



## CERTIFICATE OF ANALYSIS

(Institute of Public Analysts of Nigeria, IPAN Act CAP I.16 LFN 2004, formerly Decree 100 of 1992)

Lab. Sample Ref No: DASCO/07/11/2018/1253/347/2/17145

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Certificate No: 0017145

Name of Client: DASCO ENGINEERING IND. NIG. LTD

Address: 3, AKANNI DOHERTY STR, OBA AKRAN, IKEJA, LAGOS

Laboratory Environmental Conditions: Humidity, %: 55 Temperature, oC: 23 COA Version 1 dated 13/11/18

Sample Name/Label: WATER SAMPLE "II", 07/11/18

Sample Type : UNPACKAGED DRINKING WATER QUALITY (NIS 554:2015)

Date Received in Lab: 07-Nov-18

Batch No: --

Date Analysed in Lab: 07-13/11/18

I, BENJAMIN A. MIACHI, the undersigned Registered PUBLIC ANALYST No: 00329, of REMABEN SCIENTIFIC SERVICES LTD, do hereby certify that on 07/11/2018 a sample marked/labelled as WATER SAMPLE "II", 07/11/18, Batch No: --, Net Content: 1.5L; was submitted to our Laboratory by you (the Customer) as a sample of UNPACKAGED DRINKING WATER QUALITY (NIS 554:2015) for analysis. Our Laboratory findings are stated hereunder:

### PHYSICAL AND CHEMICAL ANALYSIS:

Tests performed/Unit	Result	Uc	Limit	Test Method
GENERAL APPEARANCE	Clear		Clear	Visual
ODOUR	Unobjectionable		Unobjectionable	Sensory evaluation
COLOR (after filtration), TCU	0		15max.	APHA 2120 B
pH @25 oC	5.52		6.5 - 8.5	APHA 4500-H+
CONDUCTIVITY, microSiemens/cm	547.0		1,000max.	APHA 2510 B
TURBIDITY, NTU	0		5max.	APHA 2130 B
TOTAL HARDNESS-EDTA, mg/L	34.8		150max.	APHA 2340 C
TASTE	Unobjectionable		Unobjectionable	Sensory
TEMPERATURE, oC	27.5		Ambient	APHA 2550 B
TOTAL ALKALINITY(as HCO <sub>3</sub> ),mg/L	12.7		200max.	APHA 2320 B
TOTAL DISSOLVED SOLIDS, mg/L	274.0		500max.	ASTM D5907-03
TOTAL SOLIDS, mg/L	298.2		Not Stated	APHA 2540 B
FREE RESIDUAL CHLORINE,mg/L	N.D		0.2-0.25	APHA 4500-Cl B
FREE CARBONDIOXIDE, mg/L	65		50max.	APHA 4500-CO <sub>2</sub> B
AMMONIA (as N), mg/L	11.8		0.05max.	APHA 4500-NH <sub>3</sub>
CHLORIDE (as Cl), mg/L	95.2		250max.	APHA 4500-Cl- B
NITRITE (as NO <sub>2</sub> ), mg/L	0.16		0.2max.	APHA 4500-NO <sub>2</sub>
NITRATE (as NO <sub>3</sub> ), mg/L	35.9		50max.	APHA 4500-NO <sub>3</sub>
SILICA (Reactive, as SiO <sub>2</sub> ), mg/L	5.6		40max.	APHA 4500-SiO <sub>2</sub>
CHROMIUM (Hexavalent), mg/L	0.001		0.05max.	APHA 3500-Cr B
ARSENIC (as As), mg/L	N.D		0.01max.	ASTM D2972A
CALCIUM (as Ca), mg/L	13.9		75max.	APHA 3500-Ca B
TOTAL IRON (as Fe), mg/L	N.D		0.3max.	APHA 3500-Fe B
COPPER (as Cu), mg/L	0.021		1.0max.	ASTM D1688A
LEAD (as Pb), mg/L	N.D		0.01max.	ASTM D3559
SULPHATE (as SO <sub>4</sub> ), mg/L	7.5		100max.	APHA 4500-SO <sub>4</sub> B
CADMIUM (as Cd), mg/L	N.D		0.003max.	ASTM D3557
MANGANESE (as Mn), mg/L	N.D		0.2max.	ASTM D858-02
MAGNESIUM (as Mg), mg/L	5.1		20max.	APHA 3500-Mg B
SALINITY, mg/L	201.9		480max.	APHA 2520 C
SODIUM (as Na), mg/L	61.7		200max.	APHA 3500-Na B
HYDROGEN SULPHIDE (H <sub>2</sub> S), mg/L	N.D		0.05max.	APHA 4500-S F
MINERAL OIL, mg/L	N.D		0.003max.	APHA 5520 B
PHENOL COMPOUNDS, mg/L	N.D		0.001max.	APHA 5530 D
DETERGENTS (as Lauryl SO <sub>4</sub> ), mg/L	N.D		0.01max.	APHA 5540 C
ZINC (as Zn), mg/L	0.14		3max.	ASTM D1691A
PHOSPHATE (as PO <sub>4</sub> ), mg/L	0.82		Not Stated	APHA 4500-P C

### MICROBIAL EXAMINATION:

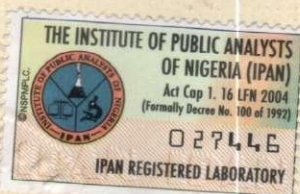
Microbial Group	Result	Unit	Limit	Test Method
E.Coli	0	CFU/ml	0	APHA 9221E
Total Coliforms	0	CFU/ml	0	APHA 9222B
Faecal Streptococci	0	CFU/ml	0	APHA 9213B
Staphylococcus A.	0	CFU/ml	0	APHA 9213B
Salmonella	Absent	in 25ml	Absent	APHA 9260B
Shigella	Absent	in 25ml	Absent	APHA 9260E
Vibrio	0	CFU/ml	0	APHA 9260H
Clostridium p.	0	CFU/ml	0	APHA 92221D
Klebsiella aerogenes	0	CFU/ml	0	APHA 9222F
Pseudomonas a.	0	CFU/ml	0	APHA 9213E
Yeast/mould	0	CFU/ml	0	APHA 9610B
Aerobic Plate Count	25	CFU/ml	100max.	APHA 9215B

Abbreviations: N.D = Not Detected, N.S = Not Stated  
APHA = American Public Health Association (22nd Edition)  
AOAC = Association of Official Analytical Chemists (AOAC Int'l)  
ASTM = American Society for Testing and Materials  
UC = Uncertainty of Measurement (K=2)

### COMMENTS/REMARKS

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- The pH value, 5.52, falls below the Nigerian Industrial Standard (NIS 554:2015) acceptable range of 6.5-8.5 for drinking water.
- The results of microbial examination is in conformity with Nigerian Standard for Drinking Water Quality (NIS 554:2015) maximum permitted levels for unpackaged drinking water from privately owned drinking water systems and used solely for the family residence or food processing by food manufacturers.
- Appropriate correction of pH via dosing of soda ash and disinfection/chlorination are considered necessary.



Lab Analyst: Akinmiyi O.R. Akim  
Sign/date: 13-Nov-18

As witness my hand and issued on this: 13-Nov-18

Approved by: MIACHI Benjamin A. (Lab Director)  
Practice Licence No, 00329  
Signature: [Signature]  
Date: 13/11/18