaching 0%)			

		<ul style="list-style-type: none"> - Increase laying poultry - Laying-hens and breeding hens 	<ul style="list-style-type: none"> - 1% 	<ul style="list-style-type: none"> 0⁺%²⁰(approaching 0%) 0⁺%²⁰(approaching 0%) for <i>S. enteritidis</i> and <i>S. typhimurium</i> 			
		Turkey feed: end products and feed materials for: <ul style="list-style-type: none"> - Raising increase turkeys - Increase turkeys - Consumption turkeys 	<ul style="list-style-type: none"> - - - 	<ul style="list-style-type: none"> 0⁺%²⁰(approaching 0%) 0⁺%²⁰(approaching 0%) 0⁺%²⁰(approaching 0%) 	GMP		
		Other animal feeds, feed materials and wet mixes intended for cattle farms (except for poultry feeds).	-	Absent in 25 gr	GMP		
		Feed for pets and dog bones	-	Absent in 25 gr	Reg. 1774/2002	<p>$n = 5, c = 0, m = 0, M = 0$ ¹⁴ Tinned feed for pets which has been subjected to heat treatment with a Fc value of at least 3</p> <p>does not necessarily have to be sampled and tested for <i>Salmonella</i> and <i>Enterobacteriaceae</i>.</p>	
M4b	Salmonella preservation determined through pH	<ul style="list-style-type: none"> - Feed materials for delivery to cattle farms, and - Wet mixes for delivery to livestock farmers on the basis of: 		Maximum pH for guarantee:	GMP	If preservation can be achieved at a higher pH then this should be supported with data.	OZM Part 2; M-5

		<ul style="list-style-type: none"> - Spontaneous lactic acid fermentation - Add organic acids - Add anorganic acids 	-	<p>4.5</p> <p>4</p> <p>3,5</p>		<p>These norms do not apply if the products are supplied at a temperature of at least 60°C and the supplier is demonstrably informed of the storage conditions.</p> <p>The absence of Salmonella can also be shown in heat-treated wet mixes and feed materials (<13% moisture) through compliance with the norms for Enterobacteriaceae, see M4 e resp. f.</p>	
M5	Moulds	<ul style="list-style-type: none"> - Feed materials for delivery to cattle farms, and - Wet mixes for delivery to cattle farmers <p>with an Aw value > 0.75 (if this is not known then a moisture content > 13%)</p>	-	10,000 kve/gram	GMP		OZM Part 2; M-4
Chemical							
C1	Aflatoxin B1	Feed materials intended for (direct) delivery to dairy farmers	-	0.005 mg/kg	GMP		OZM Part 2; OSP1a to 1e
		All feed materials	-	0.02 mg/kg	Directive 2003/100/EEG amending Directive 2002/32/EEG		
		Complete animal feeds for cattle, sheep and goats with the exception of:	-	0.02 mg/kg			
		- dairy cattle	-	0.005 mg/kg			
		- calves and lambs	-	0.01 mg/kg			
		Complete animal feeds for pigs and poultry (with the exception of young animals)	-	0.02 mg/kg			
Other complete animal feeds	-	0.01 mg/kg					

		Supplementary animal feeds for cattle, sheep and goats (with the exception of supplementary animal feeds for dairy cattle, calves, lambs)	-	0.02 mg/kg		
		Supplementary animal feeds for pigs and poultry (with the exception of young animals)	-	0.02 mg/kg		
		Other supplementary animal feeds	-	0.005 mg/kg		
C2	Aldrin } separately } or jointly expressed Dieldrin }dieldrin } in	all animal feeds, with the exception of: - fats,	-	0.01 mg/kg 0.2 mg/kg	Directive 2002/32/EG	OZM Part 2; OSP-11
C3	Arsenic ¹⁶	Feed materials, with the exception of: - ground grass meal, alfalfa meal and clover meal and also molassed and unmolassed dried sugar beet pulp - Palm kernel flakes - phosphates and limestone - calcium carbonate - magnesium oxide - animal feeds obtained by processing fish or other sea creatures - ground dried seaweed and feed materials on the basis of seaweed	- - - - - - - - -	2 mg/kg 4 mg/kg 4 mg/kg ¹⁵ 10 mg/kg 15 mg/kg 20 mg/kg 15 mg/kg ¹⁵ 40 mg/kg ¹⁵	Directive 2003/100/EEG amending Directive 2002/32/EEG	OZM Part 2; OSP-26
		complete animal feeds, with the exception of: - complete fish feed and complete animal feed for fur-bearing animals	- -	2 mg/kg 6 mg/kg ¹⁵		

		complete animal feeds, with the exception of:	-	4 mg/kg			
		- mineral mixes	-	12 mg/kg			
C4	Prussic acid	Feed materials, with the exception of:	-	50 mg/kg	Directive 2002/32/EG		OZM Part 2; OSP-9
		- linseed	-	250 mg/kg			
		- linseed cake	-	350 mg/kg			
		- cassava products and almond cake,	-	100 mg/kg			
		complete animal feeds, with the exception of:	-	50 mg/kg			
		- complete animal feeds for chicks	-	10 mg/kg			
C5	Biogenic amines* or;	- Animal feeds > 30% raw protein	-	4,000 mg/kg. protein	GMP	* In as far as these are created by decay due to protein decay and are not the consequence of the normal processing of the product	OZM Part 2; OSP-23
C6	Cadmium ²	Feed materials of vegetable origin,	-	1 mg/kg	Directive 2005/87/EEG amending Directive 2002/32/EEG		OZM Part 2; OSP-27
		Feed materials of animal origin	-	2 mg/kg			
		Feed materials of mineral origin, with the exception of:		2 mg/kg			
		- phosphates	-	10 mg/kg			
		Feed additives, belonging to the functional group "Compounds of trace elements", with the exception of:	-	10 mg/kg			
		- copper oxide, manganese (II)oxide, zinc oxide and manganese (II) sulphate-monohydrate	-	30 mg/kg ⁸			
		Feed additives belonging to the functional group "Binding agents and thinners"	-	2 mg/kg			
		Premixes	-	15 mg/kg ⁸			
		Mineral mixes					

