



AESUB blue

- + vanishing scanning spray
- + free of pigments - spray dust does not damage the sensitive technical scan equipment
- + time and cost savings - no post-cleaning necessary; the spray sublimates and evaporates after scanning process
- + thin, homogenous and dry to handle coating
- + reference points stick on the coating
- + excellent scannability
- + developed and approved by scanning experts

SPRAY | SCAN | DONE

AESUB
STATE OF THE ART SCANNINGSpray

100% scannable
no cleaning

Spray can be applied on any surface (reflecting, transparent, etc.) in order to enable scanability.
Zum Aufsprühen auf jegliche Oberflächen, z.B. spiegelnde, transparente, etc., um Scannbarkeit zu ermöglichen.

Made in Germany

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 projected on and/or 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.

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.

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

Semi-permanent sprays

- surface remains white after scan
- cleaning required or disposal of scanned object

Vanishing sprays

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

1. AESUB blue - value proposition

AESUB blue is a self-vanishing scanning spray developed by scanning experts. The spray evaporates within a few hours, 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 digitizing processes.

AESUB blue characteristics are:

- Vanishing
- Time and cost savings – no post-cleaning necessary
- layer thickness of ~8-15 µm
- free of pigments – spray dust does not damage the sensitive technical scan equipment
- consistent and homogenous and dry to the touch coating
- reference points stick on the coating
- optimized material compatibility
- excellent scannability

AESUB blue forms a thin layer of white, homogeneous coating resulting in ideal conditions for optical scanning. AESUB blue contains agent, propellant and solvent and has been optimized with regards to material compatibility. Independent analysis certifies that AESUB blue sublimates without leaving any residues on the surface of the scanned object. See the residue analysis and the safety data sheet (<https://aesub.com/download>) in multiple languages for further information.

2. Areas of application

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

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

3. Material compatibility

Material compatibility for specific applications cannot be 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.

4. Layer thickness

The layer thickness of AESUB blue ranges between 8 µm and 15 µm depending on the user-specific application.

5. 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.

