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(JSERT/JPIF/JSA)

Plastics — Epoxy resins — Determination of chlorine content — Part 3: Total chlorine

ICS 83.080.10

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from The Japan Society of Epoxy Resin Technology (JSERT)/The Japan Plastics Industry Federation (JPIF)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

This Standard has been made based on **ISO 21627-3**:2002 *Plastics — Epoxy resins — Determination of chlorine content — Part 3: Total chlorine* for the purpose of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Consequently **JIS K 7246**:2000 is replaced with this Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS K 7243 consists of the following parts, under the general title *"Plastics — Epoxy resins — Determination of chlorine content"*:

- *Part 1: Inorganic chlorine*
- *Part 2: Easily saponifiable chlorine*
- *Part 3: Total chlorine*

In producing epoxy resins based on epichlorohydrin, impurities containing chlorine may be formed. These are shown below. Since these impurities could lower the final properties of the cured resins, it is necessary to control their formation. Their chemical activities differ significantly, so different analytical procedures are needed for their analysis.

JIS K 7243 specifies methods for the determination of these organic and inorganic chlorides which occur as impurities in epoxy resins derived from epichlorohydrin.

- Part 1: Inorganic chlorine (also called ionic chlorine).
- Part 2: Easily saponifiable chlorine consisting mainly of chlorine, which is present as 1,2-chlorohydrin as the result of incomplete dehydrohalogenation.
- Part 3: Total chlorine consisting mainly of all saponifiable organic chlorine, e.g., 1,2-chlorohydrin, 1,3-chlorohydrin and 1-chloro-2-glycidylether (chloromethyl derivative) which are the result of incomplete dehydrohalogenation, along with inorganic chlorine present in the test portion of epoxy resin.

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Since the purposes of parts 1 to 3 of **JIS K 7243** differ, one of these methods should be selected depending on the impurities to be measured. Typical impurity types of inorganic and organic chlorine are shown below.

Cl^-	Inorganic chlorine (or Ionic chlorine)
····· $O\text{-}CH_2\text{-}\underset{\underset{OH}{\vert}}{CH}\text{-}\underset{\underset{Cl}{\vert}}{CH_2}$	1,2-chlorohydrin
····· $O\text{-}\overset{\overset{CH_2Cl}{\vert}}{\underset{\underset{CH_2OH}{\vert}}{CH}}$	1,3-chlorohydrin
····· $O\text{-}CH_2\text{-}\underset{\underset{\underset{Cl}{\vert}}{CH_2}}{\vert}CH\text{-}O\text{-}CH_2\overset{\diagdown O \diagdown}{CH}\text{-}CH_2$	1-chloro-2-glycidylether (chloromethyl derivative)

For analytical methods for impurities other than those shown above, see **ISO 4615**:1979 *Plastics — Unsaturated polyesters and epoxide resins — Determination of total chlorine content.*

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In the event of any doubts arising as to the contents, the original JIS is to be the final authority.

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