		- containing < 7% phosphorus - containing \geq 7% phosphorus	- -	5 mg/kg 0.75 mg/kg per 1% phosphorus, with a maximum of 7.5 mg/kg			
		Additional animal feeds for pets	-	2 mg/kg			
		Other supplementary animal feeds	-	0.5 mg/kg			
		Complete animal feeds for cattle, sheep and goats and fish feed with the exception of: - complete pet feeds - complete animal feeds for calves, lambs and goat lambs and other complete animal feeds	- - -	1 mg/kg 2 mg/kg 0.5 mg/kg			
C7	Chlorine	- Feed materials for delivery to cattle farms, and - Wet mixes for delivery to cattle farmers	10 g/kg (dry matter)	10x the action limit (dry matter) ²¹	GMP	If the action limit is exceeded then a warning or processing advice must be demonstrably communicated to the customer.	OZM deel 2; OSP-22
C8	Chlorocamphene (toxaphene) – sum of the indicators CHB 26, 50 and 62 ⁷	Fish, other sea creatures and (by)products thereof with the exception of fish oil - fish oil ⁸ - fish food ⁸	- - -	0.02 mg/kg 0.2 mg/kg 0.05 mg/kg	Directive 2005/86/EEG amending Directive 2002/32/EEG		OZM Part 2; OSP-11
C9	Chlordane (sum of cis- en transisomers and of oxychlordane expressed in Chlordane)	all animal feeds, with the exception of: - fats	- -	0.02 mg/kg 0.05 mg/kg	Directive 2002/32/EG		OZM Part 2; OSP-11
C10	Crotalaria spp.	All animal feeds	-	100 mg/kg	Directive 2002/32/EG		Microscopic determination in accordance with the instructions of

							the manufacturer
C11	DDT (sum of DDT, TDE and DDE isomers, expressed in DDT)	all animal feeds, with the exception of: - fats	- -	0.05 mg/kg 0.5 mg/kg	Directive 2002/32/EG		OZM Part 2; OSP-11
C12	Animal proteins	Animal feeds for productive livestock	-	0	Regulation (EC) no. 1234/2003 to amend 999/2001/EG	See GMP 14 B: Negative list	OZM Part 2; OSP-12
C13a	Dioxin ¹¹⁺¹⁸	Feed materials of vegetable origin with the exception of vegetable oils and their by-products	0.5 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	0.75 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	Directive 2006/13/EG to amend Directive 2002/32/EEG	In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this	OZM Part 2; OSP-18
		Vegetable oils and their by-products	0.5 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	0.75 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵		In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this	
		Feed materials of mineral origin	0.5 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	1.0 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵		In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this	

Animal fat including milk fat and egg fat	1.0 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	2.0 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	<p>In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this</p> <p>In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this</p> <p>In the event of exceeding the action limit: In many cases it may perhaps not be necessary to carry out an investigation into the source of the contamination as the background level in some areas is close or above the action level. If the action limit is really exceeded then all the details such as the sampling period, geographical origin, fish species, etc., should be recorded with a view to future measures for the presence of dioxins and dioxin-like compounds in these animal feeds</p>
Products from other than land animals including milk, milk products, eggs and products from eggs	0,5 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	0,75 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	
Fish oil	5.0 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	6.0 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	
Fish, other sea creatures and their (subsidiary) products , with the exception of fish oil and fish protein hydrolysates which contain more than 20% fat ⁶	1.0 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	1.25 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	
Fish protein hydrolysates which contain more than 20% fat ⁶	1.75 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	2.25 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	
Fish food Feeds for pets	1.75 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	2.25 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	

The feed additives kaolinite-bearing clay, calcium sulphate hydrate, vermiculite, natrolite phonolite, synthetic calcium aluminates and clinoptilolite of sedimentary origin, belonging to the functional group "Binding agents and thinners"		0.75 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	
Feed additives belonging to the functional group "Binding agents and thinners"	0.5 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷		In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this
Feed additives belonging to the functional group "Trace elements compounds"	0.5 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	1.0 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this
Premixes	0.5 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	1.0 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this

		Compound feeds with the exception of feeds for fur-bearing animals and pets and of fishfeed	0.5 ng WHO-PCDD/F-TEQ/kg ⁴⁺¹⁷	0.75 ng WHO-PCDD/F-TEQ/kg ⁴⁺⁵	In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this	
C13b	Sum of dioxins and dioxin-like PCBs ¹²⁺¹⁸	Feed materials of vegetable origin with the exception of vegetable oils and their by-products		1.25 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		OZM Part 2; OSP-18
		Vegetable oils and their by-products		1.5 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Feed materials of mineral origin		1.5 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Animal fat including milk fat and egg fat		3.0 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Products from other than land animals including milk, milk products, eggs and products from eggs		1.25 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Fish oil		24.0 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Fish, other sea creatures and their (subsidiary) products, with the exception of fish oil and fish protein hydrolysates which contain more than 20% fat ⁶		4.5 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Fish protein hydrolysates which contain more than 20% fat		11 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Feed additives belonging to the functional group "Binding agents and thinners"		1.5 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		

		Feed additives belonging to the functional group "Trace elements compounds"		1.5 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Premixes		1.5 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Compound feed with the exception of feeds for fur-bearing animals and pets and of fishfeed		1.5 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
		Fish food Feeds for pets		7.0 ng WHO-PCDD/F-PCB-TEQ/kg ⁴		
C13c	Dioxin-like PCBs ^{19 +18}	Feed materials of vegetable origin with the exception of vegetable oils and their by-products	0.35 ng WHO-PCB-TEQ/kg ^{4 + 17}		In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this	OZM Part 2; OSP-18
		Vegetable oils and their by-products	0.5 ng WHO-PCB-TEQ/kg ^{4 + 17}		In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this	
		Feed materials of mineral origin	0.35 ng WHO-PCB-TEQ/kg ^{4 + 17}		In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this	

Animal fat including milk fat and egg fat	0.75 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷		<p>In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this</p> <p>In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this</p> <p>In the event of exceeding the action limit: In many cases it may perhaps not be necessary to carry out an investigation into the source of the contamination as the background level in some areas is close or above the action level. If the action limit is really exceeded then all the details such as the sampling period, geographical origin, fish species, etc., should be recorded with a view to future measures for the presence of dioxins</p> <p>and dioxin-like compounds in these animal feeds</p>
Products from other than land animals including milk, milk products, eggs and products from eggs	0.35 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷		
Fish oil	14.0 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷		
Fish, other sea creatures and their (subsidiary) products, with the exception of fish oil and fish protein hydrolysates which contain more than 20% fat	2.5 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷		
Fish protein hydrolysates which contain more than 20% fat	7.0 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷		
Fish food Feeds for pets	3.5 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷		

		Feed additives belonging to the functional group "Binding agents and thinners"	0.5 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷			In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this
		Feed additives belonging to the functional group "Trace elements compounds"	0.35 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷			In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this
		Premixes	0.35 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷			In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this
		Compound feed with the exception of feeds for fur-bearing animals and pets and of fishfeed	0.5 ng WHO-PCB-TEQ/kg ⁴⁺¹⁷			In the event of exceeding the action limit: Determination of the source of the contamination. Once the source of the contamination has been established take, if possible, suitable measures to reduce or eliminate this
C15	DON (Deoxynivalenol)	Animal feed on full ration basis for: - Pigs - Cattle	0.8 mg/kg 4 mg/kg	1 mg/kg 5 mg/kg	GMP	OZM Part 2; OSP-19

