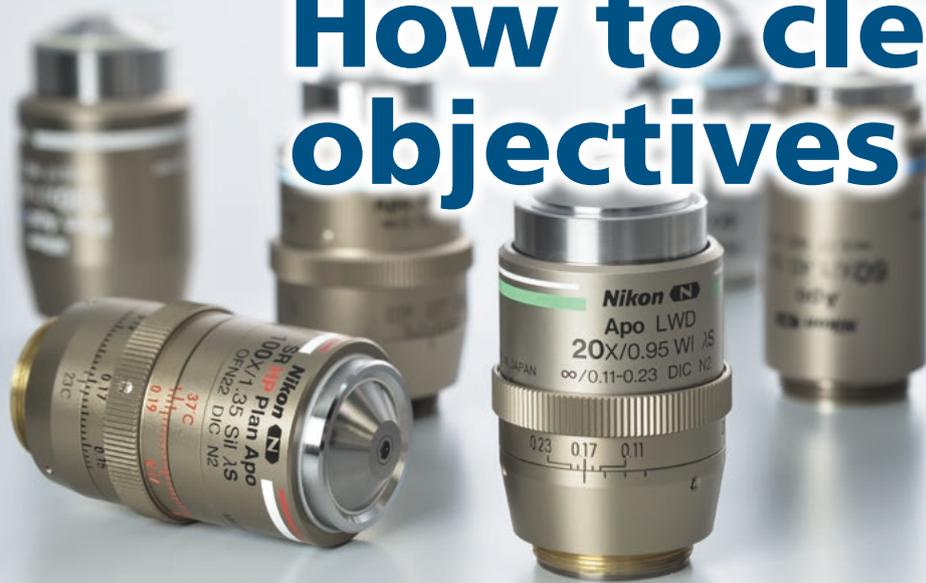




How to clean objectives



Objective lenses are arguably the most important element in a microscope. Dust, fingerprints, old immersion medium and grease on the lens can severely impact image quality. To ensure the maximum performance of your microscope system, regular cleaning of objectives is recommended.

Cleaning tools and reagents

- **Blower:** for blowing away dust
- **Lens cleaning brush** or soft brush: for removing dust that remains after using the blower
- **Lens cleaning paper** (Dusper®, made of rayon, is recommended), soft cotton cloth, or gauze: for wiping the lens after soaking in absolute alcohol or petroleum benzine
- **Absolute ethanol:** for wiping off soluble smudges or grease (a push dispenser is convenient)
- **Petroleum benzine:** for wiping off immersion oil
- **Distilled water or ultrapure water:** for removing dust or culture medium that remains after cleaning with absolute ethanol/petroleum benzine
- **Magnifying lens:** for checking on the progress of cleaning
- **Gloves:** for protecting the skin from solvents and to prevent fingerprints on the lens
- **Cleaning stick:** to be used wrapped in cleaning paper as shown below. A stick of up to 5mm diameter made of willow wood is recommended.



① Lens cleaning paper ② Absolute ethanol
③ Cleaning brush ④ Blower
⑤ Cleaning stick ⑥ Push dispenser

* To prevent additional dust/dirt from attaching to the lens during the cleaning procedure, we recommend using a clean work surface.

Preparing and sharpening the cleaning sticks

Sharpen the tips of the sticks before wrapping the ends with lens cleaning paper. Whittle one end to make a wide tip (up to 3.5 – 4 mm) and the other end into a narrow tip (up to 1 – 1.5 mm).

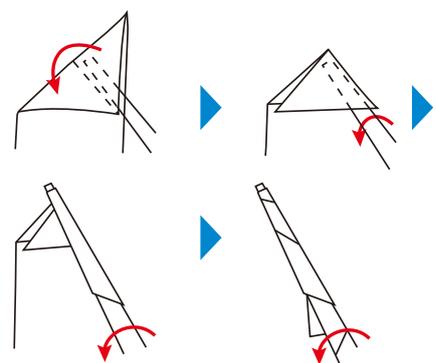


Left: wider tip,
right: narrow tip



Single-use cotton swabs can be used in place of lens cleaning paper. The round type is suitable for cleaning large lenses and the cone type is suitable for cleaning small lenses or high-magnification objectives.

How to wrap the lens cleaning paper around a cleaning stick



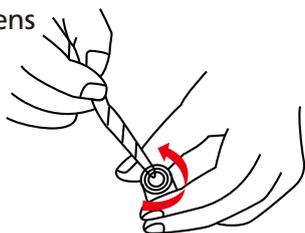
Cleaning dry objectives

- ① Removal of dust
 - Blow away dust using a blower.
 - Remove the remaining dust using a soft brush or cotton cloth.
- ② Removal of fingerprints or grease
 - Wipe with lens cleaning paper (or a soft cotton cloth) soaked in absolute ethanol.

How to wipe a lens

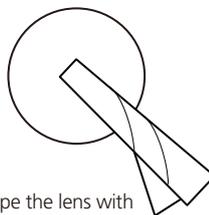


Wipe the lens in a circular motion from center to edge.

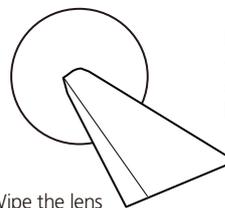


You can put an objective on a desk and rotate the objective while maintaining slight pressure on the lens with a stick wrapped in lens cleaning paper.

How to use the lens cleaning paper



Wipe the lens with lens cleaning paper wrapped around the tip of a cleaning stick.



Wipe the lens using a corner of folded lens cleaning paper.

*** Wiping tip**
Do not wipe the lens with a section of the lens cleaning paper that has been previously used.

Cleaning oil immersion objectives

- ① Wipe off the oil completely using lens cleaning paper soaked in petroleum benzine*.
- ② Perform final cleaning with lens cleaning paper soaked in absolute ethanol as described in step ② of "cleaning dry objectives".

Note: The same applies to **silicone oil immersion objectives**.

* If you cannot obtain benzine, absolute ethanol can also be used. However, as the detergency of absolute ethanol is weak, multiple wiping (three to four times) with new lens cleaning paper soaked in ethanol may be required.

Cleaning water immersion objectives

- ① After the immersion water evaporates, there is a chance that dust in the water will remain on the lens and become resistant to removal with absolute ethanol. To prevent this problem, objectives should be cleaned after each use, before the water evaporates.
- ② If any dust remains, wipe the lens gently with lens cleaning paper soaked in distilled or ultrapure water.
- ③ Perform final cleaning with lens cleaning paper soaked in absolute ethanol as described in step ② of "cleaning dry objectives".

Note: The same applies to **glycerin immersion objectives**.

CAUTION

- Petroleum benzine and absolute ethanol are highly combustible. Observe due caution when handling and storing. Keep away from heat or sources of ignition.
- Wear rubber finger tips or gloves to prevent petroleum benzine or absolute ethanol from coming into contact with the skin.
- Use petroleum benzine only for removing immersion oil.
- Do not use petroleum benzine or absolute ethanol for resin, coated, and printed parts of objectives. Otherwise, discoloration or erasure of the printed characters may occur.
- Follow manufacturer's directions when handling petroleum benzine or absolute ethanol.



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