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A) HAZARD ANALYSIS - RAW MATERIAL/PACKAGING MATERIAL

Process Step	Potential Hazard State whether biological, chemical or physical.	Rationale for inclusion or exclusion as a		What Preventive Measure or Controls can be applied to prevent this significant hazard?	Is thi Mate	is a Se erial/Pa	ensitiv ackagi	e Raw ng Ma	terial?	
No. Input / Output	B: Biological; C: Chemical; P: Physical	Ha: Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	(Yes / No)
Cocoa bean	B: Contamination of mould by mouldy beans from supplier or wet beans that promotes growth of mould	2	3	-Buy bean from approved suppliers -Sun dry wet cocoa bean or use it within 2 days -Conduct Incoming Test, reject if beans fail on mouldy bean criterion as per non-conforming procedure -Mould will be killed by sterilisation process at Roaster	N	-	-	-	-	No
	C: Contamination of heavy metals from cocoa beans	3	2	-Buy bean from approved suppliers -Send sample for testing on a yearly basis -No occurrence in past 10 years of operation	N	-	-	-	-	No
	C: Contamination of mycotoxins from cocoa beans	3	2	-Buy bean from approved suppliers -Send sample for testing on a yearly basis -No occurrence in past 10 years of operation	N	-	-	-	-	No
C: co	C: Contaminated with pesticide from cocoa beans	3	2	-Buy bean from approved suppliers -Send sample for testing on a yearly basis -No occurrence in past 10 years of operation	N	-	-	-	-	No
	C: Contaminated with fumigant	4	2	-Use methyl bromide/aluminium phosphide for fumigation. -Send sample for testing on yearly basis -Methyl bromide is very volatile. Literature (Schumacher 1985) shown that the residue is only 1.7ppm on cocoa bean. (Malaysia residue limit is 500ppm, SIXTEENTH SCHEDULE (Regulation 41)) -Literature (Hackerberg U. 1972) states aluminium phosphide as a commonly used fumigants is free from toxic residues and leaves little residues on food grains.	Ν	-	-	-	-	No
	C: RADIOLOGICAL Contaminated with radiological hazard	3	2	-Buy bean from approved suppliers -Obtain radiation statement from approved suppliers -All cocoa bans must be free from radiological hazard	N	-	-	-	-	No
	P: Contaminated with stone, metal and other foreign material	2	4	-Buy bean from approved suppliers -To be separated during bean cleaning processes.	Ν	-	-	-	-	No

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Process Step	Potential Hazard R State whether biological, chemical i or physical. ex		nale for sion or sion as a zard	What Preventive Measure or Controls can be applied to prevent this significant hazard?	Is this a Sensitive Raw Material/Packaging Material? Decision Tree								
No. Input / Output	B: Biological; C: Chemical; P:	Likely-	Severity	Control Measures / Justification		Q2	Q3	Q4	Q5	(Yes /			
	Physical	hood	-							No)			
Processing aid, e.g.	B: Not identified	-	-	-	-	-	-	-	-	-			
potassium carbonate	C: ALLERGENS contamination of in	3	2	-Buy from approved supplier	N	-	-	-	-	No			
	the processing aids	•	-	-Obtain declaration of allergen									
	C: Contamination of harmful chemical	3	2	-Buy from approved supplier	Ν	-	-	-	-	No			
	in the processing aids			-Use food grade material only									
				-Obtain Certificate of analysis per delivery									
	C: RADIOLOGICAL Contaminated with	3	2	-Buy from approved suppliers	Ν	-	-	-	-	No			
	radiological hazard			- Obtain radiation statement from approved suppliers									
				-Use processing aids which are free from radiological									
	D. Not identified			nazard			_						
	P: Not identified	-	-	-	-	-	-	-	-	-			
Packaging material,	For Primary Packaging which will	3	2	-Buy from approved supplier	Ν	-	-	-	-	No			
e.g. plastic liner,	contact with cocoa, i.e. plastic liner,			-Conduct incoming testing for bacteria for surfaces in									
paper bag	Jumbo bag, paper bag.			contact with cocoa, i.e. plastic liner, Jumbo bag,									
	P: Cross contamination of bastaria			paper bag.									
	from workers at supplier site												
	For Primary Packaging which will	4	2	-Buy from approved supplier	N	_	-	-	-	No			
	contact with cocoa, i.e. plastic liner.	-	2	-All primary packaging material must be Food grade.									
	Jumbo bag, paper bag.			suitable for food contact application.									
	C: Potential contamination from solvent												
	residue or chemical hazard from												
	primary packaging material.												
	For Primary Packaging which will	3	2	-Buy from approved suppliers	Ν		-	-	-	No			
	contact with cocoa, i.e. plastic liner,			-Obtain radiation statement from approved suppliers									
	Jumbo bag, paper bag.			-All primary packaging material must be free from									
	C: PADIOLOGICAL Contaminated with												
	radiological bazard												
	naulological hazalu	1	1		1	1	1	1	1	1			

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Process Step	Potential Hazard State whether biological, chemical or physical. Hazard.		What Preventive Measure or Controls can be applied to prevent this significant hazard?		Is this a Sensitive Raw Material/Packaging Material? Decision Tree							
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	(Yes / No)		
	For Primary Packaging which will contact with cocoa, i.e. plastic liner, Jumbo bag, paper bag.	3	2	-Ensure packaging materials are clean and wrapped properly	N	-	-	-	-	No		
	P: Dust from the environment											
	For Secondary Packaging which will	-	-	-	-	-	-	-	-	-		
	not contact with cocoa, i.e. cartons											
	B: Not identified											
	For Secondary Packaging which will not contact with cocoa, i.e. cartons	4	3	-Ensure packaging materials are clean and wrapped properly	N	-	-	-	-	No		
	C: Stain with lubricant chemical from supplier site											
	For Secondary Packaging which will not contact with cocoa, i.e. cartons	3	2	 Buy from approved suppliers Obtain radiation statement from approved suppliers All secondary packaging material must be free from 	N	-	-	-	-	No		
	C: RADIOLOGICAL Contaminated with			radiological hazard								
	radiological hazard											
	For Secondary Packaging which will not contact with cocoa, i.e. cartons	2	3	-Ensure packaging materials are clean and wrapped properly	N	-	-	-	-	No		
	P: Dust from the environment											

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B) HAZARD ANALYSIS – PROCESS

