

Requirements for transport sequence, cleaning and disinfection

1.1. General

Prior to the acceptance of a transport commission, the participant should determine the cleaning regime of the new cargo.

Before every animal feed transport there must be a visual check that the loading compartment is clean which means that it is completely empty and free of remains and odours from previous load and is dry. The cleaning regimes of the previous loads should also be determined before loading.

A cleaning and disinfection regime has been already established for many different products. The IDTF database contains the instructions relating to loading sequence and the cleaning and disinfection regimes. The list can be consulted via www.gmpplus.org. The participant in GMP+ Road Transport should follow these instructions for loading sequence, cleaning and disinfection. The established cleaning regimes consider a minimum of necessary cleaning. If the loading compartment is not clean after the cleaning in question then additional cleaning should take place (see Annex A).

Products which do not appear in the IDTF database with one of the cleaning categories A, B, C or D are prohibited as loads for means of transport in which animal feeds are also carried. The carrier must be able to show that in the past no prohibited loads were transported. Only after a release of the means of transport by an independent loading compartment inspector or by the competent authority may animal feeds be transported again in the loading compartment in question (see "Procedure for the acceptance of loading compartments after the transport of prohibited loads").

The list with established cleaning and disinfection regimes may change over time. The changes are published in GMP+ newsletter.

1.2. Cleaning and disinfection regime

Four basic principles can be distinguished with respect to cleaning and disinfection:

- A. Dry cleaning
- B. Cleaning with water
- C. Cleaning with water and a cleansing agent
- D. Disinfection after one of the previous cleaning regimes (A,B or C).

Re. A). Cleaning regime A (dry cleaning)

Application:

In the case of transport of dry 'neutral' substances only, dry cleaning may be sufficient and beneficial both practically and microbiologically.

The general cleaning regime is as follows:

- a. clean the means of transport by extraction, blowing out or sweeping
- b. manual cleaning of places which are difficult to reach
- c. if there are still remains after dry cleaning then use additional wet cleaning.

EXPLANATION:

In dry cleaning the preference is for suction because there is then no spreading of dust or dirt.

Re. B) Cleaning regime B (cleaning with water)

Application:

After the transport of products with cleaning regime B, there must be a cleaning with water at all times before the first transport of feed.

Companies carrying out transport using bulk tankers must wet clean these tankers at least once per quarter unless it can be demonstrated that there are no remains present in the bulk tanker.

Cleaning with water is necessary after transport of, for instance, damp or sticky substances or possibly harmful chemicals.

The general cleaning regime is as follows:

remove residue from the previous load as much and as dry as possible

- a. pre-rinse with cold water, or warm if necessary, and difficult places.
- b. manual cleaning
- c. high-pressure cleaning with water
- d. dry through ventilation or hot air dryer.

EXPLANATION:

With open vehicles it is best to use a high-pressure cleaner with a flat nozzle with at least 25 bar pressure or higher. If chemicals need to be removed, (e.g. chemical fertilisers) warm water should be used at a temperature of at least 60°C, to dissolve the chemicals more easily. Places that are difficult to reach should if necessary be cleaned separately with additional means such as brushes. It is important that the water can be drained

Re. C) Cleaning regime C (Cleaning with water and cleansing agent)

Application:

In case of load containing protein or grease, it is necessary to use a cleansing agent.

The general cleaning regime is as follows:

- a. remove residue from the previous load as much and as dry as possible
- b. pre-rinse with hot water (max. 60 °C) and clean difficult places by hand.
- c. foam or gel with a cleaning agent for tippers open wagons or flush with CIP cleaning agent at 80 °C in the event of tank cleaning
- d. rinse with water at approx. 60°C
- e. if necessary dry through ventilation or hot air dryer.

EXPLANATION:

A raised water temperature is required to remove fats more easily. This may however not be higher than 60 degrees Celsius to prevent the protein from coagulating and thereby sticking to surfaces. To facilitate the removal of protein and greases it is advisable to use a medium to strong alkaline cleansing agent, using the dosage prescribed by the manufacturer.

