

FEED. Risk assessment of the chain of starch manufacturing

1: GENERAL RISK ASSESSMENT APPLICABLE FOR ANY RAW MATERIAL

1.1 General risk based approach				Ingredient: the raw materials (MAIZE, WHEAT, POTATO, PEA) coming from primary production			
Hazard	Cat.	Chance	Severity	Risk Class.	Legislation	Control Measure	Remarks
Foreign bodies like glass, wood, metals, etc.	P	Low	High	3		In letter stages; general processing steps must be purifying (magnets, screens).	Supplier's specification.
Pesticide residues (authorised) above the MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the MRL	C	Medium	Medium	3	Reg. 396/2005/EC	Active participation in surveillance schemes for contaminant monitoring. A monitoring program should be in place.	Supplier's specification. Traceability from supplier's silo's- attention for the use of post harvest pesticides. Special attention for the geographical origin.
Pesticides residues (unauthorised)	C	Very low	High	2	Directive 2002/32/EC	Active participation in surveillance schemes for contaminant monitoring. A monitoring program should be in place.	Directive 2002/32/EC sets limits for a number of pesticides residues in feeding stuff. Some of the banned pesticides may be present in the environment.
Mycotoxins above the specified limit	C	Medium	High	4	Dir. 2002/32/EC Rec. 2006/576/EC	Active participation in surveillance schemes for contaminant monitoring. A monitoring program should be in place.	Supplier's specification. Traceability from supplier's silo's.
Heavy metals above the specified limit	C	Low	High	3	Reg. 396/2005/EC Dir. 2002/32/EC Rec. 2006/576/EC	Active participation in surveillance schemes for contaminant monitoring. A monitoring program should	Supplier's specification. Special attention for the geographical origin.



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						be in place.	
Phytotoxins	C	Low	Medium	2	Directive 2002/32/EC limits the maximum content of toxic weed seeds	Active participation in surveillance schemes. A monitoring program should be in place.	Supplier's specification. Special attention for the geographical origin.

1.2 General risk based approach				Ingredient: WATER			
Hazard	Category	Chance	Severity	Risk Class.	Legislation	Control Measure	Remarks
Contaminants present in water such as PFOA and PFOS	P	Low	Medium	2	Regulation 183/2005/EC	A monitoring plan shall be in place for the verification of water of suitable quality for feed production. In latter stages; general processing steps are purifying, i.e. filtration.	For the manufacture of feed water used shall be of suitable quality.
Cross contamination	C	Low	High	3	Regulation 183/2005/EC	The PRP program should prevent cross contamination by use of dedicated water circuits. The chemicals used have to be authorized.	
Pesticide residues (authorised) above the MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the	C	Medium	Medium	3	Reg. 396/2005/EC	A monitoring program should be in place.	



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MRL							
Pesticides residues (unauthorised)	C	Very low	High	2	Directive 2002/32/EC	A monitoring program should be in place.	
Heavy metals above the specified limit	C	Low	High	3	Dir. 2002/32/EC	A monitoring program should be in place.	
Hydro carbons	C	Low	High	3		A monitoring program should be in place.	
Metal leaching	C	Low	Medium	2		The PRP program should include inert contact materials where applicable and the appropriate construction standards.	
Pathogenic micro - organisms	B	Low	High	3		The PRP program should include dedicated water circuits and the possibility for disinfection treatment. A monitoring program should be in place.	



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1.3 General risk based approach				Processing agent: CHEMICAL AGENTS (antifoams, acidification or alkalisng agents, SO ₂ and derivatives, enzyme catalysing salts...)			
Hazard	Cat.	Chance	Severity	Risk Class.	Legislation	Control Measure	Remarks
Heavy metals above the specified limit	C	Low	High	3	Dir. 2002/32/EC	Ingredient specification. Contracts containing food adequate requirements.	Purchasing requirements
Cross contamination	C	Low	Medium	2		The PRP program should include on-line process monitoring (pH, sensorial, consumption rates), correct labelling of chemical containers.	



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1.4 General risk based approach				Processing agent: ENZYMES (particularly those specific to usage in the scope of starch processing)			
Hazard	Cat.	Chance	Severity	Risk Class.	Legislation	Control Measure	Remarks
Cross contamination	B	Low	Low	1		The PRP programme should include on-line process monitoring (consumption rates), correct labelling of enzyme containers.	
Pathogenic micro-organisms	B	Low	High	3		Ingredient specification Contracts containing food adequate requirements.	Purchasing requirements.



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1.5 General risk based approach				Processing agent: FILTER AIDS (filtering earth, silica, coal, cellulose fibre...)			
	Cat.	Chance	Severity	Risk Class.	Legislation	Control measure	Remarks
Metal leaching	C	Low	Medium	2		Ingredient specification. Contracts containing food adequate requirements.	Purchasing requirements.
Cross contamination	P	Low	Medium	2		Filtration in latter process stages.	
Contaminants from filter aids	C	Low	High	3		Ingredient specification. Contracts containing food adequate requirements.	Purchasing requirements.

1.6 General risk based approach				Materials: MATERIALS IN CONTACT (equipment, packaging...)			
Hazard	Cat.	Chance	Severity	Risk Class.	Legislation	Control Measure	Remarks
Metal leaching	C	Low	Medium	2		Ingredient specification. Contracts containing food adequate requirements.	Purchasing requirements.
Pathogenic micro - organisms	B	Low	High	3		Ingredient specification. Contracts containing food adequate requirements.	Purchasing requirements.