		<ul style="list-style-type: none"> - Calves up to 4 months - Dairy cattle - Poultry 	<ul style="list-style-type: none"> 1.6 mg/kg 2.4 mg/kg 3.2 mg/kg 	<ul style="list-style-type: none"> 2 mg/kg 3 mg/kg 4 mg/kg 			
		Feed material (supplied to the cattle farmer for immediate feeding) for <ul style="list-style-type: none"> - Pigs - Cattle - Calves up to 4 months - Dairy cattle - Poultry 	<ul style="list-style-type: none"> 1 mg/kg 5 mg/kg 2 mg/kg 3 mg/kg 4 mg/kg 	<ul style="list-style-type: none"> 5 mg/kg 15 mg/kg 6 mg/kg 9 mg/kg 12 mg/kg 	GMP	The supplier provides information to the cattle farmer in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the days ration	
C16	Endosulfan (sum of alfa and beta-isomers and of endosulfan sulphate, expressed in endosulfan)	all animal feeds, with the exception of: <ul style="list-style-type: none"> - maize and derived products - oil-bearing seeds and derived products - complete fish food 	<ul style="list-style-type: none"> - - - 	<ul style="list-style-type: none"> 0.1 mg/kg 0.2 mg/kg 0.5 mg/kg 0.005 mg/kg 	Directive 2003/100/EEG amending Directive 2002/32/EEG		OZM Part 2; OSP-11
C17	Endrin (sum of endrin and delateto-endrin, expressed in endrin)	All animal feeds, with the exception of: <ul style="list-style-type: none"> - fats 	<ul style="list-style-type: none"> - - 	<ul style="list-style-type: none"> 0.01 mg/kg 0.05 mg/kg 	Directive 2002/32/EG		OZM Part 2; OSP-11
C19	Fluorine ³	Feed materials, with the exception of: <ul style="list-style-type: none"> - animal feeds of animal origin with the exception of sea water shellfish such as krill - seawater shellfish such as krill - phosphates - calcium carbonate - magnesium oxide - calcareous marine algae 	<ul style="list-style-type: none"> - - - - - - 	<ul style="list-style-type: none"> 150 mg/kg 500 mg/kg 3,000 mg/kg 2,000 mg/kg 350 mg/kg 600 mg/kg 1,000 mg/kg 	Directive 2005/87/EEG amending Directive 2002/32/EEG		OZM Part 2; OSP-6

		Vermiculite	-	3,000 mg/kg ⁸		
		Supplementary animal feeds				
		- containing \geq 4% phosphorus	-	500 mg/kg		
		- containing > 4% phosphorus	-	125 mg/kg per 1% phosphorus		
		complete animal feeds, with the exception of:		150 mg/kg		
		- complete animal feeds for cattle, sheep and goats				
		- which suck	-	30 mg/kg		
		- others	-	50 mg/kg		
		- complete animal feeds for pigs	-	100 mg/kg		
		- complete animal feeds for poultry	-	350 mg/kg		
		- complete animal feeds for chicks	-	250 mg/kg		
C20	Heptachlor (sum of heptachlor and heptachlor epoxyd, expressed in heptachlor)	All animal feeds, with the exception of:	-	0.01 mg/kg	Directive 2002/32/EG	OZM Part 2; OSP-11
		- fats	-	0.2 mg/kg		
C21	Hexachlorobenzene (HCB)	All animal feeds, with the exception of:	-	0.01 mg/kg	Directive 2002/32/EG	OZM Part 2; OSP-11
		- fats	-	0.2 mg/kg		
C22	Hexachlorocyclohexane (HCH):		-		Directive 2002/32/EG	OZM Part 2; OSP-11
	- Alfa-isomer	All animal feeds, with the exception of:	-	0.02 mg/kg		
		- fats	-	0.2 mg/kg		
	- Beta-isomer	Compound feeds with the exception of:	-	0.01 mg/kg		
		- feeds for dairy cattle	-	0.005 mg/kg		
		Feed materials, with the exception of:	-	0.01 mg/kg		
		- fats	-	0.1 mg/kg		
	- Gamma-isomer (lindane)	All animal feeds, with the exception of:	-	0.2 mg/kg		
		- fats	-	2.0 mg/kg		

C23	Potassium	- Feed materials for delivery to cattle farms, and - Wet mixes for delivery to cattle farmers	60 g/kg (dry matter)	10x the action limit (dry matter) ²¹	GMP	If the action limit is exceeded then a warning or processing advice must be demonstrably communicated to the customer.	OZM deel 3; WM-08
C24	Hydrocarbons (C10-C40)	Animal fat, with the exception of:	-	400 mg/kg (on product basic)	GMP		OZM Part 2; OSP-15a
		- crude fish oil	-	3,000 mg/kg (on product basic)			
		Vegetable oil (with the exception of sunflower oil)	-	400 mg/kg (on product basic)			
		Sunflower oil and sunflower fatty acids	-	1,000 mg/kg (on product basic)			
		Vegetable fatty acids incl. Mixes of fatty acids (with the exception of sunflower fatty acids)	-	3,000 mg/kg (on product basic)			
		Palm oil	-	25 mg/kg calculated as diesel oil		This norm applies if the hydrocarbons (calculated as diesel oil) are determined via the GC-MS method. If use is made of the GC-FID method, then the norm for vegetable oil applies	OZM Part 2; OSP-15b
C25	Copper (E4)	Free-range consumption pig feed	-	25 mg/kg total	GMP	Only for free-range consumption pig feed	OZM Part 1; TVM-I-2
		Pigs: ¹³	-		Directive 1334/2003/EG amendment to 70/524		
		- Piglets to 12 weeks ¹³	-	170 mg/kg total			
		- Other pigs ¹³	-	25 mg/kg total			
		Cattle: ¹³					
		1. Cattle before they start with rumination:					
		- Milk replacer ¹³	-	15 mg/kg total			
		- Other complete animal feeds ¹³	-	15 mg/kg total			
		2. Other pigs ¹³	-	35 mg/kg total			

		- Sheep ¹³	-	15 mg/kg total		
		- Fish ¹³	-	25 mg/kg total		
		- Shellfish ¹³	-	50 mg/kg total		
		- Other animals ¹³	-	25 mg/kg total		
C26	Mercury	Feed materials, with the exception of:	-	0.1 mg/kg	Directive 2005/8/EEG amending Directive 2002/32/EEG	OZM Part 2; OSP-5
		- animal feeds obtained by processing fish or other sea creatures	-	0.5 mg/kg		
		- calcium carbonate	-	0.3 mg/kg		
		complete animal feeds, with the exception of:	-	0.1 mg/kg		
		- complete animal feeds for dogs and cats	-	0.4 mg/kg		
		complete animal feeds, with the exception of:	-	0.2 mg/kg		
		- supplementary animal feeds for dogs and cats	-	-		
C27	Lead ¹⁰	Feed materials, with the exception of:	-	10 mg/kg	Directive 2005/87/EEG amending Directive 2002/32/EEG	OZM Part 2; OSP-28
		- green fodder ⁹	-	30 mg/kg ⁸		
		- phosphates and limestone	-	15 mg/kg		
		- calcium carbonate	-	20 mg/kg		
		- yeast	-	5 mg/kg		
		Feed additives, belonging to the functional group "Compounds of trace elements", with the exception of:		100 mg/kg		
		- zinc oxide		400 mg/kg ⁸		
		- manganese (II)oxide, ferrous carbonate, copper carbonate		200 mg/kg ⁸		
		Feed additives, belonging to the functional group "Binding agents and thinners", with the exception of:		30 mg/kg ⁸		
		- clinoptilolite of vulcanic origin		60 mg/kg ⁸		