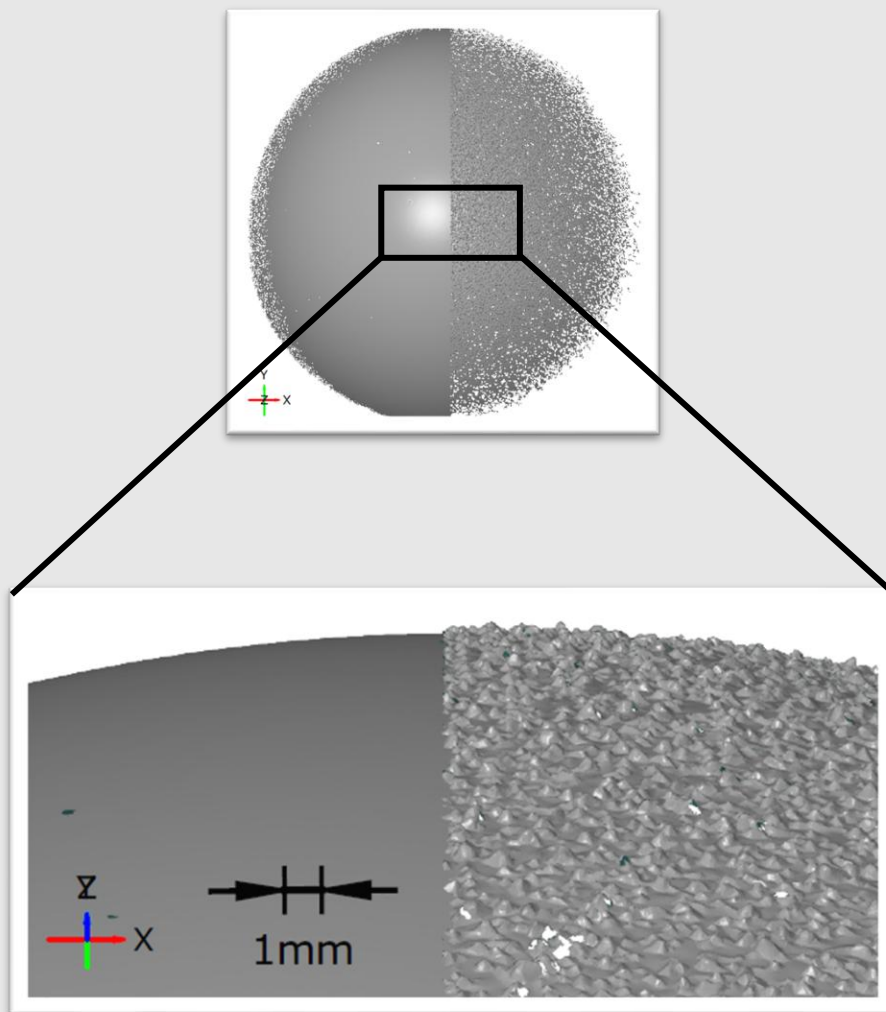


figure: Surface comparison AESUB blue and Cyclododecane

6. Application

SPRAY



Apply AESUB blue from 15-20 cm away. Gently push down the spray button and move the can across the area using even, back and forth strokes. Move at a consistent pace to achieve an even coating. Spray over the entire surface that you will be scanning.

AESUB blue is applied "wet". The solvent vanishes within a few seconds while the coating remains on the surface. The degree of whiteness of the coating still increases for a couple of seconds.

Increase spraying distance or pace in case of drop formation or when coating remains "wet" for too long. Note that multiple spraying increases layer thickness.

When applying AESUB Blue, always spray it in a thin and homogeneous layer. Do not over apply or spray excessively in one spot. AESUB Blue contains solvents in addition to a propellant (Propane) and is sprayed with approximately 4bar (58 psi) pressure.

If you spray an excessive amount concentrated on one spot, it might dissolve the surface and allow AESUB Blue and it's solvents to enter "into" the material's surface.

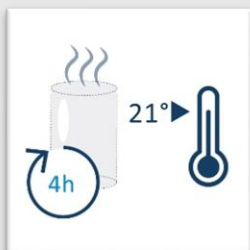
Normal applications of AESUB Blue will gradually evaporate once it is in contact with air. The recommended ambient temperature is 21°C/69.8°F. But when applied too thickly and/or if you press or rub it into the surface, it can't evaporate well and the entire vanishing process takes significantly longer and can discolour the surface. In the instance where it has been over sprayed in one spot, you can try to softly brush it off with a clean rag or cloth, but we recommend using warm air (a hair dryer for example) to accelerate the vanishing process. Always be careful when applying AESUB to older items and items with historic coatings, such as corrosion protection on bronze statues or old rubber compounds. AESUB might evaporate very slowly in those situations (taking multiple weeks and more). Without exception, always test the material compatibility before using AESUB.

SCAN



Scan can be started as soon as you have a stable & white coating.
 Scan object in usual manner.

DONE



The applied coating of AESUB blue sublimates and thus eliminates the need for complex cleaning after use.

7. Vanishing / Sublimation

The sublimation time of AESUB blue depends on the following factors:

a) **Temperature**

- high ambient temperatures shorten sublimation time
- low ambient temperatures extend sublimation time, even above 4 hrs possible

b) **Airflow**

- ventilation shortens sublimation time

c) **Surface structure**

- features such as pockets, holes or grooves within the surface structure extend sublimation time
- even surface structures shorten sublimation time
- sublimation starts at exposed areas, such as outer corners or edges

d) **Material**

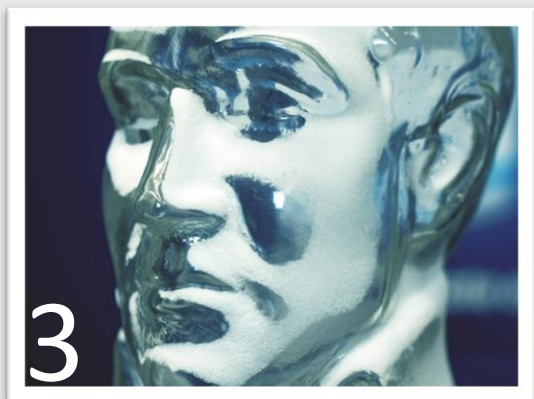
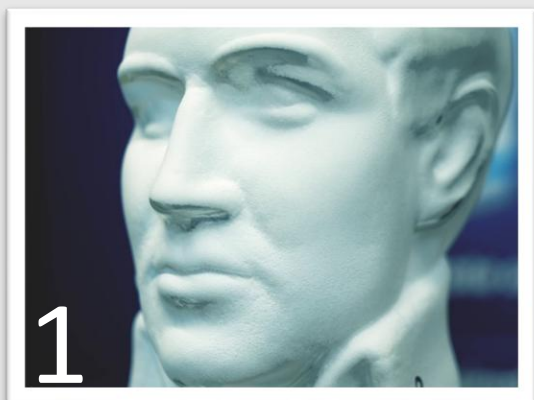
- sublimation time also depends on the material to which AESUB blue is applied to

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.