Process Step	Potential Hazard	Ratio	nale for	What Preventive Measure or Controls can	ls thi	s step	a Critio	al Con	trol Po	int?
	State whether biological, chemical or physical.	inclu exclus Ha	sion or sion as a zard.	hazard?	Decis	sion Tr	ee			
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP
1a Receive water from SAJ, Johor state water supply authority	B: Contamination of pathogenic microbes (i.e; Salmonella and E.Coli) from water source.	2	3	-Use only SAJ water -Pathogenic Microbes (i.e: Salmonella and E.Coli) will be killed by sterilisation process at Roaster	N	-	-	-	-	-
	C: Contamination of heavy metal from water	3	2	-Use only SAJ water -Send sample for testing on a yearly basis -No occurrence in past 10 years of operation	N	-	-	-	-	-
	C: RADIOLOGICAL Contaminated with radiological hazard	3	2	-Use only SAJ water -Send sample for testing on a yearly basis	N	-	-	-	-	-
2a Filter incoming	P: Contamination of rust and other suspended solids	2	4	-Use only SAJ water -Install water filter (5micron) to filter the water	N	-	-	-	-	-
2a Filter incoming water with 5 micron filter	B: Contamination of pathogenic microbes (i.e; Salmonella and E.Coli) if filter is not cleaned properly.	2	3	-Filter to be cleaned regularly (i.e. weekly) according to maintenance program -Pathogenic Microbes (i.e: Salmonella and E.Coli) will be killed by sterilisation process at Roaster	Ν	-	-	-	-	-
	C: Not identified	-	-	-	-	-	-	-	-	-
	P: Dirt and solids from filter if filter is damaged and is not cleaned properly	4	2	 Filter to be checked regularly according to maintenance program. Filter to be cleaned regularly (i.e. weekly) according to maintenance program 	N	-	-	-	-	-
3a Store water at	B: Not identified	-	-	-	-	-	-	-	-	-
	C: Not identified	-	-	-	-	-	-	-	-	-
F	P: Contamination of suspended solid in water tank	2	3	-Maintenance service of tank for every 6 month - Tank is made of stainless steel, reducing contamination of rust	N	-	-	-	-	-
	B: Not identified	-	-	-	-	-	-	-	-	-

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Process Step	Potential Hazard State whether biological, chemical or physical.		nale for sion or sion as a zard.	What Preventive Measure or Controls can be applied to prevent this significant hazard?		Is this step a Critical Control Poir Decision Tree					
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification		Q2	Q3	Q4	Q5	CCP/ OPRP	
1y Receive compressed air from compressor	C: Contamination of lubricant from compressor	3	2	-Use only food grade lubricant -install air filter (0.01micron) to filter compressed air	N	-	-	-	-	-	
	P: Contamination of rust and particulate dust	2	4	-install air filter (0.01micron) to filter compressed air	N	-	-	-	-	-	
2y Store compressed air at receiver tank	B: Not identified	-	-	-	-	-	-	-	-	-	
	C: Not identified	-	-	-	-	-	-	-	-	-	
	P: Contamination of rust and particulate dust	2	3	-install air filter (0.01micron) to filter compressed air	N	-	-	-	-	-	
3y Filter compressed	B: Not identified	-	-	-	-	-	-	-	-	-	
air with 0.01 micron filter F	C: Contamination of lubricant from compressor	3	2	-Use only food grade lubricant -filter 0.01micron should be able to filter out lubricant carry over	N	-	-	-	-	-	
	P: Contamination of rust and particulate dust	2	4	-filter 0.01micron should be able to filter out particulate	N	-	-	-	-	-	
1x Receive steam	B: Not identified	-	-	-	-	-	-	-	-	-	
	C: Contamination of chemical from boiler water	3	2	-Use only SAJ water -use only food grade boiler chemical	N	-	-	-	-	-	
	P: Contamination of rust	2	4	-Use only SAJ water -Install water filter (5micron) to filter the water	N	-	-	-	-	-	
2x Filter steam with	B: Not identified	-	-	-	-	-	-	-	-	-	
	C: Not identified	-	-	-	-	-	-	-	-	-	
5 micron steam filter C F c	P: Dirt and rust from filter if filter is damaged.	4	2	-Steam from steam filter will be checked for turbidity, off flavors and particulates monthly	N	-	-	-	-	-	
	B: Not identified	-	-	-	-	-	-	-	-	-	

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Process Step	Potential Hazard Rationale for inclusion or exclusion as a Hazard. What Preventive Measure or Controls can be applied to prevent this significant hazard? Is B: Biological; C: Chemical; P: Physical Likely- hood Severity hood Control Measures / Justification Q		nale for sion or sion as a zard.	What Preventive Measure or Controls can be applied to prevent this significant hazard?		Is this step a Critical Control Point Decision Tree					
No. Input / Output			Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
1c Receive processing aid, e.g.	C: ALLERGENS contamination of in the processing aids	3	2	-Buy from approved supplier -Obtain declaration of Allergen	N	-	-	-	-	-	
potassium carbonate	C: Contamination of harmful chemical in the processing aids	3	2	-Buy from approved supplier -Use food grade material only -Obtain Certificate of analysis per delivery	N	-	-	-	-	-	
	P: Not identified	-	-	-	-	-	-	-	-	-	
2c Store processing	B: Not identified	-	-	-	-	-	-	-	-	-	
aiu	C: Not identified	-	-	-	-	-	-	-	-	-	
	P: Dust from environment	2	4	-Clean storage area as per cleaning program	N	-	-	-	-	-	
3c Mixing processing B aid with water C C P o m	B: Staff: Cross contamination of bacteria from worker during handling	2	3	-Workers to follow personal hygiene -Bacteria count will be reduce to acceptable level at Roaster.	N	-	-	-	-	-	
	C: Not identified	-	-	-	-	-	-	-	-	-	
	P: Staff: Contamination of foreign object during adding processing aid for mixing	2	3	-Worker to follow proper working attire -Report to production manager if accidentally put in foreign object -Install strainer after mixing tank. If there is any foreign object, the strainer will block. -Regular services the strainer according to maintenance program	N	-	-	-	-	-	
4c Pass through	B: Not identified	-	-	-	-	-	-	-	-	-	
processing aid	C: Not identified	-	-	-	-	-	-	-	-	-	
solution to solution tank.	P: Contamination of foreign object if strainer broken	2	3	-Daily check of the strainer by production team	N	-	-	-	-	-	
	B: Not identified	-	-	-	-	-	-	-	-	-	

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
5c Store processing aid solution at	C: Not identified	-	-	-	-	-	-	-	-	-		
solution tanks	P: Not identified	-	-	-	-	-	-	-	-	-		
1d Receive packaging material, e.g. plastic liner, carton, Jumbo bag, paper bag	For Primary Packaging which will contact with cocoa, i.e. plastic liner, Jumbo bag, paper bag. B: Cross contamination of bacteria from workers at supplier site	3	2	-Buy from approved supplier -Conduct incoming testing for bacteria for surfaces in contact with cocoa, i.e. plastic liner, Jumbo bag, paper bag.	N	-	-	-	-	-		
	For Primary Packaging which will contact with cocoa, i.e. plastic liner, Jumbo bag, paper bag. C: Potential contamination from solvent residue or chemical hazard from	4	2	-Buy from approved supplier -All primary packaging material must be Food grade, suitable for food contact application.	N	-	-	-	-	-		
	For Primary Packaging which will contact with cocoa, i.e. plastic liner, Jumbo bag, paper bag. P: Dust from the environment	3	2	-Ensure packaging materials are clean and wrapped properly	N	-	-	-	-	-		
	For Secondary Packaging which will not contact with cocoa, i.e. cartons B: Not identified	-	-	-	-	-	-	-	-	-		
	For Secondary Packaging which will not contact with cocoa, i.e. cartons C: Stain with lubricant chemical from supplier site	4	3	-Ensure packaging materials are clean and wrapped properly	N	-	-	-	-	-		

