



# TÜBİTAK ULUSAL METROLOJİ ENSTİTÜSÜ

**TÜBİTAK**  
UME

## Certificate of the Reference Material



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**Name of the Material** : Certified Electrolytic Conductivity Solution  
**Material Code** : UME CRM 1404-1  
**Issue Date** : 20.10.2020  
**Revision Date** : 16.12.2025 (Revision history can be found on the last page)  
**Validity Period of the Certificate** : 1 year from the sales date (The certified value is guaranteed for 3 months from the date of opening the bottle)  
**Certified Values** :

Parameter	Value <sup>[2,3]</sup> ( $\mu\text{S}\cdot\text{cm}^{-1}$ )	Uncertainty <sup>[4]</sup> ( $\mu\text{S}\cdot\text{cm}^{-1}$ )
Conductivity <sup>[1]</sup>	1409.5	2.7

[1] The certified value is obtained from measurements carried out at 25 °C. Temperature is continuously monitored throughout the measurements with 0.03 °C uncertainty.

[2] The certified value is determined by primary level electrolytic conductivity measurement system.

[3] The certified value is traceable to International System of Units (SI).

[4] The expanded uncertainty of the certified value includes characterization, homogeneity, stability components and is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with GUM "Guide to the Expression of Uncertainty in Measurement".

**TÜBİTAK UME has been accredited by TÜRKAK as a reference material producer under the accreditation number AB-0001-RM in accordance with the TS EN ISO 17034:2018 standard.**

**Turkish Accreditation Agency (TÜRKAK) is a signatory to the European Cooperation for Accreditation (EA) Multilateral Agreement (MLA) and the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of reference material certificates.**

**Sales Date**

**Assoc. Prof. Mustafa ÇETİNTAŞ**  
Director

The following pages are an integral part of the certificate. The use of current certificate is customers' responsibility.

Most recent certificate can be downloaded from [www.ume.tubitak.gov.tr](http://www.ume.tubitak.gov.tr).

## Description

The material is a solution of approximately 500 mL ultrapure water and potassium chloride (KCl) in high density polyethylene (HDPE) bottle. More detailed information about the material and certification process is presented in the certification report.

## Intended Use

This material can be used for on-site calibration and control of conductivity meter devices.

## Instructions for Use

All precautions should be taken to prevent contamination and evaporation of the material during opening and subsequent use of the bottle. The bottle should be shaken before opening the cap to avoid a bias due to condensed water at the bottleneck. The minimum amount of material to be used in the measurements should be arranged such that the diaphragm of the electrode to be calibrated is completely immersed in to the solution. Although this amount may vary depending on the electrode type, it is approximately 25 mL. Calibration should be made at a temperature of 25 °C, and measurements of the electrolytic conductivity value of the sample solutions should be the same as the temperature at which the calibration was performed. Electrode or any other substance must not be immersed in to the bottle for measurement. The measurement should be carried out by transferring the amount to be used from the bottle to a clean container. The material transferred to the container must not be returned to the bottle. The cap of the bottle should not be left open. This material can be safely dispatched under conditions where the temperature does not exceed 50 °C for up to 4 weeks.

Material should not be used longer than 3 months after opening of the bottle.

## Storage Conditions

The material should be stored at (21 ± 3) °C temperature range.

TÜBİTAK UME cannot be held responsible for changes that might happen to the material at customer's premises due to noncompliance with the instructions for use, and the storage conditions described in the certificate.

## Safety Information

Usual laboratory precautions apply. It is strongly recommended that the material must be handled and disposed according to the safety guidelines where applicable. Please refer to the Safety Datasheet before any use of the material.

## Participants

Information about the laboratory participated in the characterization study is given in the table.

Laboratory	Address
TÜBİTAK UME	TÜBİTAK Gebze Yerleşkesi, Barış Mahallesi, Dr. Zeki Acar Caddesi No.1, 41470 Gebze - Kocaeli / Türkiye

## Methods and/or Techniques Used for the Determination of the Certified Values

The characterization of the material is conducted with a primary method using primary level electrolytic conductivity measurement system.

The characterization study was performed at  $(25.00 \text{ } ^\circ\text{C} \pm 0.03) \text{ } ^\circ\text{C}$ . All solutions used in the characterization study were prepared gravimetrically, and the weighings were made using calibrated balances that were checked with appropriate weights. The balances and weights are calibrated with traceability to national measurement standards realizing the units defined in the International System of Units (SI).

Method/Technique	Parameter
Primary Level Electrolytic Conductivity Measurement System	Conductivity

## Revision History

Date	Remarks
20.10.2020	First issue.
28.11.2024	Certificate is updated to adapt it to the current format of certificate for reference material.
16.12.2025	Certificate is updated due to corporate identity (logo) change of TÜBİTAK UME.