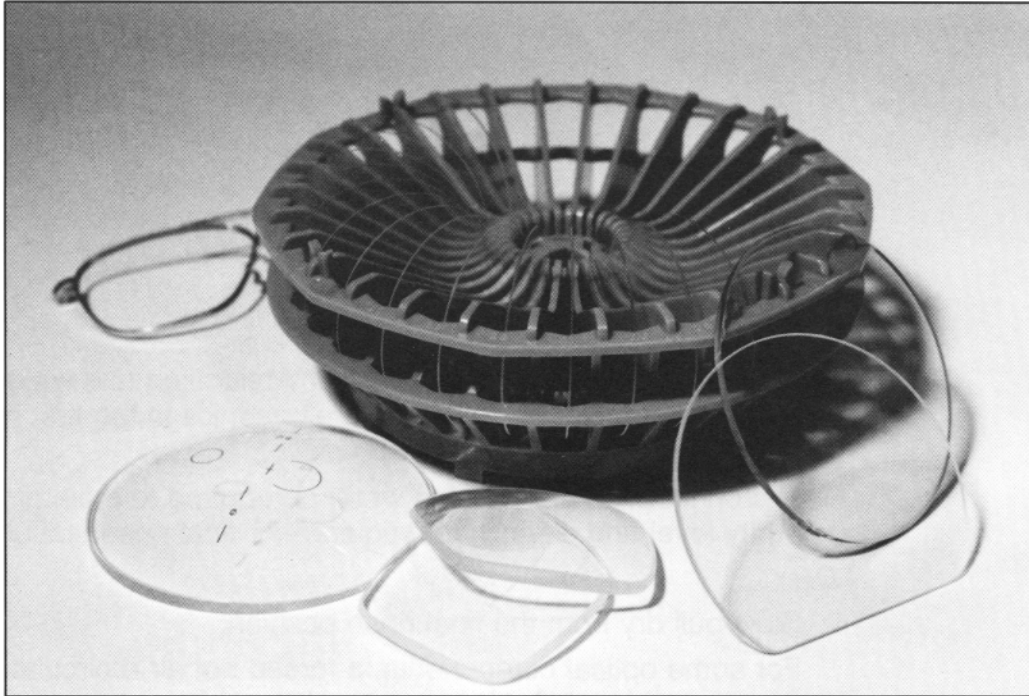


Optical Lens Cleaning



Precision cleaning of optical surfaces is an essential and critical step in the production of high-quality optical components. Any evidence of particulate matter, film, or water spotting will cause irregularities on the optical surface, leading to improper adhesion of thin-film coatings and rejection of the finished product.

Stacking wax and mounting pitch, cerium oxide residue, lacquers, glass fines, grinding coolant, fingerprints, and airborne dust and dirt particles can all accumulate on the optical surface at various stages, necessitating techniques throughout the manufacturing process to safely remove the contamination.

Branson has developed and proven a specific aqueous cleaning process to produce

glass lenses cleaned to the critical levels required for subsequent coating operations.

Aqueous chemistries for optics are inorganically-based and either emulsify, disperse, or solvate soils in liquid. These chemistries are concentrated formulas that are environmentally acceptable replacements for cleaning optical lenses. The addition of ultrasonics provides increased cleaning efficiency to remove heavy or tenacious organic soils.

The critical factors in removing these soils are ultrasonics and the temperature of the cleaning solution. These two combined effectively soften and lift soils from the lens surface.

Cleaning Optical Lenses

Challenge: Remove wax, pitch, lacquers, and other residue from optical lenses.

Previous Cleaning Method: Solvent/vapor cleaning with 1,1,1 trichloroethane.

Recommended Process:

CLEAN:
Optical lenses are cleaned in a heated 40 kHz ultrasonic tank containing an alkaline solution at 180° F.
Heavily soiled lenses will benefit from a pre-clean ultrasonic cycle using the same chemistry. When emulsified wax and pitch levels are high, filtration is recommended to extend the life of the chemistry.

RINSE:
Hot water spray rinse at 150° F. Hot deionized (DI) water two-stage cascade rinse with 40 kHz ultrasonics in the first rinse station. Incoming water 150° F.

Micron filtration of incoming water is required to maintain the purity level and cleanliness required for final rinse stations.

DRY:
Slow-pull dry from the final rinse position.
For some optical components, a forced hot air recirculating dryer may be required as a secondary drying method. HEPA filtration is recommended to maintain cleanliness of the parts.

Equipment: A Branson modular ultrasonic aqueous cleaning system with a dryer. An automated transport system will insure repeatable and consistent cleaning.

Benefits:

- Aqueous cleaning produces cleaner parts than solvent cleaning.
- No need to change wax, pitch, or lacquer specifications.
- Eliminates the need to use ozone-depleting solvents in cleaning and/or drying operations.
- Optional closed-loop DI water reclamation can eliminate discharge.

For application assistance, contact your nearest Branson office or Branson's Cleaning Applications Laboratory at (203) 796-0522.



BRANSON ULTRASONICS CORPORATION

41 Eagle Road, Danbury, CT 06813-1961

(203) 796-0400 • FAX (203) 796-9813