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Hydraulic fluid power — Background, impact and use of ISO 11171:2020 on particle count and filter test data



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Foreword

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Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The 2020 revision of ISO 11171 was initiated due to depletion of supplies of the National Institute of Standards and Technology (NIST) Standard Reference Material® (SRM) 2806b, which is required for primary calibration of liquid automatic particle counters (APC) using ISO 11171:2016. The 2016 edition of ISO 11171 also provides an option for reporting particle size in units of either $\mu\text{m}(\text{c})$ or $\mu\text{m}(\text{b})$, which has resulted in confusion among users of particle count data. $\mu\text{m}(\text{b})$ sizes are about 10 % larger than the corresponding $\mu\text{m}(\text{c})$ sizes. Thus, $\mu\text{m}(\text{b})$ concentrations can be as much as 8 times (3 ISO Codes) lower, and $\mu\text{m}(\text{b})$ filter Beta Ratios can be an order of magnitude lower than the same numerical value reported in $\mu\text{m}(\text{c})$. This is problematic when attempting to conform with fluid cleanliness and filter performance specifications.

ISO 11171:2020 addresses these issues by specifying the historically consistent, traceable $\mu\text{m}(\text{c})$ as the sole acceptable means of reporting particle size. Unlike the 2016 edition, ISO 11171:2020 is not dependent upon a specific batch of SRM 2806, as NIST henceforth certifies the material as a consensus standard to minimize the potential for shifts in particle size with future batches. Additional refinements to ISO 11171 facilitate calibration at smaller and larger particle sizes.