Code of product in Lab :	**C-138**	ilac-MRA / GCC ACCREDITATION CENTER GAC Testing ISO/IEC 17025:2017 ATL 0052	الاعتماد السعودي Saudi Accreditation Testing N-T-00047 Testing N-T-00085 Testing N-T-00075
LAB DATA		**بيانات المختبر**	
Laboratory name	اسم المختبر	Saudi Inspection & Testing Co.(SAITCO)	
Address	العنوان	1st Industrial Area, St. No.4,5,6,7-Riyadh	
Country	الدولة	Saudi Arabia	
Client Data		**بيانات العميل**	
Sample Date in	تاريخ استلام العينة	14 / 06 / 2023	
Date or period of tests	تاريخ / فترة الاختبار	27 / 6 / 2023	04/ 07 /2023
Date of report issue	تاريخ اصدار التقرير	04/ 07 /2023	
Laboratory test report number	رقم التقرير بالمختبر	E-230762	
Client Name	اسم العميل	Saudi ceramics factory	
Client Address	عنوان العميل	PO Box 3893 Riyadh 11481, Kingdom of Saudi Arabia	
Client Reference No. / Date	مرجع العميل	14/06/2023	
No of received Samples	عدد العينات المستلمة	2	
Sample Data		**بيانات العينة**	
Product description	وصف المنتج	Electric Storage Water Heater	
Brand name or trademark	العلامة التجارية	SAUDI CERAMICS	
Type or reference	النوع / المرجع	EWH-V15AS-S	
Country of Origin	بلد الصنع	Saudi Arabia	
Manufacture Name	اسم المصنع	Saudi ceramics factory	
Manufacture Address	عنوان المصنع	PO Box 3893 Riyadh 11481, Kingdom of Saudi Arabia	
Products Category	تصنيف المنتج	Water Heaters - Energy Performance Requirements and Labeling	
Standard / TR No.	رقم المواصفة / اللائحة	SASO 2884:2017 / EN 50440	E-230762
Test case verdicts		**حالات الحكم على نتيجة الاختبار**	
Conformity to articles tested		☑**Yes**	☐**No**
Test case does not apply to the test object		***Not Applicable***	***N/A***
Test item does meet the requirement		***Pass***	***P***
Test item does not meet the requirement		***Fail***	***F***

Technical Lab supervisor / Manager

ELECTRICAL LAB
TECHNICAL Dep

4	**Criteria for applying the Minimum Energy Performance Standard (MEPS)**		
4.1	**Declaration of rated values**	-	-
	The declaration of the rated capacity shall be expressed only in terms of liters (l) according to the following rules	-	P
	- rated capacity lower or equal to 14 liters as multiples of 1 liter	-	N/A
	- rated capacity from 15 liters as multiples of 5 liters	15L	P
	The declaration of the rated power shall be expressed only in terms of watt (W) as multiples of 50 W.	1.2kW (1200W)	P
	The rated annual energy as a multiple of 5 kWh	550kWh	P

4.2	**DeterminingtheMinimumPerformance**							
4.2.1	***General***					-		-
	Minimum energy performance are based on the Water Heating Energy Efficiency					-		P
4.2.2	***DeclarationoftheLoadProfile***					-		-
	Declared a load profile as described in Annex A					-		N/A
	Declared load profiles of 3XS, XXS, XS and S					-		N/A
	3XS shall not exceed 7 litres in capacity					-		N/A
	XXS and **XS** shall not exceed 15 litres in capacity					15L		P
	S shall not exceed 36 litres in capacity					-		N/A
AMD 4	For storage water heaters with declared load profile M,L,XL,XXL,3XL and 4XL, therequirements of mixed water At 40 ºC shall be as illustrated in table below					-		-
Declared Load Profile	M	L	XL	XXL	3XL	4XL		N/A
Mixed Water at 40 ºC	65 L	130 L	210 L	300 L	520 L	1040 L		
4.2.3	***MinimumEnergyPerformanceStandard(MEPS)forWaterHeaters***							-
	The water heater MEPS values are presented in Table 1.					-		P

Table 1 – MINIMUM ENERGY EFFICIENCY (η_{wh}) in %

Declared load profile	3XS	2XS	XS	S	M	L	XL	2XL	3XL	4XL
Water heaters energy efficiency (with or without smart controls)	53	55	63	63	73	73	79	79	79	79