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Process Step	Potential Hazard State whether biological, chemical or physical.	Rationale for inclusion or exclusion as a Hazard.		What Preventive Measure or Controls can be applied to prevent this significant hazard?		Is this step a Critical Control Point? Decision Tree						
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
	For Secondary Packaging which will not contact with cocoa, i.e. cartons	2	3	-Ensure packaging materials are clean and wrapped properly	N	-	-	-	-	-		
	P: Dust from the environment											
2d Store packaging	B: Not identified	-	-	-	-	-	-	-	-	-		
materiais	C: Not identified	-	-	-	-	-	-	-	-	-		
	P: Dust from the environment	2	3	-Clean the storage area as per cleaning program	N	-	-	-	-	-		
1.Receive cocoa bean	B: Contamination of mould by mouldy beans from supplier or wet beans that promotes growth of mould	2	3	-Buy bean from approved suppliers -Sun dry wet cocoa bean or use it within 2 days -Conduct Incoming Test, reject if beans fail on mouldy bean criterion as per non- conforming procedure -Mould will be killed by sterilisation process at Roaster	Ν	-	-	-	-	-		
	C: Contamination of heavy metals from cocoa beans	3	2	-Buy bean from approved suppliers -Send sample for testing on a yearly basis -No occurrence in past 10 years of operation	N	-	-	-	-	-		
	C: Contamination of mycotoxins from cocoa beans	3	2	-Buy bean from approved suppliers -Send sample for testing on a yearly basis -No occurrence in past 10 years of operation	N	-	-	-	-	-		
	C: Contaminated with pesticide from cocoa beans	3	2	-Buy bean from approved suppliers -Send sample for testing on a yearly basis -No occurrence in past 10 years of operation	N	-	-	-	-	-		
	C: Contaminated with fumigant	4	2	-Use only methyl bromide for fumigation. -Send sample for testing on yearly basis -Methyl bromide is very volatile. Literature (Schumacher 1985) shown that the residue is only 1.7ppm on cocoa bean. (Malaysia residue limit is 500ppm, SIXTEENTH SCHEDULE (Regulation 41))	N	-	-	-	-	-		

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP	
	P: Contaminated with stone, metal and other foreign material	2	4	-Buy bean from approved suppliers -To be separated during bean cleaning processes.	N	-	-	-	-	-	
2.Store cocoa bean at warehouse	B: Contamination of mould from wet cocoa bean that promotes growth of mould	2	3	-Sun dry wet cocoa bean or use it within 2 days -Mould will be killed by sterilisation process at Roaster	N	-	-	-	-	-	
	For sun dry wet cocoa bean: B: Contamination of mould by mouldy beans if wet beans are not sun dried properly.	4	2	-Wet beans will be sun dried to bring down moisture level to below 10%, i.e. around equilibrium moisture content of cocoa bean. -After sun dry, conduct bean testing, reject if dried beans fail on mouldy bean criterion as per non-conforming procedure -Mould will be killed by sterilisation process at Roaster	N	-	-	-	-	-	
	For sun dry wet cocoa bean: C: Contaminated with grease/oil on floor	3	3	- When drying cocoa, place wet cocoa bean on cardboard. No direct contact with floor	N	-	-	-	-	-	
	For sun dry wet cocoa bean: P: Contaminated with sand/stone on floor	3	3	- When drying cocoa, place wet cocoa bean on cardboard. No direct contact with floor	N	-	-	-	-	-	
	B: Contamination of pathogenic microbes (i.e; Salmonella and E.Coli) with bird dropping on cocoa	3	3	-Warehouse is screened with plastic curtains to prevent bird entrance - Pathogenic microbes (i.e; Salmonella and E.Coli) will be killed by sterilisation process at Roaster	N	-	-	-	-	-	
	C: Contaminated with pesticide from fogging activities	3	2	-Pest control conducted by approved pest operator -Only approved pest chemical is used -Test for pesticide residue yearly	N	-	-	-	-	-	

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
	P: Contaminated with pest	3	3	-Maintain effective pest control program	Ν	-	-	-	-	-			
3.Transport cocoa bean to GCBCM factory	B: Contamination of mould from wet cocoa bean by rainwater that promotes growth of mould.	2	3	-Use box truck lorry or cover with canvas during transfer. -Mould will be killed by sterilisation process at Roaster	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
F f t.Receive cocoa Pean at GCBCM	P: Contaminated with wooden piece from damages of pallet during transferring activities	2	4	-Train worker not to damage pallet by forklift -To be separated by bean cleaning process	N	-	-	-	-	-			
4.Receive cocoa	B: Not identified	-	-	-	-	-	-	-	-	-			
actory F	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Contaminated with pest	3	3	-Maintain effective pest control program	N	-	-	-	-	-			
5.Dumping cocoa bean into line1 and line2	B: Contamination of pathogenic microbes (i.e; Salmonella and E.Coli) with bird dropping on cocoa	3	3	-Door is screened with plastic curtains to prevent bird entrance - pathogenic microbes (i.e; Salmonella and E.Coli) will be killed by sterilisation process at Roaster	N	-	-	-	-	-			
	B: Staff: Cross contamination of bacteria from worker during handling	2	3	-Worker to follow personal hygiene -Bacteria Count will be reduce to acceptable level by sterilisation process at Roaster	N	-	-	-	-	-			
	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant 	N	-	-	-	-	-			