		Premixes		200 mg/kg ⁸			
		complete animal feeds, with the exception of:	-	10 mg/kg			
		- mineral mixes	-	15 mg/kg			
		Complete animal feeds	-	5 mg/kg			
C28	Ergot of rye (<i>Claviceps purpurea</i>)	All animal feeds which contain unground grain	-	1,000 mg/kg	Directive 2002/32/EG		OZM Part 2; OSP-32
C29	Sodium	- Feed materials for delivery to cattle farms, and - Wet mixes for delivery to cattle farmers	8 g/kg (dry matter)	10x the action limit (dry matter) ²¹	GMP	If the action limit is exceeded then a warning or processing advice must be demonstrably communicated to the customer.	OZM deel 3; WM-09
C30	Nickel	Feed fats	20 mg / kg (on a fat basis)	50 mg / kg (on a fat basis)	GMP		OZM Part 2; OSP-29
C31	Nitrite	Fish meal	-	60 mg/kg (expressed in sodium nitrite)	Directive 2002/32/EG		OZM Part 2; OSP-7
		complete animal feeds, with the exception of:	-	15 mg/kg (expressed in sodium nitrite)			
		- feeds for pets with the exception of birds and aquarium fish	-	-			
C32	Weed seeds and unground or pulverised fruits which contain alkaloids, glucosides or other poisonous substances separately or jointly, including: a) <i>Lolium temulentum</i> L. b) <i>Lolium remotum</i> Schrank c) <i>Datura stramonium</i> L.	All animal feeds	-	3,000 mg/kg	Directive 2002/32/EG		Microscopic determination in accordance with the instructions of the manufacturer
			-	1,000 mg/kg			
			-	1,000 mg/kg			
			-	1,000 mg/kg			
C33	Insoluble impurities	Melted fats from ruminants	-	0,15%	Regulation 1774/2002		OZM Part 2; OSP-16
C34	Ochratoxin A	Animal feed on full ration basis for:			GMP		OZM Part 2; OSP-19

		- sows and consumption pigs and piglets	0.04 mg/kg	0.05 mg/kg			
		- poultry	0.16 mg/kg	0.2 mg/kg			
		Feed material (supplied to the cattle farmer for immediate feeding) for					The supplier provides information to the cattle farmer in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the days ration
		- Sows and pigs and piglets	0.05 mg/kg	0.15 mg/kg			
		- Poultry	0.2 mg/kg	0.6 mg/kg			
C35	Polycyclic Aromatic Hydrocarbons (PAHs)	Feed fats	15 µg/kg BaPEQ (on fat basis)	50 µg/kg BaPEQ (on fat basis)	GMP	BaPEQ = Benzo(a)pyrene equivalent	OZM Part 2; OSP-33
C36	Polychlorinated biphenyls (PCBs)	Animal feedstuffs of animal origin (if fat content > 2% fat) with the exception of fish oil	-	250 µg/kg (on fat basis)	GMP		OZM Part 2; OSP-11
	Total of the following PCB's (IUPAC): 28, 52 101, 118, 138, 153, 180	Animal feedstuffs of animal origin (if fat content < 2% fat)	-	50 µg/kg (on product basis)			
		Compound feeds with the exception of fish feed	-	200 µg/kg (on fat basis)			
C38	Ricinus-Ricinus communis L.	All animal feeds	-	10 mg/kg (expressed in ricinus husks)	Directive 2002/32/EG		Microscopic determination in accordance with the instructions of the manufacturer
C39	Sulphate	- Feed materials for delivery to cattle farms, and	8 g/kg (dry matter)	10x the action limit (dry matter) ²¹	GMP	If the action limit is exceeded then a warning or processing advice must be demonstrably communicated to the customer.	OZM deel 2; OSP-24
		- Wet mixes for delivery to cattle farmers which are preserved with sulphuric acid and not for products which by nature are rich in sulphur					
C40	Theobromine	complete animal feeds, with the exception of:	-	300 mg/kg	Directive 2002/32/EG		OZM Part 2; OSP-8
		- complete animal feeds for full-grown cattle	-	700 mg/kg			

C41	Vinylthiooxazolidon (Vinylloxazolidine thion)	Complete animal feeds for poultry with the exception of:	-	1,000 mg/kg	Directive 2002/32/EG		OZM Part 2; OSP-31
		- complete animal feeds for laying poultry	-	500 mg/kg			
C42	Volatile mustard oil	Feed materials, with the exception of:	-	100 mg/kg	Directive 2002/32/EG		OZM Part 2; OSP-20
		- colza cakes	-	4,000 mg/kg (calculated as allylisothiocyanate)			
		complete animal feeds, with the exception of:	-	150 mg/kg (calculated as allylisothiocyanate)			
		- Complete animal feeds for cattle, sheep and goats (with the exception of young animals)	-	1,000 mg/kg (calculated as allylisothiocyanate)			
		- Complete animal feeds for pigs (with the exception of piglets) and poultry	-	500 mg/kg (calculated as allylisothiocyanate)			
C43	Free gossypol	Feed materials, with the exception of:	-	20 mg/kg	Directive 2003/100/EEG amending Directive 2002/32/EEG		OZM Part 2; OSP-21
		- cotton seed	-	5,000 mg/kg			
		- cotton seed cake and cotton seed meal	-	1,200 mg/kg			
		complete animal feeds, with the exception of:	-	20 mg/kg			
		- complete animal feeds for cattle, sheep and goats	-	500 mg/kg			
		- complete animal feeds for poultry (except laying hens) and calves	-	100 mg/kg			
		- complete animal feeds for rabbits and pigs (except piglets)	-	60 mg/kg			
C44	Zearalenon	Animal feed on full ration basis for:			GMP		OZM Part 2; OSP-19
		- sows and consumption pigs	0.2 mg/kg	0.25 mg/kg			
		- young pigs	0.08 mg/kg	0.1 mg/kg			
		- young cattle and dairy cattle	0.4 mg/kg	0.5 mg/kg			

