1. General Information

Even with state-of-the-art scanners, it is necessary to apply matting spray in several application cases:

a) *Transparent parts*

As we are dealing with optical technologies, light needs to be reflected off the surface back into the detector of the scanner. In case of a transparent surface, however, the light will go through the surface instead of being reflected by the same. In consequence, the scanner is not able to capture the surface structure.

b) Reflective parts

In case of reflective parts, such as a mirror, the light beams will be reflected in a focused way instead of in a diffused way. This means that the chance of a beam hitting the reflector of the scanner is greatly reduced and the scanner will only capture a fraction of the reflected light beams.

c) Deep Pocket

When the object to be scanned has deep pockets, the scanner receives a reflection from the walls of the pocket onto the bottom. This causes disturbance in the pattern of the light manifesting in the scan as “artefacts” or bad data.

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d) High quality and accuracy

When quality and accuracy are important, you might want to apply spray to remove as much as possible all the causes like colour differences, differences in reflection, texture, etc.

The use of spray creates a matt, white coat reducing reflection and other inhomogeneities and thus provides perfect scanning condition.

Spaying parts for reverse engineering and prototype parts using traditional permanent pigment spray has become a generally accepted practice. Spraying large volume of parts in production application, however, is problematic due to the pigment-contamination.

In general, matting sprays used in 3D metrology for antireflective coating can be classified into the following two product groups:

Permanent pigment sprays

- surface remains white from pigments after scan
- intensive cleaning required or disposal of scanned object
- pigment-contamination of laboratories, sensors, environments, scanners and users

Vanishing sprays

- coating evaporates automatically after scanning
- no cleaning after scanning required
- no pigment-contamination of laboratories, sensors, environments, scanners and users

2. Value proposition

AESUB® blue is a self-vanishing scanning spray developed by scanning experts. The spray evaporates within a few hours without leaving any residues, meaning that there is no need for cleaning after scanning. Unlike traditional sprays, AESUB® blue does not contain pigments and thus avoids pigment-contamination of sensitive areas, such as laboratories and production sites, equipment and users. You can therefore apply AESUB® blue directly on spot of scanning without any costly transport to avoid said pigment-contamination in sensitive areas. Overall, AESUB® blue greatly increases efficiency and productivity within the measuring processes.

AESUB® blue characteristics are:

- residue-free sublimation
- layer thickness of ~8-15 µm
- consistent and homogenous coating
- optimized material compatibility

AESUB® blue forms a thin layer of white, homogeneous coating resulting in ideal conditions for optical scanning. AESUB® blue contains active substances, propellant and solvent and has

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been optimized with regards to material compatibility. Independent analyses certify that AESUB® blue sublimates without leaving any residues on the surface of the scanned object. See the safety data sheet (https://aesub.com/download) for further information.

3. Areas of application

AESUB® blue facilitates and enables optical digitization in a wide variety of industrial sectors and range of applications:

- automotive
- engineering
- aerospace
- energy sector
- medical sector
- architecture
- plastic design / art
- digital archiving
- reverse engineering
- optical metrology
- research and development
- process monitoring
- inlinescanning
- measurement services
- surface inspection

4. Material compatibility

Material compatibility for specific applications cannot guaranteed. Users should check specific material compatibility before use. AESUB® blue contains solvents. See the safety data sheet (https://aesub.com/download) for further information.

5. Layer thickness

The layer thickness of AESUB® blue ranges between 5 µm and 15 µm depending on the user-specific application.

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6. Surface coating

AESUB® blue forms a consistent and very homogeneous coating on the surface of the object to be scanned. The figure below provides a surface comparison between AESUB® blue (left) and a vanishing spray previously used in measurement technology (right). The measurement shows a 3D scan of a glass sphere with a diameter of approx. 130 mm.