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP
	P: Contamination of hook, wood, string and other foreign object during dumping	2	4	-Train worker not to contaminating cocoa bean dumped with foreign object -To be separated during bean cleaning processes	N	-	-	-	-	-
6. Transport cocoa	B: Not identified	-	-	-	-	-	-	-	-	-
cleaning separator	C: Not identified	-	-	-	-	-	-	-	-	-
VIRB1.1, MIRB2.1, VTRB2.2 via bean silos 7 Remove foreign	P: Contamination of metal caused by wear and tear of machinery	2	4	- To be removed by magnets at magnet drum, Winnower, Liquor grinding section	N	-	-	-	-	-
7. Remove foreign	B: Not identified	-	-	-	-	-	-	-	-	-
MTRB2.1, MTRB2.2	C: Not identified	-	-	-	-	-	-	-	-	-
F Remove metal	P: Dust, strings and other foreign matter from inadequate removing process	2	3	-Regular maintenance of machine according to maintenance program -Can be removed at winnowing process	N	-	-	-	-	-
8.Remove metal	B: Not identified	-	-	-	-	-	-	-	-	-
drum	C: Not identified	-	-	-	-	-	-	-	-	-
	P: Metal contamination due to faulty magnet drum	2	3	-Regular maintenance of machine according to maintenance program -To be removed by magnet at Winnower, Liquor grinding section	N	-	-	-	-	-
9.Remove stone via	B: Not identified	-	_	-	-	-	-	-	-	-
destoner	C: Not identified	-	-	-	-	-	-	-	-	-
	P: Stone if destoner malfunction	2	3	-Regular maintenance -Stone will be trapped at LP grinder screen, if pass thru destoner	N	-	-	-	-	-
10.Transport cocoa	B: Not identified	-	-	-	-	-	-	-	-	-
machine, i.e.	C: Not identified	-	-	-	-	-	-	-	-	-
Microniser (Line1) or IR (Line2)	P: Contamination of metal caused by wear and tear of machinery	2	4	- To be removed by magnet bar at Winnower, Liquor grinding section	N	-	-	-	-	-

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
11.Preheat cocoa bean at Microniser	B: Not identified	-	-	-	-	-	-	-	-	-			
and IR	C: Not identified	-	-	-	-	-	-	-	-	-			
12. Break up cocoa	P: Contamination of loosen/broken machinery parts due to vibration and wear and tear.	2	3	-Regular maintenance of machine according to maintenance program -Magnetised metal to be removed by magnet bar at Winnower, Liquor grinding section. -Others non magnetised object will be screened at winnower or trapped at LP grinder screen	N	-	-	-	-	-			
12. Break up cocoa bean into nibs and shell at bean crusher of Winnower 1.1&1.2 and Winnower 2.1&2.2 (With Pre- Sieve)	B: Not identified	-	-	-	-	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Contamination of metal caused by wear and tear of machinery	2	3	-Regular maintenance of machine according to maintenance program -To be removed by magnet bar at Winnower, Liquor grinding section	N	-	-	-	-	-			
13.Separate nib and shell at winnowers	B: Contamination of pathogenic microbes (i.e; Salmonella and E.Coli) from shell due to inadequate separation process, i.e. suction and broken screen	2	3	-Checking "shell in nib" at Winnower every shift to ensure good operation condition - Pathogenic Microbes (i.e: Salmonella and E.Coli) will be killed by sterilisation process at Roaster	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
C F o s b	P: Contamination of shell, dust and other foreign matter from inadequate separation process, i.e. suction and broken screen	2	3	-Regular maintenance of machine according to maintenance program -Checking "shell in nib" at Winnower every shift to ensure good operation condition -Other foreign matter which cannot be sucked out and pass thru winnower will be trapped at LP grinder screen	N	-	-	-	-	-			

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
14.Transport and	P: Contamination of loosen/broken machinery parts due to vibration and wear and tear.	2	3	-Metal to be caught by magnet at Winnower. Clean magnet every shift. -For whatever not caught by Winnower magnet, magnetised metal to be removed by magnet bar at Liquor grinding section. Other non magnetised object will be trapped at LP grinder screen	N	-	-	-	-	-		
14. Transport and	B: Not identified	-	-	-	-	-	-	-	-	-		
	C: Not identified	-	-	-	-	-	-	-	-	-		
15.Transport nib to	P: Contamination of metal caused by wear and tear of machinery	2	3	-Regular maintenance of machine -To be removed by magnet bar at Liquor grinding section	N	-	-	-	-	-		
15.Transport nib to E	B: Not identified	-	-	-	-	-	-	-	-	-		
reactor/roasters	C: Not identified	-	-	-	-	-	-	-	-	-		
	P: Contamination of metal caused by wear and tear of pipe	2	3	-To be removed by magnet bar at Liquor grinding section	N	-	-	-	-	-		
16. Alkalising nibs at	B: Not identified	-	-	-	-	-	-	-	-	-		
option to inject processing aid solution, steam, air and water	C: Possible contamination with toxic chemical, such as heavy metal from direct injected steam	3	2	-Use only food grade chemical additive for boiler water -Use only SAJ water -Test heavy metal every year.	N	-	-	-	-	-		
	P: Contaminated with dust from compressed air	3	3	-Install 0.01micron filter at compressed air line.	Ν	-	-	-	-	-		
T7. Roasting nibs at B roasters, m with option to inject processing aid solution and water C ct di	B: Contamination of pathogenic microbes (i.e; Salmonella and E.Coli) if sterilisation process is not performed during roasting	3	1	-Ensure sterilisation step is performed by monitoring for every roaster batch	Y	Y	Y	Y	Y	CCP1		
	C: Possible contamination with toxic chemical, such as heavy metal from direct injected steam	3	2	-Use only food grade chemical additive for boiler water -Use only SAJ water -Test heavy metal every year.	N	-	-	-	-	-		

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No. Input / Output	B: Biological; C: Chemical; P:	Likely-	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/			
	Physical	hood								OPRP			
	P: Contaminated with dust from compressed air	3	3	Install 0.01micron filter at compressed air line.	N	-	-	-	-	-			
	P: Contamination of loosen/broken machinery parts due to vibration and wear and tear.	2	3	-Regular maintenance of machine according to maintenance program -Magnetised metal to be removed by magnet bar at Liquor grinding section. -Others non magnetised object will be trapped at LP grinder screen	Ν	-	-	-	-	-			
18a. Filtered air	B: Cross contamination of bacteria from intake air for cooling	3	2	-Install bacteria filter (95% @ 1micron) at cooler -Regular maintenance of the bacteria filter according to maintenance program	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
F	P: Not identified	-	-	-	-	-	-	-	-	-			
18. Cooling nib in cooler	B: Cross contamination of bacteria from intake air for cooling	3	2	-Install bacteria filter (95% @ 1micron) at cooler -Regular maintenance of the bacteria filter according to maintenance program	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Contamination of loosen/broken machinery parts due to vibration and wear and tear.	2	3	-Regular maintenance of machine according to maintenance program -Magnetised metal to be removed by magnet bar at Liquor grinding section. -Others non magnetised object will be trapped at LP grinder screen	N	-	-	-	-	-			
19. Transport nib to E LP hopper f	B: Cross contamination of bacteria from intake air	3	2	-Install filter box with bacteria filter (Pre-filter, Bio-Cell, HEPA 99.99% @ 0.3micron) -Regular maintenance of the bacteria filter according to maintenance program	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Contamination of metal caused by wear and tear of pipe	2	3	-To be removed by magnet bar at Liquor grinding section	N	-	-	-	-	-			