Measured *ηwh84.10%*

4.2.4	***Minimum Energy Performance Standard (MEPS) for Hot Water Storage Tanks***	-
	Minimum energy performance standard (MEPS) requirements for hot water storage tanks with capacities higher or equal to 25 liters are based on the daily thermal losses QPR.	N/A
	The limit values for QPR are expressed in table 2, rounded to 2 decimal places.	N/A
4.2.5	**Test Voltage**	-
AMD 4	The products shall be tested at 230V for single-phase, and shall be at 400V for three phase.	Applied 230V

4.3	***Acceptance Criteria for Labelling and Market Surveillance***					-
	The energy label shall be accepted as valid when a sample unit(s) tested meets the following criteria:					-
	TABLE***: Acceptance Criteria for Labelling and Market Surveillance***					-
	Measured Point	***Acceptance Criteria***	**Rated**	**Limit**	**Measured Value**	**Verdict**
	a.)Tested Power (W)	≥ 0.90 x rated power	1200W	1080W	1120W	P
	b) Tested Power (W)	≤1.05 x rated power		1260W		
	c) Tested thermal losses (QPR)	≤ 1.05 rated QPR, rated	-	-	-	N/A
	d) Tested Standing loss power (S)	≤ 1.05 rated S	-	-	-	N/A
AMD 3	e.) Capacity (L)	≥0.95 x rated Capacity	15L	≥14.25L	15L	P
	f.) Mixed quantity of water (V_{40})	≥0.97 x rated V_{40}	-	-	-	N/A
	g.) Tested Energy (any type)	≤1.05 x rated annual energy	550kWh	≤577.5	558kWh	P
	h) Tested Collector Aperture (m2)	≥ 0.98 x rated value	-	-	-	N/A
	i) Tested Standby Power Psol;stby	≤1.03 rated Psol;stby	-	-	-	N/A
	j) Tested Pump power consumption Psol;pump	≤1.03 rated Psol;pump	-	-	-	N/A
	Qelec	-	2.573kWh	-	2.62kWh	-

6	**Marking and instructions**		
6.1	General information	-	-
	The following information **shall bemarked on the nameplate** of the water-heater in English or Arabic and English	English	P
	The marking shall not be on a detachable part of the unit and shall be indelible, durable and easily legible	Durable	P
	Any information related to **energy performance** added on any part of the water heater unit or packaging shall not have any ambiguity or lead to misunderstanding of the performance of the unit	-	P
6.2	**Nameplate information**	-	-
	The nameplate information **shall include**, for conformity to this standard the following information:	-	-
	• Manufacturer's name and/or trademark	SAUDI CERAMICS	P
	• Country of origin	Saudi Arabia	P
	• Manufacturer's model or type reference and serial number of the unit	EWH-V15AS-S	P
	• Rated voltage or rated voltage range in volts (V)	220-240V	P
	• Rated frequency in hertz (Hz)	50/60Hz	P
	• Rated power input in Watt (W) or kiloWatts (kW)	1200W	P
	• Rated Capacity	15L	P

	• Annual standby losses (kWh/year) or daily standby losses (kWh/24h), when applicable	-	N/A
6.3	**Instruction sheet**	-	-
	An instruction sheet or manual in both Arabic and English shall be delivered with each water heater	Arabic and English	P
	Tables, drawings and circuit diagrams may be depicted in English only	See instruction manual	P
	The instruction sheet or manual shall include the following information as a minimum:	-	-
	a) Supplier's name or trade mark	SAUDI CERAMICS	P
	b) Supplier's model number	EWH-V15AS-S	P
	c) Declared load profile	XXS	P
	d) Energy Efficiency Class of the model	E	P
	e) Water heating energy efficiency in %	85.2%	P
	f) Annual electricity consumption in kWh under average climatic condition for Saudi Arabia	550kWh	P
	g) If applicable, other load profiles for which the water heater is suitable to use and the corresponding water heating energy efficiency and annual electricity consumption as set out in points (e) and (f)	-	N/A
	h) Thermostat temperature setting	50°C	P
	i) specific precautions that shall be taken when the water heater is assembled, installed or maintained	See instruction manual	P
	j) Where Smart Control Compliance is declared as being enabled	-	N/A
	k) annual electricity consumption in kWh (or mass of butane equivalent when applicable)	-	N/A
	l)) Collector aperture area in m^2	-	N/A
	m) zero-loss efficiency	-	N/A
	n) First-order coefficient ($W/(m^2. K^2)$	-	N/A
	o) Second-order coefficient ($W/(m^2. K^2)$	-	N/A
	p) Incidence angle modifier (I_{am})	-	N/A
	q) Storage Capacity in Liters	15L	P
	r) pump power consumption in W	-	N/A
	s) standby power consumption in W,	-	N/A
	t) Annual non-solar heat contribution Q_{nonsol} in KWh	-	N/A
	u) Annual auxiliary electricity consumption Q_{aux}		
	In addition, for solar water heaters, the instruction sheet or manual shall include the following:	Electric storage water heater	-
	• The information specified in clause 6.2 and Table 6	-	N/A
	• Dimensions of the unit	-	N/A
	• Instruction for mounting and connection to the pipes	-	N/A
	• Instruction for connection to the electrical installation	-	N/A
	• Instructions necessary for the correct operation of the unit and any special precautions to be observed to ensure its safe use and maintenance	-	N/A
	• Instruction for packing and unpacking the unit	-	N/A
	• Instructions on unit handling and rigging	-	N/A
	• Net weight of the unit (empty)	-	N/A

