



TÜRK STANDARDLARI ENSTİTÜSÜ
DENEY ve KALİBRASYON
MERKEZİ BAŞKANLIĞI
ANADOLU YAKASI ENERJİ, MALZEME VE
KALİBRASYON LABORATUVARI MÜDÜRLÜĞÜ



TURKISH STANDARDS INSTITUTION
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AB-0001-T

1715

01-25

MUAYENE VE DENEY RAPORU
TEST REPORT

Deneysel Talep Eden/Firma : (Adı, Adresi, Şehir vb.) Requesting/Customer (Name, Address, City etc.)	RADİVA ISI SİSTEMLERİ SANAYİ VE TİCARET LİMİTED ŞİRKETİ
Deneysel Talep Tarihi / No : Order Date/No.	16.12.2024 / 2024-351225
Numunenin Tanımı : (Cins, Marka, Sınıf, Tip, Tür, Model vb.) Sample Description (Type, Mark, Class, Model etc.)	2024-419098, Çelik Havlupan, Radıva, HAITI, 500 mm x 1100 mm, Çelik Boru Radyatör, Boyalı, Maksimum İşletme Basıncı: 10 Bar, 1.00, adet
Numune Kabul Tarihi : Sample Receipt Date	20.12.2024
Deneysel Yapıldığı Tarih : Date of Test	25.12.2024 / 03.01.2025
Uygulanan Standart Metot : Applied Standard/Method	TS EN 442-1/Basınca Dayanım Deneyi, TS EN 442-1/Kaplama Kalınlığı Tayini, TS EN 442-1/Raporlama ve Değerlendirme(Not:Kütle ve boyut ölçümleri ile gerektiğinde gözle muayene bu ücrete dahildir.), TS EN 442-1/Sızdırmazlık Deneyi, TS EN 442-2 Ek-K/Nemlilik Deneyi, TS EN 442-2/Isıl Güç Deneyi, TS EN ISO 2409/Çapraz Tarama
Raporun Sayfa Sayısı : Number of pages of the report	5
Deneysel Sonucu : Test Result	Yapılan Deneysel Yönuyle Uygundur
Açıklamalar : Remarks	

Yukarıda tanımlanan numune için laboratuvarımızda yapılan muayene ve deneysel sonuçlar müteakip sayfalarda verilmiştir.
The testing and/or measurement results are given on the following pages which are part of this report.

Bu raporda Uygunluk Beyanı verilen deneysel sonuçları için TSE internet sitesinde yayınlanan LAB-D-PR-18 Karar Kuralı Prosedüründe belirtilen basit kabul kuralını esas alarak Karar Kuralını uygulanmıştır.
Rules described in "LAB-D-PR-18 Decision Rule Procedure" Decision Rule based on Simple Acceptance Rule which is published on TSE Web site have been applied to the test result for which Conformity Declaration is given in this test report

Deneysel laboratuvarları olarak faaliyet gösteren TSE Deneysel ve Kalibrasyon Merkezi Başkanlığı Deneysel Laboratuvarları TÜRKAK'tan AB-0001-T ile TS EN ISO/IEC 17025:2017 standardına göre akredite edilmiştir.

TSE Headship of Test and Calibration Center Testing Laboratories accredited by TÜRKAK under registration number AB-0001-T for TS EN ISO/IEC 17025:2017 as test laboratory.

TÜRKAK deneysel raporlarının tanınırlığı konusunda Avrupa Akreditasyon Birliği (EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği(ILAC) ile karşılıklı tanıma anlaşması imzalamıştır.

TURKAK is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports.

Deneysel ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deneysel metodları bu raporun tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.

The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.



Tarih
Date
03.01.2025

Deneysel Sorumlusu
Person in charge of test
ÖMER SEZER KAYMAZ

Kontrol Eden
Reviewer
UTKU DURMAZ

Onaylayan
Approved by
UTKU DURMAZ

Bu rapor, hazırlayan laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve karekodsuz raporlar geçersizdir. Bu rapor, müşteri tarafından laboratuvara ulaştırılan numuneler üzerinde yapılan deneysel sonuçlarını içermekte olup, "Ürün Belgesi" yerine geçmez.
This test report shall not be reproduced other than in full except with the written permission of the laboratory. Test reports without signature and seal are not valid. This report contains the test results performed on the samples delivered to the laboratory by the customer and does not replace the "Product Certificate".

Bu doküman elektronik ortamda imzalanmıştır. /This document has been signed with e-signature.

