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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 39560.701-2020

**Determination of certain substances in electrical and electronic products - Part 7-1:
Hexavalent chromium - Presence of hexavalent chromium[Cr(VI)] in colourless and
coloured corrosion-protected coatings on metals by the colorimetric method**

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Foreword

GB/T 39560 "Determination of Certain Substances in Electrical and Electronic Products" is currently divided into the following parts:

---Part 1: Introduction and overview;

---Part 2: Disassembly, disassembly and mechanical sample preparation;

---Part 3-1: Screening of lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry;

---Part 4: CV-AAS, CV-AFS, ICP-OES and ICP-MS determination of mercury in polymers, metals and electronic parts;

---Part 5: AAS, AFS, ICP-OES and ICP-MS determination of cadmium, lead and chromium in polymers and electronic parts and metals

Cadmium and lead;

---Part 6: Determination of polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatography-mass spectrometry (GC-MS);

---Part 7-1: Determination of hexavalent chromium in colorless and colored anticorrosive coatings on metals by hexavalent chromium colorimetry [Cr(VI)];

---Part 7-2: Determination of hexavalent chromium in polymers and electronic parts by hexavalent chromium colorimetry [Cr(VI)];

---Part 8: Gas Chromatography-Mass Spectrometer (GC-MS) and Gas Chromatography-Mass Spectrometer (Py/T D-GC-

MS) Determination of phthalates in polymers:

This part is part 7-1 of GB/T 39560:

This section was drafted in accordance with the rules given in GB/T 1:1-2009:

The translation method used in this part is equivalent to IEC 62321-7-1:2015

"Determination of Certain Substances in Electrical Products Part 7-1: Six Valence"

Determination of hexavalent chromium in colorless and colored anticorrosive coatings on metals by chromium colorimetry [Cr(VI)]":

The Chinese documents that have a consistent correspondence with the international documents cited in this section are as follows:

---GB/T 6682-2008 Analytical laboratory water specifications and test methods (ISO 3696:1987, MOD)

---GB/T 39560:1-2020 Determination of certain substances in electrical and electronic products Part 1: Introduction and overview (IEC 62321-1: 2013, IDT)

---GB/T 39560:2-2020 Determination of certain substances in electrical and electronic products Part 2: Disassembly, disassembly and mechanical sample preparation (IEC 62321-2:2013, IDT)

This section also made the following editorial changes:

---In order to be consistent with my country's existing standard series, the standard name is changed to "Determination of Certain Substances in Electrical and Electronic Products Part 7-1

Points: hexavalent chromium colorimetric method to determine hexavalent chromium in colorless and colored anticorrosive coatings on metals [Cr(VI)]":

This part is proposed and managed by the National Environmental Standardization Technical Committee of Electrical and Electronic Products and Systems (SAC/TC297):

Drafting organizations of this section: China Electronics Standardization Institute, Shenzhen Saixi Information Technology Co., Ltd., Lanzhou 3D Big Data Standard

Chemical Research Institute Co., Ltd., Suzhou Huace Testing Technology Co., Ltd.,
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Academy of Information and Communications Technology, South China Laboratory of
China Quality Certification Center, Weikai Testing Technology Co., Ltd:

Company, ZTE Corporation, Jiangsu Electronic Information Product Quality Supervision
and Inspection Institute, TCL China Star Optoelectronics Technology Co., Ltd:

the company:

1 Scope

This part of GB/T 39560 specifies a boiling water extraction method whose purpose is to
treat colorless and colored anticorrosive plating on metal samples:

The hexavalent chromium in the layer is qualitatively determined:

Due to its high activity, the content of hexavalent chromium in the anticorrosive coating will
change significantly with time and storage conditions: Because of the

Storage conditions are often unknown or unavailable, so the process can only be
determined based on the hexavalent chromium content detected in the coating during the
test:

Determine its existence: When testing the newly plated samples, a waiting time of at least
5d is required (after the plating process is completed) to ensure that the plating has been

After stable: The oxidation of trivalent chromium to hexavalent chromium may occur during
the waiting period:

The existence of hexavalent chromium is determined by the mass of hexavalent chromium
contained in the unit surface area of the coating, and its unit is expressed in micrograms
per square centimeter ($\mu\text{g}/\text{cm}^2$)

Show: This method is preferred because it is often difficult to accurately measure the quality
of the anti-corrosion coating after the product is produced: From the plating technology

From a point of view, the changing trend of the entire industry is to use chemicals that do
not contain hexavalent chromium, that is, there is little or no hexavalent chromium:

Do not use traditional chemical substances containing hexavalent chromium, that is, the
content of hexavalent chromium is significant and can be reliably detected: Considering
industry changes

To determine whether the presence or absence of hexavalent chromium is sufficient to
meet the testing purpose of regulatory compliance:

In this process, if the detection of hexavalent chromium in the sample is lower than the LOQ (Limit of Quantification) of 0:10µg/cm², it can be considered as the hexavalent chromium of the sample:

Chromium is negative: Since hexavalent chromium cannot be evenly distributed in the coating even in the same batch of samples, the 0:10µg/cm²~

The "grey area" between 0:13µg/cm² is determined as "inconclusive" to reduce the inconsistent results due to inevitable changes in the coating:

fruit: In this case, additional tests may be required to confirm the presence of hexavalent chromium: When the content of hexavalent chromium is higher than

At 0:13µg/cm², the sample is considered to be positive, that is, there is hexavalent chromium in the coating:

2 Normative references

The following documents are indispensable for the application of this document: For dated reference documents, only the dated version applies to this article

Pieces: For undated references, the latest version (including all amendments) applies to this document:

IEC 62321-1 Determination of certain substances in electrical products Part 1: Introduction and overview (Determination of certain sub-

stancesinelectrotechnicalproducts-Part 1:Introductionandoverview)

IEC 62321-2 Determination of certain substances in electrical products Part 2: Disassembly, disassembly and mechanical sample preparation (Determination of

certainsubstancesinelectrotechnicalproducts-Part 2:Disassembly,disjointmentand mechanical

samplepreparation)

ISO 78-2:1999 Chemical Standard Format Part 2: Chemical Analysis Methods (Chemistry-Layoutsforstand-

ards-Part 2:Methodsofchemicalanslysis)

ISO 3696 Analytical laboratory water specification and test method (Waterforanalyticallaboratoryuse-Specification

andtestmethods)