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
20. Grinding nib into liquor at LP grinder	B: Contaminated with water, which could contains bacteria, if jacketed water leaks	4 2 -Regular maintenance of LP grinder N - -Leakage of water into the cocoa produce immediate symptom: liquor become sludge lumps if mix with water, amp of LP will increase and trip the machine; There is no chance of contamination of final product since the contaminated liquor lumps cannot be pumped.	2 -Regular maintenance of LP grinder N -Leakage of water into the cocoa produce immediate symptom: liquor become sludge lumps if mix with water, amp of LP will increase and trip the machine; There is no chance of contamination of final product since the contaminated liquor lumps cannot be pumped	-	-	-	-					
	B: Cross contamination of bacteria from worker during cleaning of magnet	3	3	-Workers to follow personal hygiene -Sanitize magnet with sanitizer after cleaning	N				-			
C o F fr	C: Possible contamination of lubricant oil	3	3	-Use food grade lubricant only -Regular maintenance of LP grinder	N	-	-	-	-	-		
	P: Contamination of foreign object if foreign object go in to LP grinder	4	2	-Regular maintenance of LP grinder -LP screen is of 0.4mm; foreign object will be trapped in the screen and will not contaminate the final product.	N	-	-	-	-	-		
	P: Metal contamination from machines upstream, i.e. carry forward from previous step	3	2	-Clean magnet bar every shift -Metal dust escaped thru LP grinder magnet will be removed by magnet after LF grinders.	N	-	-	-	-	-		
20.b Add cocoa	B: Not identified	-	-	-	-	-	-	-	-	-		
	C: Not identified	-	-	-	-	-	-	-	-	-		
	P: Not identified	-	-	-	-	-	-	-	-	-		
21. Store liquor	B: Not identified	-	-	-	-	-	-	-	-	-		
ouffer at LMT tanks	C: Not identified	-	-	-	-	-	-	-	-	-		
	P: Not identified	-	-	-	-	-	-	-	-	-		

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
22. Grind liquor at Ll grinder	B: Contaminated with water, which could contains bacteria, if jacketed water leaks	4	2	-Regular maintenance of LI grinder -Leakage of water into the cocoa produce immediate symptom: liquor become sludge lumps if mix with water, amp of grinder will increase and trip the machine; There is no chance of contamination of final product since the contaminated liquor lumps cannot be pumped.	Ν	-	-	-	-	-			
	C: Possible contamination of lubricant oil	3	3	-Use food grade lubricant only -Regular maintenance of grinder	N	-	-	-	-	-			
7 2. Store liquor B. Store liquor	P: Contamination of metal caused by wear and tear of machinery	3	2	-Metal will be removed by magnet after LF grinders.	N	-	-	-	-	-			
23. Store liquor E buffer at LMT	B: Not identified	-	-	-	-	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Not identified	-	-	-	-	-	-	-	-	-			
24. Grind liquor at LF grinder	B: Contaminated with water, which could contains bacteria, if jacketed water leaks	4	2	-Regular maintenance of LF grinder -Leakage of water into the cocoa produce immediate symptom: liquor become sludge lumps if mix with water, amp of grinder will increase and trip the machine; There is no chance of contamination of final product since the contaminated liquor lumps cannot be pumped.	Ν	-	-	-	-	-			
	C: Possible contamination of lubricant oil	3	3	-Use food grade lubricant only -Regular maintenance of grinder	N	-	-	-	-	-			
o F س	P: Contamination of metal caused by wear and tear of machinery	3	2	-Metal will be removed by magnet after LF grinders.	N	-	-	-	-	-			
25. Sieve liquor at	B: Not identified	-	-	-	-	-	-	-	-	-			
LIQUOT SIEVE, LR	C: Not identified	-	-	-	-	-	-	-	-	-			

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP
	P: Contamination of loosen/broken machinery parts due to vibration and wear and tear.	2	3	-Metal will be removed by magnet after LF grinders. -Non-magnetize foreign matter will be trapped by subsequent liquor strainer	N	-	-	-	-	-
26. Liquor flow	B: Not identified	-	-	-	-	-	-	-	-	-
trays and pump liquor thru liquor	C: Possible contamination of lubricant oil	3	3	- Use food grade lubricant only	N	-	-	-	-	-
sump tanks	P: Not identified	-	-	-	-	-	-	-	-	-
27. Flow thru magnet bar/magnetic filter and store at LST tanks	B: Staff: Cross contamination of bacteria from worker during cleaning of magnet.	3	3	-Workers to follow personal hygiene -Sanitize magnet with sanitizer after cleaning	N	-	-	-	-	-
	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant. 	N	-	-	-	-	-
	P: Metal contamination from machines upstream.	3	2	-Clean magnet every shift -Further metal hazard protection with metal detector and magnet bar at subsequent processes, i.e. before packing for cocoa liquor, butter, cake, and powder.	Ν	-	-	-	-	-
28. Pump liquor to	B: Not identified	-	-	-	-	-	-	-	-	-
preheat liquor at LCS tanks	C: Possible contamination of lubricant oil	3	3	-Use food grade lubricant only	N	-	-	-	-	-

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
	P: Contaminated with foreign matter from machinery at upper stream.	2	2	-Install liquor strainer to trap foreign matter -Check liquor strainer daily -For cocoa cake, there is no further protection step for this hazard -For cocoa butter, there is polishing filter to address this hazard -For cocoa powder there is sifter and ACM classifier to address this hazard.	Y	Y	Y	Y	Y	CCP2		
29.Press out cocoa butter from cocoa liquor at cocoa press. Transport remaining cocoa mass, i .e. pressed cocoa cake to cake crusher.	B: Possible cross contamination of bacteria from environmental air	3	2	-Workers to follow personal hygiene -Clean press area as per cleaning program. -The press body are always maintain above 80°C, not encourage growth for most bacteria -Exposure time is short and historical low microbe count for product from presses, i.e. cocoa cake and cocoa butter	N	-	-	-	-	-		
	C: Not identified	-	-	-	-	-	-	-	-	-		
	P: Contamination of loosen/broken machinery parts due to vibration and wear and tear.	2	3	-Protective plate installed to trap broken part, mostly is broken connecting rod. -Magnet and metal detector at cocoa cake/cocoa powder packing will remove contaminated metal, if any -There is strainer, polishing filter and metal detector for the cocoa butter line to remove contaminated object.	N	-	-	-	-	-		
1g Receive butter block to be reworked	B: Cross contamination of bacteria from workers during handling of rejected butter, if butter carton leaks	2	3	-Worker to follow personal hygiene - Bacteria count will be reduce to acceptable level at De-bacteria step	N	-	-	-	-	-		

