Reference Material Certificate

ISSUED BY **STANHOPE-SETA Richardson Laboratory**

PRODUCTION DATE **2024-07-22** CERTIFICATE NUMBER **000173**

Certificate Issued By:

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Approved By: Duncan Black

Signature:

Name of material: AvCount Calibration Material "D"

Product code: SA1121-0 Batch number: 2407005002

Description of CRM: Certified Reference Material (CRM) consisting of polydisperse suspension of irregular shaped particles in a mineral hydraulic oil.
The test dust is NIST RM 8631x
The hydraulic oil conforms to specification Mil-PRF-5606.

Method of Certification: This material is a secondary working standard with a particle distribution traceable to NIST SRM 2806d and is manufactured in accordance with ISO 11171:2022 - Annex F.

Hazards: Refer to SDS for 'SA1121-0, AvCount Calibration Material D' prior to handling.

Mean Particle Distrbution

Particle Diameter (µm)	≥ 4	≥ 6	≥ 14	≥ 21	≥ 25	≥ 30
Particles / mL	6537	2909	218	58	29	3
Expanded Uncertainty (%)*	1.0	N/A	N/A	N/A	N/A	N/A
Test Uncertainty Ratio (TUR)	10	N/A	N/A	N/A	N/A	N/A

Intended use: CRM to be used as a secondary calibration suspension in accordance with ISO 11171:2022. This secondary calibration suspension is to be used to calibrate automatic particle counters. The following handling, preparation and calibration procedure must be followed.

* The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95 %.

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Instructions for handling and preparation of the CRM:	**1.** CRM must be in the original tightly closed bottle between 17-23 °C for 48 hours prior to use. **2.** The CRM must be conditioned prior to test as detailed below and in accordance with the method of test. **a.** Vigorously shake by hand for 60 seconds. **b.** Ultrasonically disperse contents of bottle for 60 seconds using an ultrasonic bath with a power rating of 3 kW/m^2 . **c.** Mechanically tumble the CRM end over end for 1 min at a rate of one complete turn a second. **d.** Ultrasonically degas the contents of the bottle for 20 seconds using an ultrasonic bath with a power rating of 3 kW/m^2. **3.** Use immediately after preparation. **4.** Using the CRM in a dusty atmosphere can increase particle counts. **5.** Once the container is opened it shall be used immediately and only once. Do not return removed aliquots to the bottle.
Calibration Procedure:	**1.** Follow the instructions in the Calibration section of the AvCount manual **2.** Calibration should only be carried out by technicians who have completed the AvCount Service Training Course. **3.** Verify the instrument as detailed in the Verification Section of the AvCount manual. **4.** The following documents form part of the instrument calibration and must be retained with the instrument. a. Verification test printout. b. Verification Material Certificate. c. This Reference Material Certificate. d. The Calibration table
Commutability:	Value is not commutible and the intended use section must be followed.
Level of homogeneity:	Homogeneity samples are selected by systematic sampling in accordance to ISO 11171:2022. It has been demonstrated that this CRM batch is homogenous from inter-bottle testing. Stability is guaranteed during the total shelf life provided its storage conforms to the following statements.
Expiry date:	Certificate is valid for 2 years from date of production. The certification is nullified if the material is damaged, contaminated, otherwise modified, or used in a manner for which it was not intended. If the material is being stored it must be between 15-25 °C and away from direct sunlight.