Feasibility Study on Evaluation Method for Plateau Surfaces by Conic Curve Fitting Using Information of Conjugate Diameter Ryo SAKAKIBARA¹ and Ichiro YOSHIDA²

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1. Background

Evaluation methods for a plateau surface in the International Organization for Standardization (ISO) and previous studies include a processing procedure for fitting a hyperbola to a material probability curve (MPC) of a plateau surface.

However, the ISO standard does not clearly state the rationale for limiting the fitting curve to a

In this study, we examine the validity of hyperbolic curve fitting and explore the fitting of a conic curve using information of conjugate diameter.

Approximations using a curve that is better suited to the MPC shape of a plateau surface can improve the evaluation quality of the surface.

Through this study, we aim to contribute to the development of the industry and improve the performance and environmental impact reduction of automobile engines and machine tools.



2. Experiments and Results

(1) Calculation results of the conjugate diameters.



3.Conclusion

 In this study, a method for conic curve fitting was developed using conjugate diameter information for the material probability curve (MPC) of the plateau surface. The results showed that the calculated curves fit the MPCs for G1 and G5.

Gaussian probability [σ]

Gaussian probability $[\sigma]$

(2) Experimental results of hyperbolic fitting.



- We propose this newly developed fitting method that uses conjugate diameter information.
- 3. In the future, we plan to apply the proposed method to MPCs of plateau surfaces with various shapes and to verify the validity of the proposed method.

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