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No. Input / Output	B: Biological; C: Chemical; P:	Likely-	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/
	B: Contamination of pathogenic microbes (i.e; Salmonella and E.Coli) from rework products.	3	3	- Pathogenic microbes (i.e; Salmonella and E.Coli) will be killed by De-bacteria step	N	-	-	-	-	-
	C: ALLERGENS Contamination if input contains allergens	4	3	-Only reject butter from GCBCM is allowed to input to remelt.	N	-	-	-	-	-
	P: Contamination of foreign object in rejected butter	2	4	-Reject butter if there is foreign object in carton -Install polishing filter to trap foreign object after melting	N	-	-	-	-	-
2g Melt butter block t T T T C C	B: Staff: Cross contamination of bacteria from workers during handling of rejected butter, if butter carton leaks	2	3	-Worker to follow personal hygiene - Bacteria count will be reduce to acceptable level at De-bacteria step	Ν	-	-	-	-	-
	B: Cross contamination of pathogenic microbes (i.e; Salmonella and E.Coli) if de-bacteria process not performed during melting	3	2	-Melt Cocoa Butter and ensure temperature at minimum 100°C and 10 minute is performed for every de-bacteria batch for reworked product before transferring. - Pathogenic microbes (i.e; Salmonella and E.Coli) will be killed by De-bacteria step -Low likelyhood. No occurrence in past 10 years of operation -Low microbe risk due to low moisture in cocoa butter	N	-	-	-	-	-
	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant. 	N	-	-	-	-	-

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP
	P: Contamination of foreign object in rejected butter during putting in butter block for melting	3	3	-Install polishing filter to trap foreign object after melting	N	-	-	-	-	-
3g Filter butter with	B: Not identified	-	-	-	-	-	-	-	-	-
	C: Not identified	-	-	-	-	-	-	-	-	-
30 Store butter at	P: Contamination of foreign object if polishing filter broken.	3	3	-If the pressure is higher than 6 bar, change polishing filter -Any foreign object pass thru will be trapped by polishing filter at step 30.3	N	-	-	-	-	-
30.Store butter at	B: Not identified	-	-	-	-	-	-	-	-	-
Crude butter tank	C: Not identified	-	-	-	-	-	-	-	-	-
P	P: Not identified	-	-	-	-	-	-	-	-	-
30.1 Filter butter into	B: Not identified	-	-	-	-	-	-	-	-	-
filter	C: Not identified	-	_	-	-	-	-	-	-	-
	P: Contaminated with filter sock if broken	2	3	-Buy filter sock from approved supplier -Proper maintenance of butter filter as per maintenance program - Any foreign object pass thru will be trapped by polishing filter at step 30.3	N	-	-	-	-	-
30.2 Cool butter with HE and store butter at fine butter tanks	B: Contaminated with water, which could contains bacteria, if Heat exchanger leaks	4	2	-Proper maintenance of machines as per maintenance program -Butter side pressure is higher than water- side in heat exchanger. Chances are butter leak into water, instead of water leak into butter, if there is a leakage.	N	-	-	-	-	-
	C: Not identified	-	-	-	-	-	-	-	-	
	P: Not identified	-	-	-	-	-	-	-	-	
	B: Not identified	-	-	-	-	-	-	-	-	-

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP	
30.2b Pump fine butter back for	C: Not identified	-	-	-	-	-	-	-	-	-	
adding at LP	P: Not identified	-	-	-	-	-	-	-	-	-	
30.2.1 Butter flow thru magnetic filter & polishing filter	B: Staff: Cross contamination of bacteria from worker during cleaning of magnet	3	3	-Workers to follow personal hygiene -Sanitize magnet with sanitizer after cleaning	N	-	-	-	-	-	
	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant. 	N	-	-	-	-	-	
	P: Contaminated with foreign matter from machinery at upper stream.	2	2	-Install polishing filter to trap foreign matter -Check polishing filter as per schedule for every Batch of liquid butter loading	Y	Y	Y	Y	Y	CCP9	
	P: Metal contamination	3	1	-Clean magnet as per schedule for every Batch of liquid butter loading	Y	Y	Y	Y	Y	CCP 10	
30.2.2 Loading tanker	B: Staff: Cross contamination of bacteria from worker during loading	2	3	-Workers to follow personal hygiene -hoses shall be cleaned and sanitised -use only steam cleaned tanker -filling head always protected when not in use.	N	-	-	-	-	-	

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant. 	N	-	-	-	-	-			
	C: Chemical contaminated from previous load of tanker	2	3	-Only allow clean tanker - previous load of tanker shall be loaded with food products only - Declaration of 3 previous loads and obtain certificate of cleanliness for the tanker -use only approved tanker supplier	N	-	-	-	-	-			
	P: Contamination of foreign object during loading	3	2	-Worker to follow proper working attire, no pocket shirt is allowed. -Report to production manager if accidentally put in foreign object into tanker -if man holes is opened up, shield with netting, provide full protection during filling of the tanker	N	-	-	-	-	-			
30.2.3 Deliver	B: Not identified	-	-	-	-	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
P	P: Leaking of butter from valves	2	4	-Check for proper seal of valves and all openings.	N	-	-	-	-	-			
30.3 Filter butter with	B: Not identified	-	-	-	-	-	-	-	-	-			
polishing filter	C: Not identified	-	-	-	-	-	-	-	-	-			

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
	P: Contamination of foreign object	4	1	-Check daily the pressure of polishing filter. Change filter if the pressure reach 6 bar -Report if find polishing filter damages. -Change polishing filter every week, no matter what is the pressure.	Y	Y	Y	Y	Y	CCP3			
30.4 Pump butter thru HE & buffer tank	B: Contaminated with water, which could contains bacteria, if Heat exchanger leaks	4	2	-Proper maintenance of machines as per maintenance program -Butter side pressure is higher than water- side in heat exchanger. Chances are butter leak into water, instead of water leak into butter, if there is a leakage.	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Not identified	-	-	-	-	-	-	-	-	-			
30.5 Cool butter with I butter coolers	B: Contaminated with water, which could contains bacteria, if Heat exchanger leaks	4	2	-Proper maintenance of machines as per maintenance program -Butter side pressure is higher than water- side in heat exchanger. Chances are butter leak into water, instead of water leak into butter, if there is a leakage.	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Possible contamination of metal caused by wear and tear of machines	4	2	-Proper maintenance of machines as per maintenance program -Metal detector at packing will remove the contaminated metal if any for 25kg-cocoa butter	N	-	-	-	-	-			
30.6 Pack, label & palletize cocoa butter	B: Staff: Cross contamination of bacteria from worker during packing	3	2	-Workers to follow personal hygiene -Clean packing room as per cleaning program -Environment microbe monitoring for packing room as per WI-QA-004	N	-	-	-	-	-			

