Proposal of a computational algorithm for calculating material ratio of surface texture

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Background

The material ratio curve (hereafter referred to as MRC) of ISO 13565-2 and ISO 4287 is widely used in industrial fields.

However,

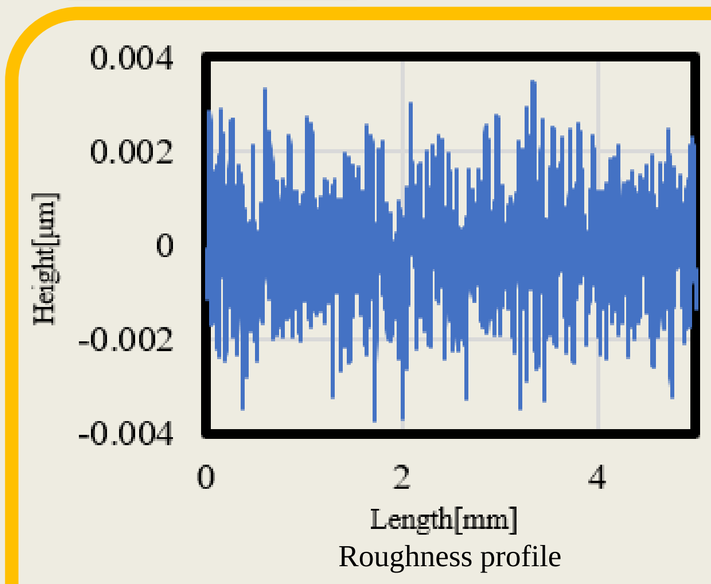
The computational algorithm of MRC proposed in ISO has a problem of long calculation time.

Purpose

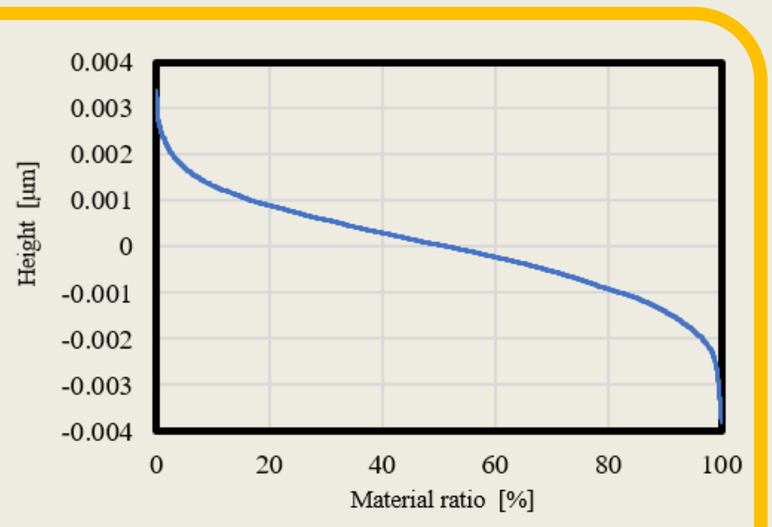
In this study, a sort method was proposed as a computational algorithm for time reduction.

This algorithm is expected the efficiency improvement of quality control.

Methods

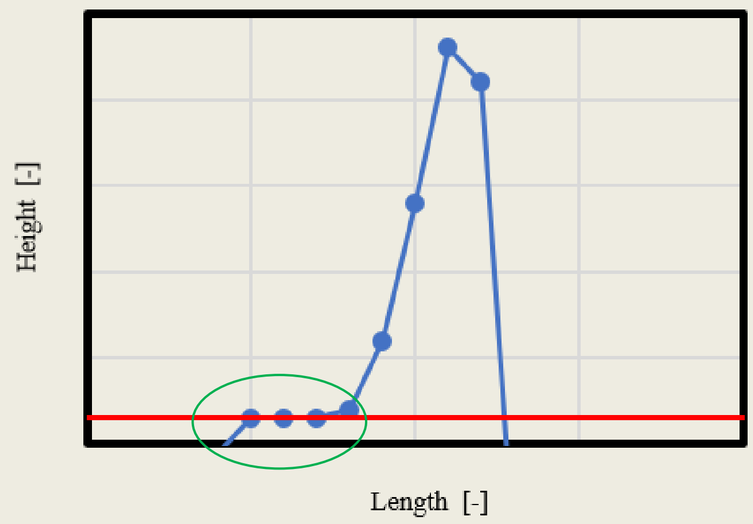


Roughness profile



MRC using the sort method.

The figure shows MRC with the data points of the roughness curve sorted by sort method.



We have developed an algorithm that does not cause problems in the derivation of MRC even if up to three points appear consecutively.

Conclusions

- The developed improved sort algorithm succeeded in the derivation of MRC without causing problems when the same value appearing continuously is up to three.
- The improved sort algorithm caused a problem in the derivation of MRC when four or more of the same values appear consecutively; therefore, we will develop a new sort algorithm to solve these problems in the future.

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