Doğrulama adresi: <https://basvuru.tse.org.tr/uye/QRKodDogrulama?code=D81ESC>

TEST RESULTS

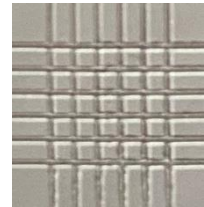
Model	Length (mm)	Height (mm)	Depth (mm)	Mass (kg)	Water content (lt)	Thermal output ($\Delta T=50$) (W/m)	Thermal output ($\Delta T=30$) (W/m)	n
Radiva, HAITI, 500 mm x 1100 mm, Steel Tubular Radiator Painted, Maximum Operating Pressure: 10 Bar	1102	502	30,50	6,48	4,82	545*	230*	1,2445

* - The calculated thermal output of 1 meter length with respect to the standard characteristic equation of a model. This value is mathematically rounded as stated in Clause 6 of TS EN 442-2.

- For tubular radiators, height refers to the dimension across header sections regardless of orientation of wall mountings. (EN 442-2, Table-3)

Sample Installation, Radiated Heat Output Factor and Barometer Exponent

Floor gap (mm)	Wall gap (mm)	S_K	n_p	Number of section/tube (if any)
110	50	0,25	0,45	20





TEST RESULTS

TS EN 442-2, Clause 4.3.3

<u>DRAWING INFO</u> Drawing Name:- Drawing Num:- Drawing Date:-	Steel Tubular Radiator			
	Tolerances	Declared (mm)	Measured (mm)	Result
Overall height of heat exchanger 250 < H ≤ 500	+ 4 / -2	500	502	U
Overall depth of heat exchanger All Measures	±1,5	30	30,50	U
Overall length of heat exchanger 1000 < L	± 1,5 %	1100	1102	U
Distance between connection centre	± 1,5 %	455	457	U

* For tubular radiators, height refers to the dimension across header sections regardless of orientation of wall mountings.(According to EN 442-2, Table 3)

TS EN 442-1, Clause 5.4

Declared maximum operating pressure (bar)	Test pressure (bar)	Remarks	Result
10	13	No leakage observed.	U

TS EN 442-1, Clause 5.6

Declared maximum operating pressure (bar)	Test pressure (bar)	Remarks	Result
10	16,9	No leakage or bursting observed.	U



TEST RESULTS

TS EN 442-1, Clause 5.7

Requirements	Remarks	Result
The heating device shall be free from burrs likely to cause personel injury. The assessment shall be done by visual inspection.	No sharp edges or burrs observed.	U

TS EN 442-1, Clause 5.9

Requirements	Remarks	Result
The protection against corrosion in normal storage and installation conditions shall be demonstrated by absence of surface corrosion after 100 h humidity test according to EN 442-2:2014, Annex K.	No corrosion or deterioration observed after 100 h humidity test.	U
Additionally, for painted radiators and convectors only, the resistance to minor impact damage shall be tested according to EN ISO 2409. The test result shall be within the first three class (0-1-2) of EN ISO 2409:2013, Table 1.	Class 0.	U

*TS EN 442-1, Clause 5.2

Requirements	Remarks	Result
Metallic radiators and convectors are considered to be reaction to fire Class A1 without testing, provided that: - the metallic radiators and convectors are not coated and, if coated, the coating does not exceeds 1,0 mm of thickness and 1 kg/mm ² of mass per unit area.	Average Coating Thickness (µm): 153,7 Class: A1	U

** Not within the scope of accreditation*


Abbreviations

- U : Conforms to the requirements
- UD : Does not conform to the requirements
- NU : Not applicable to this sample
- X : Test cannot be carried out by our laboratory
- TE : Test is not requested by applicant
- SB : Not evaluated for the lack of declaration
- CA : Not evaluated for the lack of declaration
- : No test and/or evaluation is carried out



TEST RESULTS

Average Measured Values and Results

	Symbol	Unit	Measuring Point		
			1 (ΔT 50)	2 (ΔT 60)	3 (ΔT 30)
Air pressure	p	kPa	99,9	99,8	99,8
Air reference temperature	t _r	°C	20,02	20,02	19,99
Water inlet temperature	t ₁	°C	75,05	86,30	52,67
Water outlet temperature	t ₂	°C	65,04	73,76	47,37
Temperature difference	t ₁ -t ₂	K	10,00	12,55	5,30
Inlet water enthalpy	h ₁	kJ/kg	314,230	361,394	220,591
Outlet water enthalpy	h ₂	kJ/kg	272,243	308,831	198,455
Enthalpy difference	Δh	kJ/kg	41,8865	52,5629	22,1364
Mean water temperature	t _m	°C	70,043	80,028	50,021
Excess temperature	ΔT	K	50,023	60,008	30,034
Weighing method Water flow rate	q _m	kg/h	40,9600	40,9360	41,0680
Thermal output measured	Φ_{me}	W	476,6	597,7	252,5
Thermal output corrected for barometric pressure influence	Φ	W	478,8	600,7	253,8

K _M	n	$\Phi = K_M \cdot \Delta T^n$ (W)		
		$\Delta T=50$ K	$\Delta T=60$ K	$\Delta T=30$ K
3,6772	1,2445			
Calculated thermal output calculated with respect to the standard characteristic equation of a model		478,5	600,4	253,4