		Feed material (supplied to the cattle farmer for immediate feeding) for				The supplier provides information to the cattle farmer in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the days ration	
		- sows and pigs	0.25 mg/kg	0.75mg/kg			
		- young pigs	0.1 mg/kg	0.3 mg/kg			
		- young cattle and dairy cattle	0.2 mg/kg	1.5 mg/kg			
C45	Zinc (E6)	Free-range consumption pig feed	-	90 mg/kg total	GMP	Only for free-range consumption pig feed	OZM Part 1; TVM-I-4
		Pets ¹³	-	250 mg/kg total	Directive 1334/2003/EG amendment to 70/524 / EG		
		Fish ¹³	-	200 mg/kg total			
		Milk replacer ¹³	-	200 mg/kg total			
		Other animals ¹³	-	150 mg/kg total			
Physical							
F1	Plastics	- Feed materials for delivery to cattle farms, and - Wet mixes for delivery to cattle farmers	-	1.5 g/kg (dry matter basis)	GMP	Via manual separation and weighing This norm was included subject to the outcome of the discussion taking place in the European Commission.	Microscopic determination in accordance with the instructions of the manufacturer
F2	Polyethylene	- Feed materials for delivery to cattle farms, and - Wet mix for delivery to cattle farmers	0.25 g/kg (on fat basis)	0.5 g/kg (on fat basis)	GMP		OZM Part 2; OSP-13
F3	Apricots - Prunus armeniaca L.		-				Microscopic determination in accordance with the instructions of the manufacturer

F4	Bitter almonds - <i>Prunus - dulcis</i> (Mill.) D.A. Webb var. <i>amara</i> (DC.) Focke (= <i>Prunus amygdalus</i> Batsch var. <i>amara</i> (DC.) Focke)	All animal feeds	-			
F5	Beech, unpeeled seeds - <i>Fagus silvatica</i> (L.)		-			
F6	Chinese mustard – <i>Brassica juncea</i> (L.) Czern. and Coss. ssp. <i>juncea</i> var. <i>lutea</i> Batalin		-	Seeds and fruits of the adjacent plant types and the by-products obtained from processing may not appear in animal feeds unless as traces which can not be quantitatively determined	Directive 2002/32/EG	
F7	Ethiopian mustard – <i>Brassica carinata</i> A. Braun		-			
F8	Indian brown mustard - <i>Brassica juncea</i> (L.) Czern. and Coss. ssp. <i>integrifolia</i> (West.) Thell.		-			
F9	Mowrah, <i>Bassia</i> , <i>Madhuca</i> – <i>Madhuca longifolia</i> (L.) Macbr. (= <i>Bassia longifolia</i> L. = <i>Illipe malabrorum</i> Engl.) <i>Madhuca indica</i> Gmelin (= <i>Bassia latifolia</i> (Roxb.) = <i>Illipe latifolia</i> (Roscb.) F. Mueller)		-			
F10	Physic nut - <i>Jatropha curcas</i> L.		-			
F11	Physic croton - <i>Croton tiglium</i> L.		-			

F12	Sarepta mustard - Brassica juncea (L.) Czern. and Coss. ssp. juncea	-				
F13	Camelina - Camelina sativa (L.) Crantz	-				
F14	Black mustard – Brassica nigra (L.) Koch	-				

[*1] **Action limit:** A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12%

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12%

[2] The maximum levels refer to an analytical determination of cadmium where the extraction is done for 30 minutes a boiling temperature in Nitric acid (5% m/m). Equivalent extraction procedures may be used where it can be demonstrated that the extraction procedure used has the same extraction efficiency

[3] The maximum levels refer to an analytical determination of fluorine where the extraction is done for 20 minutes at an ambient temperature with hydrochloric acid 1 N. Equivalent extraction procedures may be used where it can be demonstrated that the extraction procedure used has the same extraction efficiency

[4] Upper limit concentrations; in the calculation of upper limit concentrations it must be assumed that values lying under the detection limits for the various congeners are equal to the detection limit.

[5] The individual maximum level for dioxins (PCDD/Fs) remains temporarily applicable. The values specified in item C13a for products intended for feeding to animals must correspond in this period to the maximum levels for dioxins and the maximum levels for the sum of dioxins and dioxin-like PCBs.

[6] Fresh fish which is supplied directly without any further processing and used for the production of feeds for fur-bearing animals gebruikt, is exempted from the maximum level, and for fresh fish which is used for the direct feeding of pets, zoo animals and circus animals there is a maximum level of 4.0 ng WHO-PCDD/F-TEQ/kg product and 8.0 ng WHO-PCDD/F-TEQ/kg product. The products, processed animal proteins from these animals (fur-bearing animals, pets, zoo animals and circus animals), may not get into the feed chain and the feeding of them to productive livestock which are kept for the production foodstuffs, are being fattened up or bred, is forbidden.

[7] Numbering system in accordance with Parlar, preceded by "CHB" or "Parlar #"

- CHB 26: 2-endo, 3-

exo, 5-endo, 6-exo, 8,8,10,10-octachlorbornane

CHB 50: 2-endo, 3-exo, 5-endo, 6-exo, 8,8,9,10,10-nonachlorbornane

CHB 62: 2, 2, 5, 5, 8, 9, 9, 10, 10- nonachlorbornane

[8] The levels will be reviewed before 31 December 2007 with a view to lowering the maximum levels

[9] Green fodder includes products which are intended for feeding to animals such as hay, silage, fresh grass, etc.

[10] The maximum levels refer to an analytical determination of lead where the extraction is done for 30 minutes a boiling temperature in Nitric acid (5% m/m). Equivalent extraction procedures may be used where it can be demonstrated that the extraction procedure used has the same extraction efficiency

[11] (sum of the polychlorinated dibenzo-para dioxins (PCDDs) and the polychlorinated dibenzofurans (PCDFs) expressed in toxicity equivalents established by the World Health Organisation (WHO) where use is made of the WHO-TEFs (toxicity equivalence factors from 1997)

[12] (sum of the polychlorinated dibenzo-para dioxins (PCDDs) and the polychlorinated dibenzofurans (PCDFs) and the polychlorinated biphenyls (PCBs) expressed in toxicity equivalents established by the World Health Organisation (WHO) where use is made of the WHO-TEFs (toxicity equivalence factors from 1997)

[13] If the GMP norm for this product and the animal type in question is lower than the norm specified here, then the GMP norm applies. In complete animal feed

[14] n = number of samples to be tested; m = threshold value for the number of bacteria; the results will be considered to be satisfactory if the number of bacteria in none of the samples is greater than m, M = maximum value for the number of bacteria in one or more samples is equal to or greater than M, c = number of samples for which the bacteria count gives a result between m and M and where the sample is still considered acceptable if the result of the bacteria for the other samples is not higher than m.

[15] At the request of the competent authorities the responsible operator must carry out an analysis to show that the level of anorganic arsenic is lower than 2 ppm. This analysis is especially important for the *Hizikia fusiforme* seaweed

[16] The maximum levels refer to the total level of arsenic

[17] The Commission will evaluate these action limits at the same time as the maximum levels for the sum of dioxins and dioxin-like PCBs before 31 December 2008.

