	UGEE CHEMICALS PSG Department	SOP Standard Operating Procedure

WEIGHT CONTROL

SOP No: UCL/IBDPSG/CD/Q/11.0	Issuance Date:	As at Last Signature	
	Revision Date:	Maximum 2 years from Effective Date	
	Effective Date:	20 working days from the issuance date	Page 1 of 13

PURPOSE

- To establish a standardized system to control, evaluate & release product with respect to packed weight.
- To ensure consistent weight compliance during changes to equipment and installation of new equipment.
- To minimize net content variation at time of production to reduce losses due to overfill and over pack.

SCOPE

- This applies to all brand and sizes of all products in Fabric & Home care Ibadan Plant.
- This SOP is a part of the weight control system that consists of:
  - -Sampling, Control and Release
  - -Over pack calculation
- -This SOP provides:
  - -Guidance on sample size / location
  - -Tools to statistically control the packed weights by means of QW software.
  - -Formats to evaluate the shiftly and daily weight control performance.

RESPONSIBILITY

Shift QC: Responsible for weight sampling and documentation on both Weight control Quality window and weight control sampling sheet at start-up, normal operation and during powder run out at shut down

Back-up Shift QC: This is a pre- identified end-of- line packer who is trained and qualified to perform weight control checks per line. (S)He is responsible for weight sampling and documentation on both weight control Quality window and weight control sampling sheet whenever the shift QC is on break.

Machine/Line Operator: Produces to target weight and quality and fixes all deviation from target. He/She inputs OK in the comment section after every lot (1hour) if all weight control release criteria are met and NOT OK if the release criteria are not met - places all products made within that lot on hold immediately and initiates 100% sorting.

Shift QA Leader/Evacuation – Ensures the inclusion of the weight sampling sheet and the weight control QW report in the BPR record. Conducts spot-checks on the shift QC and back-up to ensure proper execution of the weight checks. He pastes red labels on finished products that area not meeting the weight control criteria or out of specification

Process Leader: Reviews control charts daily & monthly and institutes actions for out of control variables, tracks over pack and reports compliance monthly.

SOP OWNER	QA APPROVAL	HS&E APPROVAL	AUTHORISATION
Atobajaiye Segun	Alawode Olujide	Adebiyi Adedoyin	Ogunrinde Adebayo
Date: 10/02/2022	Date: 11-02-2022	Date: 11th Feb, 2022	Date: 15th Feb, 2022

Department QA Leader: Reviews BPR records for proper weight control documentation and basis for weight control release strategy. Coordinates the quarterly weight checks.

POTENTIAL RISKS

- Not Applicable

PPE REQUIRED

- Not Applicable

PROCEDURE

1. **PRODUCT RELEASE PRINCIPLES / GUIDE LINES:**

The following guide lines must be met for products to be released.

1.1 The average weight of the total number of samples taken per lane per lot must be above the target weight

1.2 Samples between TU1 and TU2 must not be more than 2% of the whole lot samples.

1.3 No sample falls below TU2

2. PERMISSIBLE VARIATION IN NET WEIGHT AS IN GPS STANDARD – 96674137

SIZE	TARGET	+TU1	-TU1
22	22	24	20
25G	25	27	23
60G	60	65	56
90G	90	95	86
160G	160	167	153
170G	170	178	162
190G	190	199	181
400G	400	412	388
900G	900	915	885
1KG	1000	1015	985
2KG	2000	2030	1970

3. **DAILY ON LINE WEIGHT CHECK**

3.1 Shift QC: Picks samples from each machine as the bags/strings drop onto the main conveyor at start up, normal operations and during powder run out at shut down.

3.1.1 (S)He takes 4 samples every 10 minutes from each machine checking the primary code to confirm the machine and weighs and confirms that the weight is captured on Quality Window.

3.1.2 Records the actual gross weight of each sample on the weight sample sheet immediately after weighing. This is to ensure there is a back-up in case of any electronic outages

3.1.3 Informs the machine operator immediately if a variation from target weight is noticed for necessary adjustments to be done.

3.2 Back-up Shift QC:

3.2.1 This is an identified end-of- line packer who is trained and qualified to perform weight control checks per line.

3.2.2 (S)He performs the tasks to be done by the shift QC while (S)He is on the usual 30 minutes break per shift. The tasks to be performed are stated in 3.1.1 – 3.1.3 above.