Sublimation process:

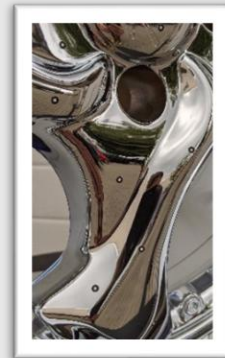
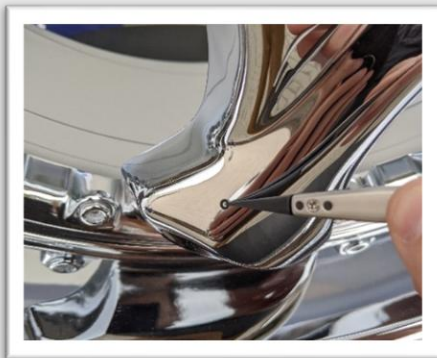


8. Scanning of big objects

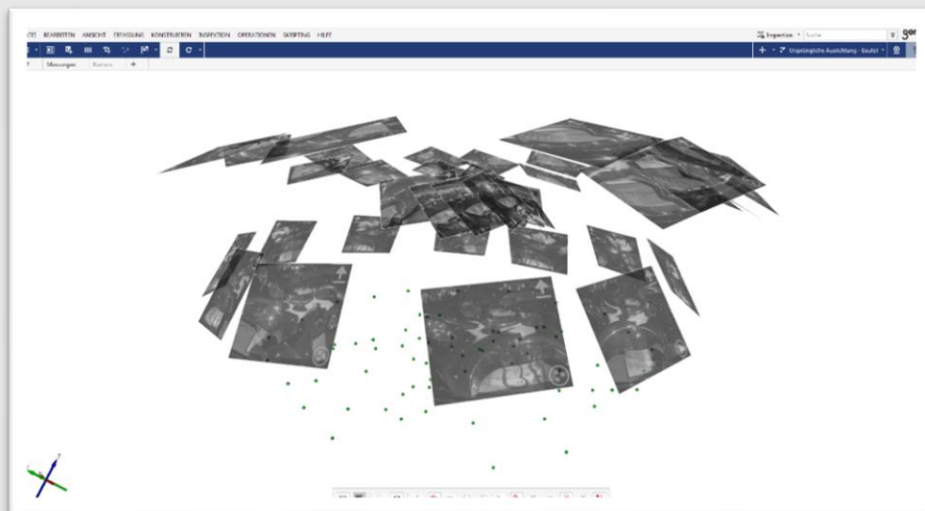
If the size of the measurement object exceeds the measurement volume of the sensor many times, it is advisable to split the digitization into several sections. This procedure prevents premature sublimation in areas that have not yet been digitized and thus prevents re-spraying.

Method A:

- Stick the reference points onto the measuring object before spraying



- Perform a full photogrammetry



- Apply AESUB blue onto the first section



- Remove the coverage from the reference points



- Perform the first scan



- Proceed accordingly with all other sections until the entire object is digitized



Method B:

- Apply AESUB blue onto the first section and stick the reference points for this section on the spray layer



- Perform the first scan



Proceed accordingly with all other sections until the entire object is digitized. Clean sprayed-over points if necessary, in order to achieve a problem-free connection of the sections.

9. Residue analysis

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

*“The proven and quantified sum of all semi-volatile compounds and the identity of the individual compounds were within the expected range. Based on the application of 1 - 2mg/sq.cm when applied according to the printed description, approximately 10ng substance/sq.cm remain on the sprayed object. Such a residue is neither optically recognizable, nor can it be detected with surface metrology. Therefore, the investigated scanning spray **"AESUB blue"** can be characterized as residue-free in the sense of the used analytical methods.”*

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

10. Further information

a) Storage

- optimal storage temperature ranges between 18°C and 21°C (64.4°F and 69.8°F)
- shelf life of 5 years
- store at dry conditions with no direct sunlight

b) Risk information centre

- If you feel unwell after use, please call the 24-hours emergency number +49 (0) 761/192 40 for assistance.
- Do not spray on an open flame or other ignition. Use ventilated areas. Protect from sunlight. Do not use on products intended for contact with food - exclude food contact. Also read carefully the safety instructions in the associated safety data sheet (<https://aesub.com/download>).

You will find further information on 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.