[18] TEF's from the WHO for the assessment of the risks to humans based on the conclusions of the meeting of the World Health Organisation in Stockholm, Sweden, 15-18 June 1997 (van den Berg et al., (1998) Toxic Equivalence Factors (TEF's) for PCB's, PCDD's, PCDF's for Humans and for Wildlife Environmental Health Perspectives, 106(12), 775).

Congenor	TEF Value	Congenor	TEF Value
<i>Dibenzo-p-dioxins (PCDDs)</i>		<i>Dioxin-like PCBs</i>	
2,3,7,8-TCDD	1	<i>Non-ortho-PCBs + mono-ortho-PCBs</i>	
1,2,3,7,8-PeCDD	1	<i>Non-ortho-PCB'</i>	
1,2,3,4,7,8-HxCDD	0.1	PCB 77	0,0001
1,2,3,4,7,8-HxCDD	0.1	PCB 81	0,0001
1,2,3,4,7,8-HxCDD	0.1	PCB 126	0,1
1,2,3,4,6,7,8-HpCDD	0.01	PCB 169	0,01
OCDD	0.0001		
		<i>Mono-ortho-PCBs</i>	
<i>Dibenzofuranes (PCDFs)</i>		PCB 105	0,0001
2,3,7,8-TCDF	0.1	PCB 114	0,0005
1,2,3,7,8-PeCDF	0.05	PCB 118	0,0001
2,3,4,7,8-PeCDF	0.5	PCB 123	0,0001
1,2,3,4,7,8-HxCDF	0.1	PCB 156	0,0005
1,2,3,6,7,8-HxCDF	0.1	PCB 157	0,0005
1,2,3,7,8,9-HxCDF	0.1	PCB 167	0,00001
2,3,4,7,8-HxCDF	0.1	PCB 189	0,0001
1,2,3,4,6,7,8-HpCDF	0.01		
1,2,3,4,7,8,9-HpCDF	0.01		

OCDF

0.0001

Key to abbreviations: T= tetra; Pe= penta; Hx=hexa; Hp= hepta; O= octa; CDD= chlordibenzodioxin; CDF= chlordibenzofuran; CB= chlorbiphenyl

[19] (sum of the polychlorinated biphenyls (PCBs) expressed in toxicity equivalents established by the World Health Organisation (WHO) where use is made of the WHO-TEFs (toxicity equivalence factors from 1997)

[20] (explanation of 0⁺: this norm does not apply to each individual sample. In a particular period of time the Salmonella incidence at company level should approach 0% (= 0⁺.)

[21]The rejection limits do not apply to feeds such as salt or mineral licks which are deliberately supplied with high mineral levels.

PART B: RESIDUE NORMS

1. INTRODUCTION

In addition to compliance with the adopted norms in appendix 1, part A, the participant must also comply with the (residue) levels of additives and veterinary medical products. Please refer to the definition of feed safety as laid down in the list of definitions for the GMP⁺ Certification Scheme.

The participant must ensure that

- a. the correct additives and veterinary medical products get into the right feed in the right dosage (GMP⁺ B1, section 7.12.1.1).
- b. (residues of) additives and veterinary medical products are not present or are under set maximum limits (the so-called residue norms) in feeds in which they should not be present (GMP⁺ B1, section 7.12.1.4).

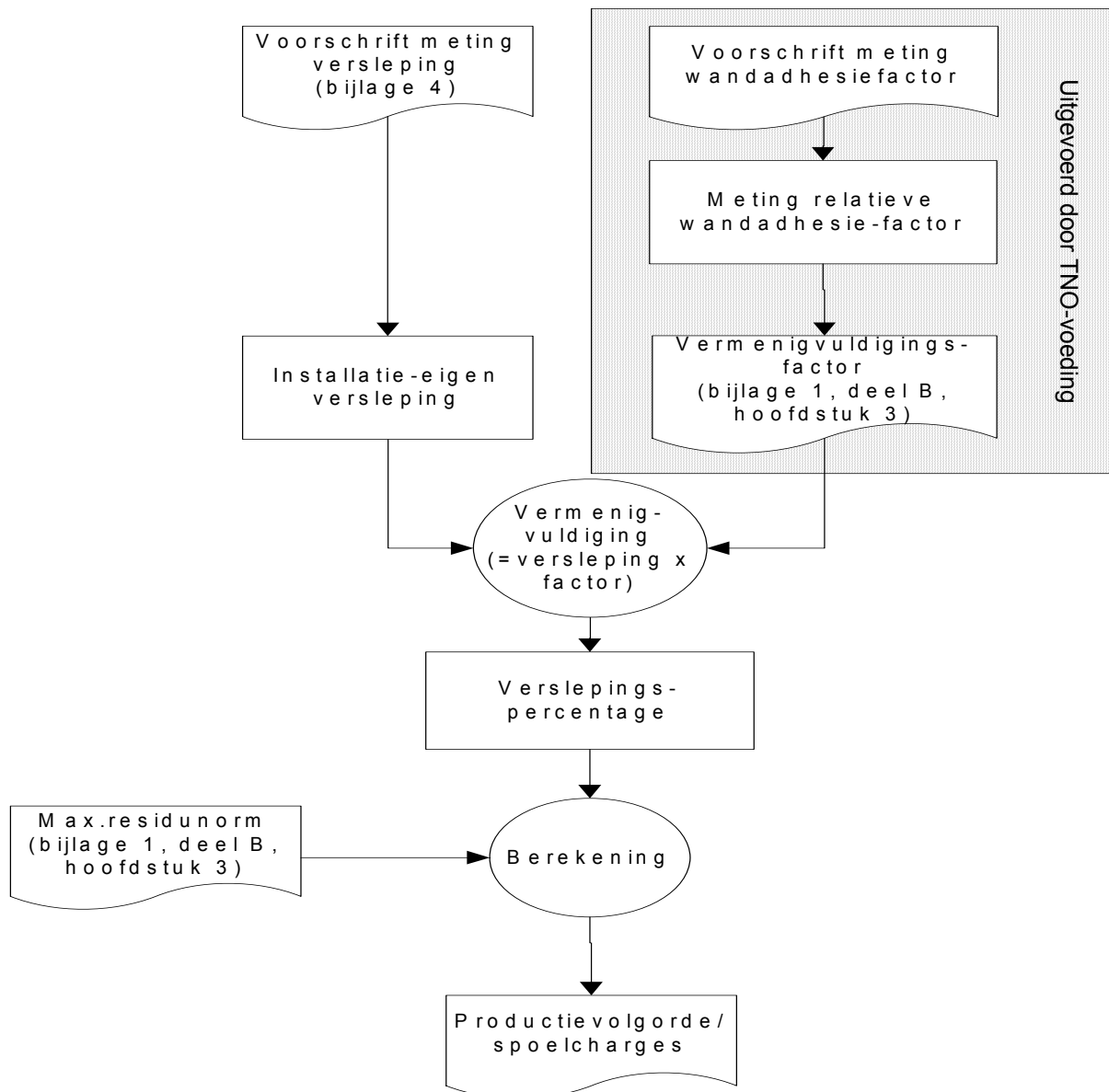
In order to be able to control the residue levels the participant should, among other things, measure carry-over in the installations (see Appendix 4) and establish production sequences. In chapter 2 of part B of this appendix there are further instructions for this.