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Process Step	Potential Hazard State whether biological, chemical or physical.	Rationale for inclusion or exclusion as a Hazard.		What Preventive Measure or Controls can I be applied to prevent this significant hazard?	Is this step a Critical Control Point? Decision Tree							
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- Severity hood		Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant. 	N	-	-	-	-	-		
	C: Potential contamination from solvent residue or chemical hazard from primary packaging material.	4	2	-Buy from approved supplier -All primary packaging material must be Food grade, suitable for food contact application.	N	-	-	-	-	-		
	P: Possible contamination of metal from upstream process if polishing filter torn or magnet damaged	3	1	 Daily verification of metal detector Quarantine products if find metal detector malfunction Verify product once again with good condition metal detector. Control measure of Rejecter: Product rejected by rejecter at this step, either under weight/metal reject, shall be verified. For metal rejected product, metal piece shall be found, and investigate the source of contamination. Confirmed rejected products by rejected, will be sold as off grade. 	Y	Y	Y	Y	Y	CCP4		

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
	P: Possible metal contamination if metal detector malfunction	3	1	-Daily verification of metal detector -Quarantine products if find metal detector malfunction -Verify product once again with good condition metal detector.	Y	Y	Y	Y	Y	CCP4			
30.7 Transfer & store	B: Not identified	-	-	-	-	-	-	-	-	-			
warehouse	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Pest contamination at warehouse	3	3	-Maintain effective pest control program	N	-	-	-	-	-			
P tra P	P: Pest cross contaminated by transport lorry that carrying bean	3	3	-Use only lorry that carrying finished product, prohibit use of lorry carrying bean to transfer products.	N	-	-	-	-	-			
	P: Dust from transfer vehicle	2	4	-Ensure cleaning of transfer vehicle, record in external warehouse transfer form	N	-	-	-	-	-			
30.8 Deliver cocoa	B: Not identified	-	-	-	-	-	-	-	-	-			
butter	C: Residue Fumigant for empty container	4	3	-Product is well protected by sealed plastic liner and external layers -Fumigant is safely released before stuffing product into container. -Residue of methyl bromide is low according to literature, as mentioned in step 1	Ν	-	-	-	-	-			
	P: Damaged carton or liner during stuffing	2	4	-Check for damaged carton during stuffing. Remove damaged carton and record in stuffing checklist. -Damaged carton is obvious defect, which can be easily detected during stuffing and also at customer site when the customer processes the cocoa product into final consumer product. Risk to final consumer is minimum.	Ν	-	-	-	-	-			

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
31a. Filtered air	B: Contamination of bacteria from intake air for transport cake	3	2	-Install filter box with bacteria filter (Pre-filter, Bio-Cell, HEPA 99.99% @ 0.3micron) for transport blower -Check filter regularly as per maintenance program	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Not identified	-	-	-	-	-	-	-	-	-			
31. Crushing pressed	P: Not identified	-	-	-	-	-	-	-	-	-			
kibble cake at cake	C: Not identified	-	-	-	-	-	-	-	-	-			
RIDDIE Cake at cake crusher, transport cake with flow thru magnet to cake silos	P: Contamination of metal caused by wear and tear of cake crusher	3	2	-Clean bullet magnet every shift	N	-	-	-	-	-			
32. Store cocoa cake	B: Not identified	-	-	-	-	-	-	-	-	-			
at cake silos	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Not identified	-	-	-	-	-	-	-	-	-			
33. Pass thru magnet	B: Not identified	-	-	-	-	-	-	-	-	-			
bar at jumbo station	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Possible metal contamination	3	1	-Check and clean magnet bar daily, when there is packing activities	Y	Y	Y	Y	Y	CCP5			
33.1 Pack, label, palletize cocoa cake at jumbo station	B: Staff: Cross contamination of bacteria from worker during packing	3	2	-Workers to follow personal hygiene -Seal the packing opening when there is no packing activities - <i>Historical low microbe count for cocoa cake</i> <i>Jumbo product</i>	N	-	-	-	-	-			

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant. 	Ν	-	-	-	-	-			
	P: Not identified	-	-	-	-	-	-	-	-	-			
33.2 transfer and	B: Not identified	-	-	-	-	-	-	-	-	-			
store cocoa cake at warehouse	C: Not identified	-	-	-	-	-	-	-	-	-			
warehouse F a lı	P: Pest contamination at warehouse and cross contaminated by transport lorry that carrying bean	3	3	-Maintain effective pest control program -Use only lorry that carrying finished product, prohibit use of lorry carrying bean to transfer products.	N	-	-	-	-	-			
	P: Dust from transfer vehicle	2	4	-Ensure cleaning of transfer vehicle, record in external warehouse transfer form	N	-	-	-	-	-			
	B: Not identified	-	-	-	-	-	-	-	-	-			

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP			
33.3 Deliver cocoa cake Jumbo 34a Filtered air	C: Residue Fumigant for empty container	4	3	-Product is well protected by sealed plastic liner and external layers -Fumigant is safely released before stuffing product into container. -Residue of methyl bromide is low according to literature, as mentioned in step 1	N	-	-	-	-	-			
	P: Damaged jumbo bag during stuffing	2	4	-Check for damaged bag during stuffing. Remove damaged bag and record in stuffing checklist. -Damaged bag is obvious defect, which can be easily detected during stuffing and also at customer site when the customer processes the cocoa product into final consumer product. Risk to final consumer is minimum.	Ν	-	-	-	-	-			
34a. Filtered air	B: Contamination of bacteria from intake air	3	2	-Install filter box with bacteria filter (Pre-filter, Bio-Cell, HEPA 99.99% @ 0.3micron) -Regular maintenance of the bacteria filter according to maintenance program	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Not identified	-	-	-	-	-	-	-	-	-			
34. Transfer cake from cake silo to ACMG	B: Contamination of bacteria from intake air of transport system	3	2	-Install filter box with bacteria filter (Pre-filter, Bio-Cell, HEPA 99.99% @ 0.3micron) for transport air -Check filter regularly as per maintenance program	N	-	-	-	-	-			
	C: Not identified	-	-	-	-	-	-	-	-	-			
	P: Not identified	-	-	-	-	-	-	-	-	-			
34.1 Grinding cake at ACMG from cake silos	B: Staff: Cross contamination of bacteria from worker when doing cleaning of ACMG	3	2	-Workers to follow personal hygiene -Sanitize magnet with sanitizer after cleaning	N	-	-	-	-	-			