ANNEX C	Calculation of the Energy Efficiency						
C.3	***Calculation of the Energy Efficiency Coefficient ηwh***						
C3.1	***Conventional Water Heaters and HeatPump Water Heaters***						
$\eta_{WH} = \frac{Q_{ref}}{(Q_{fuel} + CC.Q_{elec})(1 - SCF.smart) + Q_{cor}}$		**Q_{ref}**	**Q_{fuel}**	**CC**	**Q_{elec}**	**$SCF._{smart}$**	**Q_{cor}**
		2.10	0	1.00	2.62	0	-0.12
		ηwh =84.10%					

C.5	***Determination of the Ambient Correction Term Qcor***						
(a) for conventional water heaters using electricity:		**Q_{elec}**	**Q_{fuel}**	**Q_{ref}**	**$SCF._{smart}$**	**CC**	**k**
$Q_{cor} = -k.(CC.(Q_{elec}.(1 - SCF.smart) - Q_{ref}))$		2.62	0	2.10	0	1.00	0.23
		Q_{cor} =-0.12					
Where the k values are given in Table C1 for each load profile		2XS					-

C.6	***Determination of the mixed quantity of water V40***		
$V_{40} = V_{40;exp} \times \frac{(\theta_p - 15)}{(40 - 15)}$	The normalized value of the average temperature θ_p	-	
	Corresponds to the quantity of water delivered at least 40°C during test. $V_{40;exp}$	-	
	V_{40}=-		

ANNEX D	Calculation of the Annual Energy Consumption		
D.1	***Principle for Calculation of the Annual Energy Consumption (AECWH)***	-	-
	The annual energy is based on the energy efficiency ratio ***AEC_{WH}*** used for Classification and the reference energy Qrefused to characterize the water heaters.	558kWh/y	P
D.2	***Weather Data for Saudi Arabia***	-	-
	the following data are applied, in addition to the data used for test of the water heaters and water storage tanks (tables D1 and D2)	See table	P
D.3	***Calculation and Presentation of the Annual Energy Consumption (AEC_{WH})***		-
D.3.1	***ForConventionalWaterHeaters***		-

$AEC_{WH} = 220 \times Q_{ref}/\eta wh;_{KSA}$	***Q_{ref}***	***ηwh;$_{KSA}$***	-
	2.10	82.81%	-
	AEC_{WH} =558kWh/y		-

$\eta_{WH;KSA} = \frac{1}{1 + \left(\frac{1 - \eta_{WH}}{\eta_{WH}}\right) \times \left(\frac{65 - \vartheta_{amb;test}}{65 - \vartheta_{amb;KSA}}\right)}$	**ηwh**	**$\vartheta_{amb:test}$**	**$\vartheta_{amb:KSA}$**	-
	84.10%	20°C	24°C	-
	ηwh;$_{KSA}$=82.81%			-

	Ambient temperature for test: $\vartheta_{amb:test}$=20 °C	-	-
	Ambient temperature for label: $\vartheta_{amb:KSA}$= 24 °C	-	-

Remarks:

Photo No. 1 (Marking)