3.3 Machine/Line Operator:

3.3.1 Picks 4 samples of bags (for big sizes) or strings (for small sizes) from each of his /her machines within 1 hour of resumption/start-up of his/her shift and after 6-8 hours of run.

3.3.2 He/She records the actual gross weight of each sample on the weight sample sheet immediately after weighing.

3.3.3 For all weight checks done by the operators or the shift QC, the operators adjusts the weight if there is a variation from the target on both UVA and ML machines.

3.3.4 When any lot does not meet all the three release criteria, operator immediately holds all finished products produced within the lot and initiates 100% sorting on all.

3.3.5 Carries out 100% sorting to scrap all affected underweight products on the line.

3.3.6 Also, the line operator logs a quality alert and carries out an analysis to understand the root-cause of the failure using the necessary IWS tool- RCA.

3.4 Shift QA Leader/ Evacuation:

3.4.1 Prints out the weight sample report from Quality Window and include in the BPR for the days' batch release. Note: Hard copies of the recorded weights will be used in case there is auto pull system failure.

3.4.2 Co-ordinates the sorting and scrapping of underweight products with the machine/line operator & shift (P&G) team leader.

4.0 QUARTERLY WEIGHT COMPLIANCE CHECK

4.1 This is the weight conducted on a running line using a weight template to measure the health of our line dosing system. The individual weight of the SKU will be verified and documented for confirmation of weight compliance of the running SKUs. The exercise will be carried out quarterly by the line quality inspector and coordinated by the shift QA leader on any of the running SKUs and documented for records and regulatory purposes by the department QA leader. This follows the global SOP- Package Fill Requirement- PKG-P-01.

4.2 Take Eighty (80) samples from a running machine at 2-3 samples per machine per min intervals

4.3 Transfer data collected into weight test template (attachment 3) and check that the three weight guide lines (in section 1.1 -1.3 above) are met.

4.3 If 4.2 is not decisive (e.g. 3 samples below TU1), sample another 80 packs from the same hourly production making it a total of 160 samples and assess the total number of defective samples against the second set of criteria.

Lots (1hr Run) > 3201	# of Packs below TU1	
Samples	Accept	Reject
80	3 or less	7 or more
80+80	8 or less	9 or more

Lots (1hr Run) < 3201	# of Packs below TU1	
Samples	Accept	Reject
50	2 or less	5 or more
50+50	6 or less	7 or more

4.4 The check is said to be successful if all criteria are fully met. Otherwise, it is unsuccessful so hold all products produced within the lot and carry out 100% sorting to scrap affected products. This is to ensure that the integrity of the weight control system and individual dosing units are intact.

5. CONTROL CHARTING

5.1 Determination of average and range

For each sampling, the average and range for samples taken is determined by the On-line system (QW). For the lot, the lot average is calculated for the total number of samples in the lot moving average.

5.2 In-process control

The line QC communicates the lot moving average after entering the data in the on-line system (QW) to the machine operator to adjust the weight, if the lot moving average is below target, the operator adjusts the weight (using the turn set value) on the semi-automated weight control system for UVA and on the individual machine for ML.

5.3 Control Chart Limits

5.3.1 The average range and over pack are calculated automatically by the on-line system (QW). The control limits for the weight are calculated by the process leader based on the following guidelines:

-USL = accurate variation from gross marked weight + gross marked weight

-UCL = 75% of acceptable variation from the gross marked weight + gross marked weight

-T= gross marked weight

-LCL = TU1 for gross weight

-LSL = TU2 for gross weight

These parameters are verified by the process leader every six months and each time a new package size is introduced or a change is made to the packing equipment that might influence the weight performance.

5.4 Over Pack Control

The over pack is essential in other to meet the P&G's business requirements. The on- line QW system automatically calculates the over pack for the lot number of samples.

5.4.1 Over pack control is achieved thus:

When the line quality inspector records the sample weight in the on line system (QW), he/she checks if the over pack percentage is within control limits, if the over pack percentage is out of control limits, he informs the machine operator to adjust the sample weight on either the UVA or ML machines accordingly so that the next ongoing samples improves the over pack percentage and sets it within limits.

$$\text{Over pack \%} = \frac{\text{Lot gross weight average} - \text{marked gross weight}}{\text{Marked gross weight}} * 100\%$$

6. CONTROL CHART EVALUATION

6.1 In control:

The packing operation (as regards weight) is in control and requires no intervention as long as:

- The samples average weight is varying around the indicated target and between the control limits (UCL X & LCL X).

-The lot moving average is above the target.