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1.2 General risk based approach				Utilities: Starch processing			
Hazard	Cat.	Chance	Severity	Risk Class.	Legislation	Control Measure	Remarks
Toxins from pest control materials	C	Low	High	3		A pest control programme must be applied that is suitable for use in the food chain.	Poisoned grain from open boxes could end up in the food chain.
Cleaning agents	C	Medium	Medium	3		Cleaning agents used in the production system should be flushed. Cleaning agents must be authorised for use in the food industry.	
Boiler chemicals	C	Medium	Medium	3		Boiler chemicals used must be suitable for use in the food industry.	
Lubricants from equipment	C	Low	High	3		The PRP program should assure that the contamination of product with non food grade lubricants is avoided and that the risk of contamination with food grade lubricants is minimised. The PRP programme could involve recording of the quantities used.	



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1.7 General risk based approach				Process stage: MANUFACTURING PROCESS CONTROL			
Hazard	Cat.	Chance	Severity	Risk Class.	Legislation	Control Measure	Remarks
Foreign bodies	P	Low	High	3		A system should be in place that removes foreign material; general processing steps must be purifying (magnets, sieving).	
Phytotoxins	C	Low	Medium	2	Directive 2002/32/EC limits the maximum content of toxic weed seeds	Visual inspection of the incoming raw materials is recommended.	
Insects and rodents	B	Medium	Medium	3		The PRP program should address closed buildings, windows and doors. The PRP program should include a pest control program.	Proper sanitation should be in place.
Flying-in birds	B	Low	Medium	2		The PRP program should address closed buildings, windows and doors. The PRP program should include a pest control program.	
Lack of Hygiene	B	Low	High	3		Staff hygiene training shall be provided and the appropriate sanitation, clothing, work instructions and material regarding cleaning foreseen.	Hygiene prerequisite program.
Pathogenic microbiological organisms, including	B	Low	High	3		The PRP programme should provide closed lines. Low probability of growth via	A monitoring program should be in place.



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Salmonella						raw material by stages with higher temp routes and lower pH ranges. Regular monitoring of finished products.	
Heavy metals above the specified limit	C	Low	High	3	Dir. 2002/32/EC	Knowledge regarding the distribution of chemical contaminants from raw material into the end product, including the concentration factor. Regular monitoring of the finished products.	A monitoring program should be in place.
Mycotoxins above the specified limit	C	Low	High	3	Dir. 2002/32/EC Rec. 2006/576/EC	Knowledge regarding the distribution of chemical contaminants from raw material into the end product, including the concentration factor. Regular monitoring of the finished products.	A monitoring program should be in place.
Pesticide residues above the MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the MRL.	C	Low	High	3	Reg. 396/2005/EC Dir. 2002/32/EC	Knowledge regarding the distribution of chemical contaminants from raw material into the end product, including the concentration factor. Regular monitoring of the finished products.	A monitoring program should be in place.
Direct drying (PAH, nitrous oxides, dioxins)	C	Low	High	3	Dir. 2002/32/EC Reg. 183/2005/EC	Good burner maintenance practices. Avoid formation of soot. An in depth HACCP study should be in place in combination with good maintenance practices. Regular monitoring of the finished products.	A monitoring program should be in place.



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Cross contamination	C	Low	Medium	2		The PRP programme should foresee dedicated circuits and the dedicated storage of chemicals.	
Lubricants from equipment	C	Low	High	3		Use of food grade lubricants where applicable. Control and registration of the quantities used. Good maintenance programme.	Purchasing specifications.
Cleaning and disinfection agents	C	Low	Medium	2		The PRP programme should address the cleaning and sanitation. The cleaning agents and disinfection agents used should be authorised and suitable for use in the food industry.	Purchasing specifications.

1.8 General risk based approach				Process stage: STORAGE and TRANSPORT CONTROL			
Hazard	Cat.	Chance	Severity	Risk Class.	Legislation	Control Measure	Remarks
Foreign bodies	P	Low	High	3		Closed process, sieving, staff hygiene, glass procedure, good maintenance practices	Visual checks.
Cross contamination	C	Medium	Medium	3		The PRP program should address the requirements for storage and loading. Verification and control of the previous loads and cleaning regime.	Transport specifications and contractual agreement with service provider.

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Mycotoxins formation	C	Low	High	3	Dir. 2002/32/EC Rec. 2006/576/EC	Appropriate storage control should be in place. The PRP programme should foresee closed storage areas. Humidity & T controls when necessary. The finished product should be monitored on mycotoxins.	Good storage practices for bulk storage Monitoring program should be in place.
Pesticide residues above the MRL, i.e. residues of herbicides, insecticides, fungicides or rodenticides above the MRL.	C	Low	High	3	Reg. 396/2005/EC Dir. 2002/32/EC	The fumigation of silo's to be done by qualified persons. Regular finished products monitoring should be in place.	Good storage practices.
Pathogenic micro – organisms, including Salmonella	B	Low	High	3		Appropriate storage control should be in place. The PRP programme should foresee closed storage areas. Humidity & T controls when necessary. The finished product should be monitored on pathogenic micro-organism, including Salmonella.	Good storage practices for bulk storage Monitoring program.
Insects and rodents		Medium	Medium	3		The PRP programme should provide for a closed storage areas and covered loading area. A pest control system should be in place.	Sanitation and Pest control prerequisite.