Chapter 3 of part B of this appendix states the maximum residue norms for (critical) additives and veterinary medical products. These norms apply to compound feeds, semi-manufactured products, feed materials and premixtures and are applicable to producers of these products.

2. ADDITIONAL PROVISIONS

2.1 General

The control of residue levels using the production sequence is shown in diagram form in the following table.



2.2 Compound feed

2.2.1 Installation carry-over level:

The installation's own carry-over is the carry-over measured using an inspection procedure as laid down in Appendix 4.

The frequency at which the carry-over must be measured is determined as follows:

- a. If the participant processes or transports (products with) coccidiostatia / histomonostatica¹ or veterinary medical products then the degree of carry-over must be known for the lines on which these products are processed.
- b. If the participant has relevant² lines then he must measure carry-over at least once per two years.
- c. The minimum frequency for the measurement of carry-over may be lowered to once per year on condition that:
 - o the carry over measured is less than 10% and
 - o as soon as the last measurement is over two years old, the participant must assume the degree of carry over of the line in question is 15%.

The carry-over must be re-established in the event of major changes to the installation.

2.2.2 The coefficient

The coefficient is intended to take account of an extra carry-over in addition to the installation carry-over, as a consequence of the processing properties of the additive or veterinary medicine. A factor of 1 means that the product contains no processing properties other than those of a standard measurement substance. The actual carry-over of the product therefore corresponds to the installation carry-over. If the factor is greater than 1, this means that the product has anomalous processing properties, such that the actual carry-over will be higher than the installation carry-over.

The coefficient is determined on the basis of a so-called relative wall adhesion factor using a method specially developed for this purpose. Refer to TNO report I-96-31006 *Carry-over of a number of critical substances in cattle feed and the relationship to their characteristic properties II*.

The relationship between the relative wall adhesion factor and the co-efficient is shown in the following table.

¹ This group of additives is included in Group E of Regulation EU 1831/2003, Article 6, subsection 1e. Attention: a number of antibiotics are permitted until 1 January 2006. Refer to EU 1831/2003, Article 11. When processing these products it is necessary to measure the carry-over.

² Relevant lines are lines on which (products with) coccidiostatia/histomonostatica or veterinary medical products and also products with a set residue norm are produced and/or transported.

Relative wall adhesive factor according to the established method.	Coefficient
< 1	1
≥ 1 and < 2	2
≥ 2 and < 3	2,5
unknown, ≥ 3	3

2.2.3 Carry-over and flush batches

The actual carry-over of additives and carry-over or veterinary medical products must be calculated in order to establish the number of flushes. This carry-over can be calculated by multiplying the installation carry-over by the coefficient.

This coefficient can be used to calculate how many flush batches are minimally required to remain under the established residue norms. A sample calculation follows.

Example:

Broiler feed with nicarbazine	: 80 ppm		
Company's own carry-over in installation:	: 5 %		
Coefficient	: "1"		
Maximum residue norm for broiler feed for the last five days:	: 0.5 ppm		
Calculation of actual carry-over = company's own carry-over x coefficient			
=	0.05 (5%) x 1 = 0.05		
Calculation:			
- batch a	broiler feed	80 ppm	
- batch a+1	follow-on feed	4 ppm	(= 0.05 x 80)
- batch a+2	follow-on feed	0.2 ppm	(= 0.05 x 4)
The second batch complies with the residue norm for broiler feed in the final fattening phase. Therefore a first flush batch must be produced with a non-critical feed.			

2.2.4 Items for attention and other remarks

The supplementary instructions for use relate to the sequence of production operations in the installation. It is also necessary for the participant to establish company requirements and procedures in order to comply with the residue norms for:

- a. transport (sequence) and storage (sequence)
- b. intake of premixes, additives and veterinary medical products.

The participant must check that the prescribed residue norms are not exceeded. If an infringement of these residue norms is detected, the instructions for use and procedures must be modified.

The coefficients and the minimum carry-over levels calculated from them may be deviated from provided that the carry-over is measured using the relevant product itself.

Turkeys: No specific data is available with regard to the transfer of critical additives and veterinary medical products from feed to meat and liver for turkeys. In order to prevent undesirable transfer of these critical products, the residue norms for turkey feeds are set at the same levels as those for broiler feeds.

Dairy cattle feed: The general control measure has been adopted that dairy cattle feeds may not be produced after a product has been prepared on the line in question with the additives or veterinary medical products specified in section 3.1 or 4.1.

2.3 Premix

2.3.1 General

The objective of these supplementary instructions is that compound feed producers must be able to use premixes from GMP⁺-certified manufacturers in producing compound feeds, without exceeding the maximum carry-over levels.

Carry-over of critical additives and veterinary medicines also occurs in the preparation of premixes. In order to prevent GMP⁺-certified compound feed mixers from exceeding the standards for critical additives and veterinary medical products because of excessive levels in premixes, a general rule of thumb is that no more than 25% of the residue norm as stated for compound feed may be used up as a result of the premixes used.

The maximum level in the premix must be derived from the dosage of the premix in the compound feed. Carry-over of critical additives and veterinary medical products may take place via direct and indirect contamination.

2.3.2 Direct contamination

Direct contamination is possible through use of a premix destined for an animal feed for which a maximum residual level has been established. The premix producer is to ensure through his GMP⁺ feed safety system that no more than 25% of the residue norm as stated for that compound feed is used up via the premix.

For any flush batches required, the relevant coefficient as established for that product should be adopted.

2.3.2 Indirect contamination

In order to achieve extremely low residue norms in premixes, producers of premixes will have to first produce a number of batches for a non-critical use following the production of premixes with critical additives and veterinary medicines. A premix which is produced subsequent to one prepared with a critical additive (a so-called flush batch) may still contain such high levels of critical additives that this can cause problems for the compound feed producer.

Compound feed manufacturers use these premixes mainly in animal feeds which are also used to flush an installation clean. In certain cases the level of critical additives is so high that, together with the company's own carry-over levels, the residue norms in compound feeds are exceeded.

2.4 Calculation of residue values

An international work group has developed the following formula for the calculation of the residue values for critical feed additives and veterinary medical products:

$$\text{Limit value of feed} = \text{MRL} / 1000 \times 2.1 / 60 \times 100 \times \text{LG animal} / \text{feed per day}$$
$$(\text{mg/kg}) = \mu\text{g/kg feed} \times \text{kg feed per day} / \text{kg human} \times \text{kg animal} / \text{kg feed per day}$$

Account is taken in the calculation of the maximum residue level (MRL) in animal products which applies for the feed additive or veterinary medical product. Account is also taken of the daily intake of animal products by consumers. Finally, through the transfer of the critical feed additive and the veterinary medical product, the feed intake of the animal (in relation to the weight of the animal) and the transfer factor (from feed to animal and animal product) are important.

