

# Methods for Determining Cleanliness

## Water-Break Test:

Water will sheet off the part rather than bead

- Take a cleaned and dried part and set it in a vertical position.
- Use a spray bottle containing distilled water.
- Spray the part two to three times from at least 6" away.
- If the part is clean and free of oily residue, the water spray should sheet off.
- If some oily residue remains, the water will tend to bead on the part.

## UV Blacklight:

Can you see fluorescence on the parts when viewed using a blacklight?

- Take the cleaned and dried part and the blacklight into a dark area.
- In the dark area, shine the blacklight onto the part.
- If the part is free of soils, it should not highlight any fluorescence
- If some soil remains, you should see some fluorescence where the soil is present.
- You should check a dirty part for fluorescence to ensure that the soil emits a fluorescence when viewed under a blacklight.

## Atomizer / Mist

### Procedure

- Water with a dye is sprayed on metal surface
- A pattern of droplets develops over soiled areas
- Metal sample is placed in a viewing box with a 100 square
- Number of clean squares are counted and averaged over five panels
- Resulting average is the cleanliness index number

### Advantages



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# Methods for Determining Cleanliness

- Easy test to perform
- Results can be expressed quantitatively

## Limitations

- Many of the same limitations as the water break test

## Clean-wipe test:

Will a white cloth remain white after being rubbed on the cleaned part?

- Take the cleaned and dried part and wipe it with a portion of a clean, white lint-free cloth.
- If the cloth remains clean, the part is sufficiently clean.
- If the cloth becomes soiled or discolored, the part still contains soil residue.

## Tape Test

### Procedure

- Place Scotch brand invisible tape on sample surface
- Pull off tape and place on a plain sheet of white paper
- Place an unused tape next to the soiled tape to use as a standard
- Read both tapes using a color meter and compare

### Advantages

- Easy to perform
- Results can be expressed quantitatively

### Limitations

- Test area is limited
- Only measures soils picked up by the tape

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## Gravimetric testing:

Will tell how much contaminant is left on the part

- Involves filtering a contaminated sample through a control filter and a sample filter.
- Place two pre weighed filters, one on top of the other in a single filter holder.
- Sample contaminants will be retained entirely by the top test filter.
- Both filters are subjected to identical alterations in tare weight as a result of moisture.
- Any change in weight of the bottom ("control") filter is then applied as a correction to the weight of contaminant.
- Results accurate to 0.1 mg are routinely attained using this method.

## Contact Angle

### Procedure

- Water drop is placed on metal surface
- Contact angle between drop and metal surface is measured using a goniometer.

### Advantages

- Easy test to perform
- Results can be expressed quantitatively

### Limitations

- Requires the purchase of a goniometer
- Area tested is limited
- Will not detect rust or other finely divided metal particles

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These are our suggestions:

- Testing procedures should fit the application standards
- Test is no guarantee for quality



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