In open systems it is best to use a foaming degreasing agent. In the case of tank cleaning with spray balls, no foaming agents may be used. It is then better to use a so-called Cleaning in Place (CIP) agent at a high temperature. In specific cases, such as the removal of calcareous substances, an acid cleansing agent is preferable.

Re. D). Cleaning regime D (Cleaning with water and cleansing agent and disinfection)

Application:

After the transportation of products with cleaning regime D there should always be cleaning and disinfection before the first load of animal feeds. Disinfection is only necessary if preceding loads are microbiologically unacceptable (detectable signs of decay), or if it is known that they carry micro-organisms that cause disease, such as Salmonella.

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The general cleaning regime is as follows:

- a. cleaning in accordance with cleaning regime A, B or C
- b. disinfection with a legally-permitted disinfectant (approved for the foodstuff industry) at a dosage indicated in the instructions for use.
- c. If necessary wet rinsing
- d. if necessary dry through ventilation or hot air dryer.

EXPLANATION:

Another form of disinfection (e.g. dry) may only be applied if its effectiveness has been established.

A distinction can be made between disinfectants tested for bactericidal and fungicidal effect and those tested for bactericidal, fungicidal and virucidal effect. The latter may only be used in the livestock sector. For animal feed transport vehicles, use of a disinfectant approved for the food industry is the only other alternative.

Use of a combined cleansing and disinfecting agent containing active chlorine is only possible on smooth surfaces that are easy to clean, such as stainless steel.

In all other cases it is better to clean first and then disinfect, in which case, for the disinfection of open vehicles disinfectants containing active chlorine are advised. In some cases it is not advisable to use an agent containing chlorine, such as for materials which corrode easily or after an acid cleansing due to the forming of toxic chlorine gases. In this case quaternary ammonium compounds may be used, except for tank cleaning with spray balls due to foam forming. Their advantage is that they adhere better and therefore work longer. The disadvantage is that they are more difficult to remove.

For closed tankers, the use of acetic acid can be considered. Its advantage is that it is activated less by residues than active chlorine is. The penetrating odour and the harm it does to rubber are a disadvantage. Disinfectants must be given at least five minutes to take effect.

The food industry prescribes rinsing after disinfecting. In order to avoid the risk of residues, it is advisable to apply this to transport vehicles as well, unless it can be demonstrated that residues do not constitute a risk. In some cases, removing the disinfectant can lead to the development of surviving bacteria if the surface remains wet for too long.

After cleaning loads containing animal proteins, a check may be carried out for residues of components of animal origin in animal feeds according to the microscopic screening methods laid down in Directive ~~98/88~~ 2003/126/EG.

Other additional checks will be carried out to assess the effectiveness of the cleaning and/or disinfection method used. In order to assess the cleaning, ATP (Adenosine Tri Phosphate) measurements can be used. ATP is present in all animal and vegetable cells and can thus be used as an indicator for the extent of biological contamination left on surfaces. The ATP measurement itself is very easy and can yield a result within minutes. The application of ATP is not useful in most cases of transport of chemicals. In order to verify the effectiveness of a particular disinfection technique in use, agar stamps can be used, which can determine the numbers of surviving micro-organisms. This technique takes a day to produce results, which means that any necessary adjustments to the disinfection process can only be made afterwards. This technique provides results only after a period of one day so that any required modification of the disinfection process can only take place later.

More advanced methods may be used for checking on chemical residues and pesticides such as HPLC and Mass Spectrometry (MS).