100% is assumed for the transfer (no account is therefore taken of the half-life of the critical substances). In addition to this "safety margin" a choice has been made with respect to the Maximum Residue Limit (MRL) for the lowest MRL value which has been defined for a critical product.

This system has led to the residue norms for critical feed additives and veterinary medical products as laid down in section 4.1.

3. RESIDUE NORMS FOR CRITICAL ADDITIVES

3.1 Summary of residue norms for critical additives

Additives	Established maximum residue norm (in ppm) in animal feeds ³ for:			Established precautionary rule for dairy cattle ⁴
	laying hens ⁵	slaughter chickens ⁶ fattening turkeys ⁶	pigs ⁷	
Nicarbazine	0,05	0,5	0.1 ⁸	1 batch ⁹
Robenidine	- ¹⁰	- ¹⁰	0.8 ⁸	1 batch ⁹
Lasalocid sodium	1	- ¹⁰	- ¹⁰	1 batch ⁹
Decoquinat	- ¹⁰	- ¹⁰	2 ⁸	1 batch ⁹
For feeds for export, with feed additives which are not registered in the EU for feed, there are no special requirements except for feeds with antibiotics, coccidiostatica or histomonostatica and also for any new registrations of the specified feed additives in the Netherlands	1	1	1	1 batch ⁹

³ The max. residue norms for premixes amount to maximum. 25% of the indicated residue norms for animal feeds calculated on an animal feed basis

⁴ feed given to milk-producing cows, goats and sheep

⁵ feed given to laying animals

⁶ feed given from 5 days before slaughter

⁷ feed given from 28 days before slaughter

⁸ ~~This is a so-called Japanese norm~~

⁹ dairy cow feed may not immediately be produced on a production line which has just produced feed with these additives.

¹⁰ At this moment there is insufficient knowledge available in order to be able to establish a carry-over norm for this additive for these categories.

3.2 Additional information per critical additive

Trade name	Manufacturer	Importer	Concentration	Coefficient	
				Pigs	Other
Compound of narasin and nicarbazine (E 772)					
Maxiban	Eli Lilly	Eli Lilly Nederland BV	80 g/kg narasin 80 g/kg nicarbazine	5	1
Lasalocid sodium E 763					
Avatec 15% CC	Roche	Alpharma		1	1
Robenidine E758					
Cycostat 66G	Roche	Alpharma		1	1
Decoquinat (E756)					
Other	Other	Other	N/a	3	3

4 RESIDUE NORMS FOR CRITICAL VETERINARY MEDICAL PRODUCTS

4.1 Summary of residue norms for critical veterinary medical products

Veterinary medical product	Established maximum residue norms in animal feeds ¹¹ in ppm				Established precautionary measure for sairy cattle
	laying hens ¹²	slaughter chickens ¹³ fattening turkeys ¹³	pigs ¹⁴	dairy cattle ¹⁵	
Sulfadiazine sodium	5	8	1	1 ¹⁶	
Sulfamethoxazol	5	8	1	1 ¹⁶	
Doxycycline	8	8	10	- ¹⁶	1 batch ¹⁶
Oxytetracycline	1 ¹⁷	10	10	- ¹⁶	1 batch ¹⁶
Ivermectine	0.1	0.1	0.1	- ¹⁶	1 batch ¹⁶
Amoxicilline	1 ¹⁸	4	8	- ¹⁶	1 charge ¹⁶
Tiamuline	1	8	10	- ¹⁶	1 charge ¹⁶
Tilmicosine	1	4	10	- ¹⁶	1 charge ¹⁶
Trimethoprim	Linked to Sulfadiazine and therefore sufficiently guaranteed				
for export (not in NL for animal feed registered materials) and for any new registrations in the Netherlands	1	1	1	1 ¹⁶	1 batch ¹⁶

¹¹ The max. residue norms for premixes amount to maximum. 25% of the indicated residue norms for animal feeds calculated on an animal feed basis

¹² feed given to laying animals

¹³ feed given from 5 days before slaughter

¹⁴ feed given from 28 days before slaughter

¹⁵ feed given to milk-producing cows, goats and sheep

¹⁶ Dairy cow feed may not immediately be produced on a production line which has just produced feed with these additives.

¹⁷ At this moment there is insufficient knowledge available in order to be able to establish a carry-over norm for this additive for these categories.

4.2 Additional information per critical veterinary medical product

Trade name	Registration holder	Registration number	Concentration	Coefficient		max dosing
				Pigs	Other	
Sulphadiazine sodium (trimethoprim)						
Feedmix Trim/sul 80/420	Aesculaap BV	RegNL 1808	77 g/kg	5	3	385 ppm
Trimethosulf premix	Eurovet	RegNL 7589	62.5 g/kg	5	2	312 ppm (5kg/t) 625 ppm (10kg/t)
Tucoprim premix	Dopharma	RegNL 8448	125 g/kg	5	3	up to 600 ppm
Feedmix sulfatrim	Dopharma	RegNL 8541	60 g/kg	5	3	480 ppm (8kg/t) 600 ppm (10kg/t)
Sulphamethoxazol (trimethoprim)						
Feedmix TS	Dopharma	RegNL 8674	50 g/kg	5	3	500 ppm
Bromine hexine hydrochloride/doxycyclinehyclate						
Feedmix Doxy-B	Dopharma	RegNL 2588	20 g/kg	2,5	2,5	100 ppm
Oxytetracycline						
Feedmix V4	Dopharma	RegNL 2158	80g/kg	3	3	5-10kg/ton
Feedmix Oxy 10%	Dopharma	RegNL 2004	6g/kg	3	3	3-7kg/ton
Ivermectine						
Ivomec Premix	Merial	RegNL 8731	0.4/kg ¹⁸	3		10 ppm ¹⁹
Tiamulin						
Tiamutin 10% premix	Novartis	RegNL 8015	100g/kg	3	3	30-40ppm
Tiamutin 2% premix	Novartis	RegNL 8016	20g/kg	3	3	30-40ppm
Tialin 10% premix	Eurovet	RegNL 10178	100g/kg	3	3	30-40ppm
Tialin 2% premix	Eurovet	RegNL 10177	20g/kg	3	3	30-40ppm
Pulmotil G40/G100/G200	Eli Lilly/Elanco Health	RegNL 9166 / 9167 / 9168	40 / 100 / 200 g/kg	3	3	up to 400 ppm
Tilmicosine						
for export (not in NL for animal feed registered materials) and for any new registrations in the Netherlands		Reg NL	3	3

¹⁸ The product is made by mixing 0.33 kg premix (concentration 6 g/kg) in 5 kg premix.

¹⁹ Dosing for sow feed, calculated on the basis of dosing 100 microgrammes ivermectine per kg delivered weight.