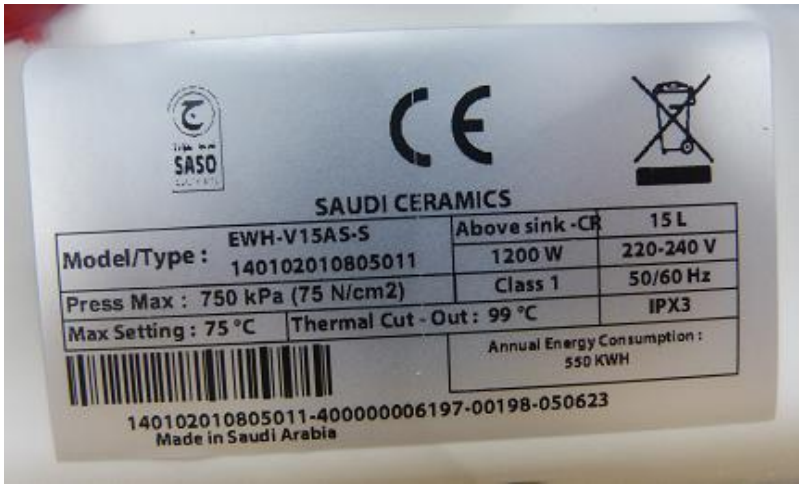

Photo no.2 (General view / External package)

Photo no.3 (Energy efficiency test report)

SAITCO
Saudi Inspection & Testing Co
الشركة السعودية للفحص و الاختبار

Report Reference E230762EFFS5R00

Storage Water Heater Test Data:

Applicable Standard(s)	SASO-2884:2017, BS EN 50440-2015

Manufacturer	Country of Origin	Model	Type	Sub Type
SAUDI CERAMICS	SAUDI ARABIA	EWH-V15AS-S	Electric	Storage

Test Start Date	Testing Stop Date	Load Profile	Rated Power	Actual Power
			W	W
6/28/2023	6/29/2023	2XS	1200	1120

Actual Capacity	Rated Capacity	T3	T5	Ambient	Smart	SCF
Litres	Litres	°C	°C	°C	0	1
15.00	15.00	53.99	47.44	21.65		

$Q_{testelec}$	Q_{ref}	Q_{H2O}	Q_{elec}	Q_{cor}
kWh	kWh	kWh	kWh	kWh
2.57	2.10	2.15	2.62	-0.12

$V_{full\text{-}drawing\ water}$	CC	η_{elecwh}	η_{wh}	MEPS MIN. η_{wh}
Litres	Coefficient	%	%	%
62.28	1.00	80.28	84.10	55.00

$\eta_{wh;KSA}$	Rated AEC	Actual AEC	Actual AEC_{WH}	Efficiency Class
%	kWh/y	kWh/y	kWh/y	C
82.81	550	548	558	

Photo No.4 (Classification as per declared load profile)

Table 3 – ENERGY EFFICIENCY CLASSIFICATION as per DECLARED LOAD PROFILE

Energy Efficiency in %			84.10								
Bar Color	Energy Class		LOAD PROFILE								
			3XS	2XS	XS	S	M	L	XL	2XL	3XL	4XL
Dark Green	أ	A	95	100	105	105	210	300	300	300	300	300
Green	ب	B	87	89	97	97	140	160	160	160	160	180
Light Green	ج	C	77	79	87	87	93	95	98	110	110	110
Yellow	د	D	69	71	79	79	87	87	92	93	93	93
Orange	هـ	E	61	63	71	71	80	80	86	86	86	86
Red	و	F	53	55	63	63	73	73	79	79	79	79
Dark Red	ز	G	45	47	55	55	65	65	71	71	71	71

Notes on results: The acceptance criterion is based on; A-Relevant standard specification ☐

B-Manufacturer's manual (product technical data sheet) ☐ C-Customer requirements .☑

.The rule of acceptance is based on: The measured value fulfills the requirement according to the acceptance criterion, taking into account the uncertainty value in the measurement

.The rule of rejection is based on: The measured value does not achieve the required according to the acceptance criterion, taking into account the uncertainty value in the measurement

☐ The sample passed all the above-mentioned tests in accordance with the requirements of the product

☐ The sample passed all the tests mentioned above in accordance with the requirements for the product, except for the ..... test where the measured value does not meet the requirements of the product mentioned in the attached standard specifications.

The result is for the sample referred to in the report, which has been tested only and is only representative of itself.

Accreditation statues :	All tests are accredit : ☐	All tests are accredit except: .....

REMARK :

SOFT COPY OF THE CONTROL TEST RESULT SHEET IS AUDITED BY THE LAB SUPERVISOR

	Inspected by	Lab supervisor/ Reviewer	Technical Manager
Name			
Sign			
Date	04/ 07 /2023	04/ 07 /2023	04/ 07 /2023

"End of Report"

SAITCO
Saudi Inspection & Testing Co
الشركة السعودية للفحص والاختبار
مختبر المنتجات الكهربائية والالكترونية
Electrical & Electronic Lab.
إعتماد رقم N-T-00047 ت.41