-The range is around the indicated target and between the control limit

-Over pack is between the control limit

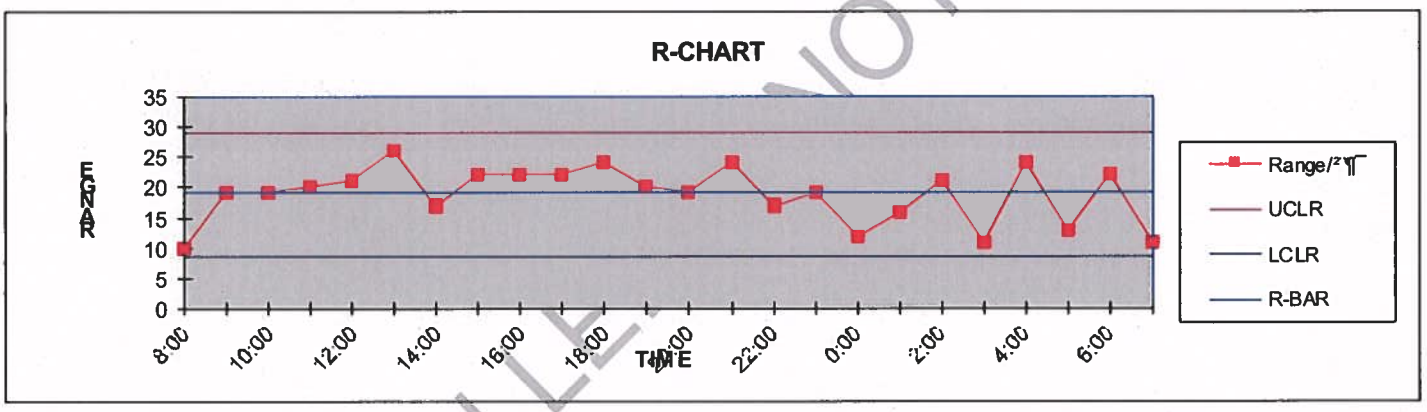
6.2 Out of control

The packing operation (as regards weight) is out of control and requires intervention if one or more deviations to the following rules are observed;

- One or more points fall outside the control limit
- Three consecutive points fall on the same side of the warning limit
- Five consecutive points are increasing or decreasing in a trend
- Seven or more consecutive point fall on the same side of the centerline (target weight)

Note: Those rules apply to both X Bar and R charts

Sample of R-bar Control Chart



7. **HANDLING DEVIATIONS**:

7.1 If the lot moving average for weight is less than the target, the whole lot is put on hold and 100% sorting/inspection is done.

7.2 If any TU2 > 0 (i.e. a sample falls below TU2) at any time during the 1-hour lot, the entire lot is put on hold and is 100% checked to discover the point(s) and source(s) of deviation.

7.3 If average sample weight between TU1 & TU2 is more than 2% at the end of the lot, the entire lot is put on hold and 100% sorting/inspection is done.

7.4 **End of line deviation**

7.4.1. If any polywoven case is out of the limits, Count the numbers of bags or strings in the polywoven case to be sure it is complete.

7.4.2 If it is over-counted, return the excess bags/string to the conveyor

7.4.3. Weigh the bags again to be sure it is within limit

7.4.4. If it is under-counted, take the required number of bags/strings from the conveyor to complete the case count and weight the case again to be sure it is within limits.

7.4.5. Then pass the case for stitching.

7.4.6. If there is no undercount and the case weight is below the limit, weigh each bag/string and pass only those that are within limits.

7.4.7. Scrap any bag/string weighing less than TU2

7.4.8. Complete the case count and weigh again to be sure it is within limit.

7.4.9. Then pass the case for stitching

7.4.10. If there is no undercount but case weight is beyond the limit, pass it on for checks and immediately inform the line quality controller for adjustment for any variation in weight.

8. **Weight Adjustment Procedure**

If the weight is less than target weight adjusts the target weight on the HMI following corresponding values to enter on the HMI if referencing weight range in the HMI. If target weight cannot be met due to bag overfilling and sifting, Stop the machine and follow troubleshooting guide.

REASON FOR UPDATE: New SOP

End of Procedure

SOP Related Attachment
1. **Attachment 1- Training and Qualification Sheet**
2. **Attachment 2- Model Answers**
3. **Attachment 3- Weight Sample Sheet**
4. **Weight Guide Template**

ATTACHMENT 1

UGEE CHEMICALS

WEIGHT CONTROL QUALIFICATIONS

Trainee Name:		Trainer Name:	
Training Date:		Qualifier Name:	

Question # 1: What is the purpose of this SOP?

