【Technical Data】	YAMAGUCHI MICA CO., LTD.				
Title	Investigation of silica content in YMC Products 2[Aichi SR Powder X-ray Diffraction]				
Category	Safety	Written by	T.Murahashi	Date	Jul. 15th, 2025

<Abstract>
Using powder X-ray diffraction measurements at the Aichi SR beamline BL5S2, we obtained measurement results corresponding to the amount of crystalline silica contained in mica.
We will continue to confirm the accuracy and reproducibility of the measurements in order to establish a method for measuring the crystalline silica content in mica.

<Implementations>
In our previous 2019 report, the crystalline silica content of the mica was measured using the XRD method, and it was confirmed that the crystalline silica content of AB-25S was less than 0.5%.
In this study, powder X-ray diffraction measurements using synchrotron radiation were performed at Aichi SR.

- The measurements were carried out at the Aichi SR beamline BL5S2 using powder X-ray diffraction. The incident X-ray energy was set at 12.4 keV, the measurement time was 30 minutes, and all data used for analysis were converted to angles corresponding to Cu K_α radiation energy.
- As a blank (0% crystalline silica), a mica sheet (a product made by processing pure mica crystals into sheet form) was pulverized. A standard sample was prepared by mixing this blank with an arbitrary amount of crystalline silica powder.

<Results>

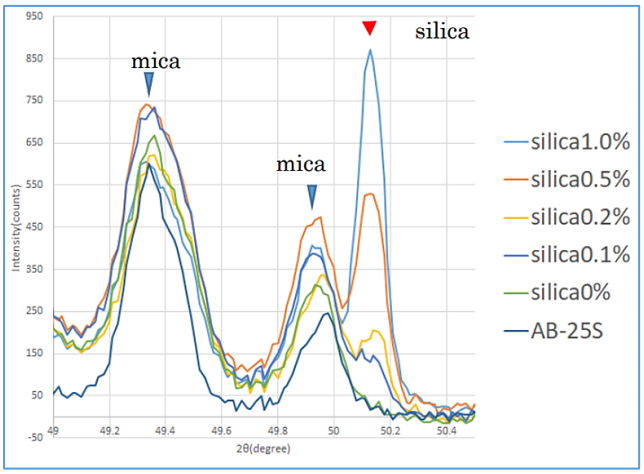

Fig.1 Results of powder X-ray diffraction measurements.

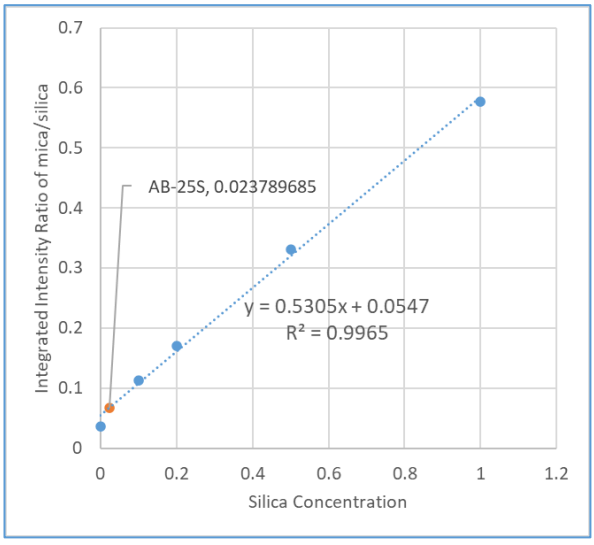

Fig.2 Correlation between the integrated intensity ratio of mica/silica and silica concentration.

From the XRD measurements, a silica peak dependent on the amount of silica added was confirmed at around 50.1 (Fig.1).
Next, the ratios of integrated intensities between mica and crystalline silica were calculated. As this result, a very high correlation was confirmed between the crystalline silica concentration in mica and the integrated intensity ratio (Fig.2). By applying the values of our mica product AB-25S to Fig. 2, the silica content was estimated to be a very low value of 0.02%.

<Conclusions>
Using powder X-ray diffraction measurements at the Aichi SR beamline BL5S2, the amount of crystalline silica contained in mica can be estimated. Based on this method, the silica content in our mica product was found to be less than 0.1%.
We will continue to confirm the accuracy and reproducibility of the measurements in order to establish a method for measuring the crystalline silica content in mica.