

Hexafluorosilicic Acid analytical methods

Data requirement 2.3.5: spectral data

UV/Vis spectroscopy

UV/visible spectroscopy is not relevant for hexafluorosilicic acid as it is a simple inorganic molecule and, as such, absorption will not occur within the UV-Vis region. In addition, the test substance is highly corrosive and may damage equipment.

UV/Vis spectroscopy is not a relevant technique for the analysis of hexafluorosilicic acid

According to Annex VI, section 2.3.5, mass spectroscopy or nuclear magnetic resonance should be conducted on the test substance if scientifically necessary.

Mass spectroscopy

While MS is, theoretically, a relevant technique for the analysis of the elemental composition of hexafluorosilicic acid, the highly corrosive nature of the substance to metal and glass means that laboratories will be unwilling to perform this analysis.

Mass spectroscopy is a relevant technique for the analysis of hexafluorosilicic acid but is unlikely to be technically feasible

Nuclear magnetic resonance

^{13}C -NMR is not relevant for the substance; hexafluorosilicic acid refers to an equilibrium mixture of SiF_6^{2-} in an aqueous solution, therefore ^1H -NMR is also not relevant. ^{19}F -NMR is theoretically a relevant technique for the analysis of hexafluorosilicic acid, however no laboratory able to perform such an analysis has been identified.

^{19}F -NMR may be a relevant technique for the analysis of hexafluorosilicic acid, however no laboratory able to perform this analysis has been identified

Infra red spectroscopy

Hexafluorosilicic acid is expected to have a stretching frequency of $1000\text{-}800\text{ cm}^{-1}$ corresponding to the Si-F bond, in the region usually discarded as background contamination. IR spectroscopy is therefore not scientifically relevant for the identification of the substance.

IR spectroscopy is not a relevant technique for the analysis of hexafluorosilicic acid

Ion chromatography

Ion chromatography is theoretically relevant, however it may not be technically possible to analyse the substance using this technique due to the extremely corrosive nature of the substance; laboratories are therefore unlikely to be willing to perform such analyses.

Ion chromatography is a relevant technique for the analysis of hexafluorosilicic acid but may not be technically feasible

Data requirement 2.3.6

Annex VI, section 2.3.6 of the Regulation EC No 1907/2006 states that either high-pressure liquid chromatography (HPLC) or gas chromatography (GC) can be used for analytical purposes.

High Performance Liquid Chromatography

HPLC routinely uses UV detection and therefore cannot be used for the analysis of hexafluorosilicic acid as its presence cannot be demonstrated using UV detection.

HPLC is not a relevant technique for the analysis of hexafluorosilicic acid

Gas Chromatography

As the substance is of low molecular weight it will be technically difficult to perform gas chromatography.

GC is not a relevant technique for the analysis of hexafluorosilicic acid