Question # 2: State the three principles guiding sample weight control.

Question # 3: How many samples are to be taken for weight check per hour?

Question # 4: What is the minimum number of samples to be taken in the quarterly weight compliance check?

Question # 5: When any sample falls below TU2, a trace back is done, and all products produced within that period are placed on hold?

[True] [False]

SOP OWNER	QA APPROVAL	HS&E APPROVAL	AUTHORISATION
Atobajaiye Segun	Alawode Olujide	Adebiyi Adedoyin	Ogunrinde Adebayo
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Question # 6: The packing operation (as regards weight) is out of control and requires intervention if Three consecutive points fall on the same side of the warning limit

Question # 7: The packing operation (as regards weight) is in control and requires no intervention as long as the lot moving average is above the target.

[True] [False]

Question # 8: who reviews control charts and institutes actions for out of control variables, track over pack and reports compliance monthly.

 # 8: (a) Process Leader (b) Line Quality Controller (c) Line Operator

Question # 9: Whose responsibility is it to produces to target weight and quality

#9: (a) Process Engineer (b) Line Quality Controller (c) Line Operator

Question # 10: Who does weight checks when the shift QC is on break?

 # 10: (a) Back-up Shift QC (b) Shift QA Leader (c) Line Operator

The person is considered passed if he scores 100 % in the above test.

Training Results: _____ (tick as appropriate) Succeeded: ☐

Qualifier 's Sign/Date: _____

Fill if re-qualification is needed:

Date of re-qualification: _____

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Atobajaiye Segun	Alawode Olujide	Adebiyi Adedoyin	Ogunrinde Adebayo
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Date:........./........./..........

Weight Sample Sheet

UGEE CHEMICALS

Shift:........... Line Quality Control name:.............................. Size / Brand :................. Balance Spec :................. Machine :................. Balance Model :.................

Sample	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Success criteria Met(Y/N)	Shift QC Comment
Time																										
1st hour																										
2nd hour																										
3rd hour																										
4th hour																										
Average (g)													Overpack %													

Shift:........... Line Quality Control name:.............................. Size / Brand :................. Machine :.................

Sample	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Success criteria Met(Y/N)	Shift QC Comment
Time																										
1st hour																										
2nd hour																										
3rd hour																										
4th hour																										
Average (g)													Overpack %													

Shift:........... Line Quality Control name:.............................. Size / Brand :................. Machine :.................

Sample	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Success criteria Met(Y/N)	Shift QC Comment
Time																										
1st hour																										
2nd hour																										
3rd hour																										
4th hour																										
Average (g)													Overpack %													

Shift:........... Line Quality Control name:.............................. Size / Brand :................. Machine :.................

Sample	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Success criteria Met(Y/N)	Shift QC Comment
Time																										
1st hour																										
2nd hour																										
3rd hour																										
4th hour																										
Average (g)													Overpack %													

1) PASS Means meets release criteria for Weight Control and can be shipped if it meets other quality realease criteria 2)FAIL Means Does not meet release criteria for Weight Control and cannot be shipped even if it meets other quality realease criteria

SOP OWNER	QA APPROVAL	HS&E APPROVAL	AUTHORISATION
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Atobajaiye Segun	Alawode Olujide	Adebiyi Adedoyin	Ogunrinde Adebayo
Date:	Date: 11-02-2022	Date: 11th Feb,2022	Date: 15th Feb,2022

UGEE CHEMICALS

SECONDARY PACK WEIGHT GUIDE TEMPLATE

Polywoven Weight Guide	
Upper Limit	
Target	
Lower Limit	

SOP OWNER	QA APPROVAL	HS&E APPROVAL	AUTHORISATION
Atobajaiye Segun	Alawode Olujide	Adebiyi Adedoyin	Ogunniade Adebayo
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PRIMARY PACK WEIGHT GUIDE TEMPLATE

	ARIEL STRING WEIGHT GROSS TO BAG NET WEIGHT CONVERSION
TU2 -	
TU1 -	
TGT	
TU1 +	
TU2 +	

SOP OWNER	QA APPROVAL	HS&E APPROVAL	AUTHORISATION
Atobajaiye Segun	Alawode Olujide	Adebiyi Adedoyin	Ogunrinde Adebayo
Date: 10/02/2022	Date: 11-02-2022	Date: 14/Feb/22	Date: 13th Feb, 2022