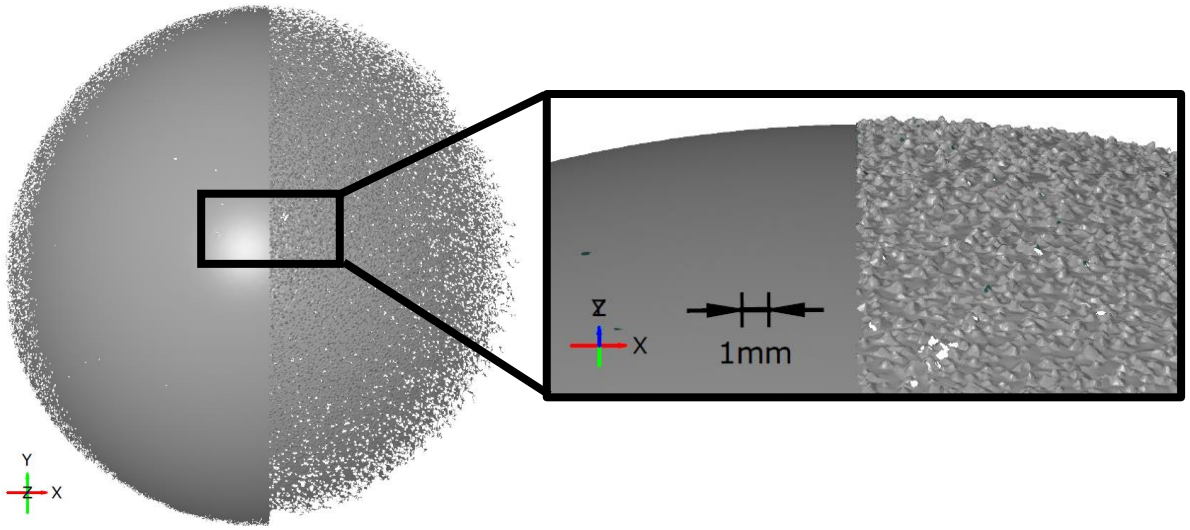

Figure 1: Surface comparison AESUB® blue vs. CCD

7. Application

Apply AESUB® blue from 15-20 cm away. Spray over the entire surface that you will be scanning. Gently push down the spray button and move the can across the area using even, back and forth strokes. Move at a consistent pace without pausing at one point to achieve an even coat. Once the coat is applied, you can scan the object in usual manner. Unlike traditional pigment spray, the applied coat of AESUB blue sublimes after scanning and thus eliminates the need for complex cleaning after use.

AESUB® blue is applied "wet". The solvent vanishes within a few seconds while the active substance remains as coat on the surface. The degree of whiteness of the coat still increases during the evaporation process of the solvent, which, however, does not affect scanning directly after application of AESUB® blue.

Increase spraying distance or pace in case of drop formation or when coat remains "wet" for too long. Note that multiple spraying increases layer thickness. The ideal ambient temperature is 21°C/66.2°F.

Do not spray on an open flame or other ignition. Use only outdoors or in well-ventilated areas. Protect from sunlight. Do not use on products intended for contact with food - exclude food

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contact. Also read carefully the safety instructions in the associated safety data sheet (https://aesub.com/download).

8. Sublimation of AESUB® blue

The sublimation time of AESUB® blue is less than 4 hours and depends largely on the following five factors:

a) Temperature

- high ambient temperatures shortens sublimation time
- low ambient temperatures extends sublimation time

b) Airflow

- ventilation shortens sublimation time

c) Surface structure

- uneven surface structures extend sublimation time
- even surface structures shorten sublimation time
- sublimation starts at exposed areas, such as outer corners or edges

d) Material

- sublimation time also depends on the material to which AESUB® blue is applied: Sublimation starts earlier on plastics and later an metals

e) Layer thickness

- Higher layer thickness extends sublimation time

Empirical tests show that objects treated with AESUB® blue remain scannable for approximately 1 hour. Scan-time can be easily extended by re-applying AESUB® blue at individual contours when sublimation commences and by spraying several layers. Increase temperature and / or air ventilation in case you want to accelerate the sublimation process.

9. Residue analysis

Independent experts examined AESUB® blue for potential residues and came to the following conclusion:

AESUB® blue provides neither recognizable nor measurable residues and can thus be regarded as residue-fee

Please find the entire report at https://aesub.com/download and note that we do not guarantee the complete sublimation of AESUB® blue.

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10. Further Information

a) Storage

- optimal storage temperature ranges between 18°C and 21°C
- shelf life of three years
- store at dry conditions with no direct sunlight

b) Risk information center

- If you feel unwell after use please call the 24-hours emergency number +49 (0) 761/192 40 for assistance.

You will find further information our website (https://aesub.com) and in particular in the safety data sheet (https://aesub.com/download).

Disclaimer

The above information was prepared carefully. We, however, cannot be held liable for any incorrect or incomplete information.

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