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Process Step	Potential Hazard State whether biological, chemical or physical.		nale for sion or sion as a zard.	What Preventive Measure or Controls can be applied to prevent this significant hazard?		Is this step a Critical Control F				
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/
34.2 Stabilise cocoa	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant. 	N	-	-	-	-	-
	P: Contamination of metal from upstream and metal caused by wear and tear of machinery	2	3	-Install metal rejecter before ACMG to remove metal from upstream -Metal caused by wear and tear will be removed by another metal detector at packing	N	-	-	-	-	-
34.2 Stabilise cocoa powder at stabilising silo with sifter	B: Mould growth at external of machine if condensation occurs when insulation broken plus air conditioner break down	2	4	-Proper maintenance of insulation -Proper maintenance of air conditioner -If there is condensation, clean and sanitise surface of machine. -Product is enclosed inside machine and piping, risk of contamination is low	Ν	-	-	-	-	-
	C: Not identified	-	-	-	-	-	-	-	-	-
	P: Contamination of metal caused by wear and tear of machinery	2	2	-Check and clean rotary magnet daily, when there is packing activities	Y	Y	Y	N	-	OPRP 1
	P: Contamination of foreign object	3	1	-Inspect sifter screen -If sifter broken, quarantine the product	Y	Y	Y	Y	Y	CCP8
34.3 Pack, label cocoa powder	B: Staff: Cross contamination of bacteria from worker during packing	3	2	-Workers to follow personal hygiene -Clean packing room as per cleaning program -Environment microbe monitoring for packing room as per WI-QA-004	N	-	-	-	-	-

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Process Step	Potential Hazard State whether biological, chemical or physical.	Rationale for Wi inclusion or be exclusion as a ha Hazard.		ale for What Preventive Measure or Controls can Is sion or be applied to prevent this significant ion as a hazard? D			Is this step a Critical Control Point? Decision Tree							
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP				
(Packing at B&B packing room)	C: allergens: possible cross contamination with allergen if worker unaware of allergen control, bring food containing allergen into plant P: Possible metal contamination	3	2	 use our Allergen control procedure to brief all worker what is allergen, and this plant is a dedicated cocoa plant, and is free from all allergen material. allergen control has been added into GMP training material to train all newly recruited worker, and also train repeatedly in annual refresher training No food is allowed to bring into plant area. No personal medicine is allowed to bring into plant. -Metal will be removed by metal detector at packing. 	N	-	-	-	-	-				
34.4 Pass thru Metal Detector, check	B: Not identified	-	-	-	-	-	-	-	-	-				
	C: Not identified	-	-	-	-	-	-	-	-	-				

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No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
weigher and palletize cocoa powder	P: Possible contamination of metal from upstream process if sifter damaged	3	1	 Daily verification of metal detector Quarantine products if find metal detector malfunction Verify product once again with good condition metal detector. Control measure of Rejecter: Product rejected by rejecter at this step, either under weight/metal reject, shall be verified. For metal rejected product, metal piece shall be found, and investigate the source of contamination. Confirmed rejected products by rejected, 	Y	Y	Y	Y	Y	CCP7		
	P: Possible metal contamination if metal detector at packing room malfunction	3	1	 Will be sold as off grade. Daily verification of metal detector Quarantine products if find metal detector malfunction Verify product once again with good condition metal detector. <i>Control measure for Rejecter:</i> Product rejected by rejecter at this step, either under weight / metal reject, shall be verified. For metal rejected product, metal piece shall be found, and investigate the source of contamination Confirmed rejected products by rejecter, will be sold as off grade 	Y	Y	Y	Y	Y	CCP7		
34.5 transfer and store cocoa powder	B: Not identified	-	-	-	-	-	-	-	-	-		
at warehouse	C: Not identified	-	-	-	-	-	-	-	-	-		

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Process Step	Potential Hazard State whether biological, chemical or physical.		nale for sion or sion as a zard.	What Preventive Measure or Controls can be applied to prevent this significant hazard?		Is this step a Critical Control Point? Decision Tree						
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
	P: Pest contamination at warehouse and cross contaminated by transport lorry that carrying bean	3	3	-Maintain effective pest control program -Use only lorry that carrying finished product, prohibit use of lorry carrying bean to transfer products.	N	-	-	-	-	-		
	P: Dust from transfer vehicle	2	4	-Ensure cleaning of transfer vehicle, record in external warehouse transfer form	N	-	-	-	-	-		
34.6 Deliver cocoa	B: Not identified	-	-	-	-	-	-	-	-	-		
powder	C: Residue Fumigant for empty container	4	3	 Product is protected by packaging materials. Fumigant is safely released before stuffing product into container. Residue of methyl bromide is low according to literature, as mentioned in step 1 	N	-	-	-	-	-		
	P: Damaged cocoa bag during stuffing	2	4	-Check for damaged bag during stuffing. Remove damaged bag and record in stuffing checklist. -Damaged bag is obvious defect, which can be easily detected during stuffing and also at customer site when the customer processes the cocoa product into final consumer product. Risk to final consumer is minimum.	Ν	-	-	-	-	-		
35 Pump butter	B: Not identified	-	-	-	-	-	-	-	-	-		
filter 816A	C: Not identified	-	-	-	-	-	-	-	-	-		
	P: Contaminated with filter sock if broken	2	3	-Buy filter from approved supplier -Proper maintenance of filter as per maintenance program - Any foreign object pass thru will be trapped by polishing filter at step 30.3	N	-	-	-	-	-		

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Process Step	Potential Hazard State whether biological, chemical or physical.	Ratio inclu exclus Ha	nale for sion or sion as a zard.	What Preventive Measure or Controls can be applied to prevent this significant hazard?		Is this step a Critical Control Point? Decision Tree						
No. Input / Output	B: Biological; C: Chemical; P: Physical	Likely- hood	Severity	Control Measures / Justification	Q1	Q2	Q3	Q4	Q5	CCP/ OPRP		
35.1 Deodorize butter at Deodorizer 822QE, with option to inject sparging steam, under vacuum	B: Growth of mould if product is cool and the injected steam condensed into water	3	2	-Conduct in-process and final product testing for moistures, reject if find moisture higher than 0.3%. -High vacuum and High temperature, facilitate removal of moisture and volatile components at vessel 822QE -Low occurrence of moisture failure.	N	-	-	-	-	-		
	C: Possible contamination with toxic chemical, such as heavy metal from direct injected steam	3	2	-Use only food grade chemical additive for boiler water -Use only SAJ water -Test heavy metal every year.	N	-	-	-	-	-		
	P: Not identified	-	-	-	-	-	-	-	-	-		
35.2 Pass	B: Not identified	-	-	-	-	-	-	-	-	-		
through Polishing	C: Not identified	-	-	-	-	-	-	-	-	-		
	P: Contaminated with filter sock if broken	2	3	-Buy filter sock from approved supplier -Proper maintenance of butter filter as per maintenance program - Any foreign object pass thru will be trapped by polishing filter at step 30.3	N	-	-	-	-	-		

Signed: Name & Position: Koo Chee Khoon / Food Safety Team Leader HACCP Review Date: 12-SEPTEMBER-2022

Date: 12-SEPTEMBER-2022

Food Safety Team member:

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Yau Tee Wan	Ting Bing Keh	Tenh Swee Kheng	Ravindran Kumar Mahalingam