ANNEX A: INSTRUCTIONS FOR TRANSPORT SEQUENCE, CLEANING AND DISINFECTION

Instructions for transport sequence, cleaning and disinfection				
	Previous load		Following load	
Cleaning regime	Description of the product	State of the bulk loading compartment	Animal feed products	Animal feed products for laying poultry
Forbidden load	Very high-risk materials.	n/a	Not allowed. Requirements for the release of transport means for the transport of animal feed are set in procedure for the acceptance of loading compartments after the transport of prohibited loads.	
Cleaning method approved by the competent authority or inspection by the competent authority.	(Products containing) certain animal products in accordance with Regulation (EC) no. 999/2001 ¹ .	n/a	Feed for ruminants . Requirements for the release of transport means for the transport of animal feed are set in (EC) 999/2001 and by the competent authority.	
Cleaning method approved by the competent authority or inspection by the	(Products containing) certain animal products in accordance with Regulation (EC) no. 999/2001 ¹ .		Feed for non-ruminants	
		After unloading	A	
		Residue after dry cleaning	B	

¹ By "(Products containing) certain animal products in accordance with Regulation (EC) no. 999/2001" is meant:

- a. Processed animal proteins (as defined in Reg.(EC) no. 142/2011 Annex I)
- b. blood products,
- c. hydrolysed proteins,
- d. dicalcium phosphate and tricalcium phosphate (of animal origin),
- e. gelatine from ruminants,
- f. feeds which contain these animal products

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Instructions for transport sequence, cleaning and disinfection				
competent authority		(Odour) residue after cleaning with water	C	
D	Microbiologically contaminated materials (for example Salmonella) or perceivable signs of decay (for example abnormal odours).	After unloading	A+D	
		Residue after dry cleaning	B+D	
		(Odour) residue after cleaning with water	C+D	
C	Material constituting a physical and/or chemical risk, not or bad soluble in water. Load containing protein or grease.	After unloading	C	
		(Odour) residue after cleaning with water and cleansing agent	Additional cleaning until (odour) residues are removed.	
B	Material constituting a physical and/or chemical risk.	After unloading	B	
		(Odour) residue after cleaning with water	C	
A	Neutral material	After unloading	A	
		Residue after dry cleaning	B	
		(Odour) residue after cleaning with water	C	
	Compound feeds and premixes with nicarbazine and medicated feeds with sulphate agents	After unloading	A	A ^b
		Residue after dry cleaning	B	B ^b
		Residue after cleaning with water	C	C ^b

This does not include (if designated as processed category 3 material):

- a. milk and products on the basis of milk and colostrum,
- b. colostrum
- c. eggs and egg products,
- d. hydrolysed proteins from parts of non-ruminants or from skins of ruminants . The hydrolysed proteins must be produced in an establishment or plant which has been approved in accordance with Reg. (EC) no. 1069/2009, using a method that at least meets the standards referred to in Reg. (EC) nr. 142/2011, Annex X, Section 5, sub D. (Hydrolysed protein derived from ruminants' skins shall have a molecular weight below 10,000-Dalton),
- e. gelatine from non-ruminants and
- f. collagen.

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Definition of processed animal proteins:" according to Reg.(EC) no. 142/2011 Annex I:

Animal protein derived entirely from Category 3 material, which have been treated in accordance with Section 1 of Chapter II of Annex X (including blood meal and fishmeal) so as to render them suitable for direct use as feed material or for any other use in feedingstuffs, including petfood, or for use in organic fertilisers or soil improvers; however, it does not include blood products, milk, milk-based products, milk-derived products, colostrum, colostrum products, centrifuge or separator sludge, gelatine, hydrolysed proteins and dicalcium phosphate, eggs and egg-products, including eggshells, tricalcium phosphate and collagen.

^b The specified cleaning instructions only apply when the manufacturer can show that the end feed remains under the total carry-over norms (factory carry-over including the carry-over during transport). For the carry-over of nircarbazine/sulpha's during transport 0.03% may be assumed if use is made of a bulk tanker where the compartments are pressurised during unloading. If a company is unable to show that the end feed remains under the total carry-over norms then a very penetrating and strict cleaning procedure should be used. It must be demonstrated with very clear documentation in what manner the carry-over is controlled (for example by way of flush batches).