POPE 12"
WIPE-FILM
MOLECULAR STILL

OFFERS BIG
ADVANTAGES IN
SEPARATIONS OF HEAT
SENSITIVE MATERIALS

- Lowest degradation and highest yield — exposure to vacuum lowered temperature is brief (seconds).
- Increased capacity ideal for large pilot plants — and small to moderate scale production plants.
- Joins standard still line with 10.5 sq. ft. of evaporative surface and feed rates up to 55 gallons/hour.

New Pope Molecular Wiped-Film Still System includes vapor trap, rotary valve and diffusion pumps, feed and discharge gear pumps, optional feed vessel with mixer, optional residue cooler, and optional control panel. (2" glass molecular still shown between discharge pumps for size comparison.)

With this versatile 12" diameter Wiped-Film Still, Pope has greatly increased the range of applications for which this gentle thermal separation process is ideally suited. With 10.5 sq. ft. heated surface area, this larger capacity unit offers processing feed rates up to 500 lb/hr, or roughly 27 drums per day.

All Pope Wiped-Film Stills separate volatile from less volatile components with a gentle process utilizing the thin-film wiping action of feed liquid through a heated cylindrical vacuum chamber. The result is an efficient thermal separation technique with minimum product decomposition and maximum product quality.

The Pope Wiped-Film Still has proven superior to conventional column stills, falling film stilles, rotary evaporators, and other separation equipment. Pope design features optimize the important performance advantages inherent with this technique. The brief (seconds) exposure of feed liquid to heated walls is due in part to the slotted wiper design which forces the liquid downward with strict control of residence time, film thickness, and flow characteristics. (This avoids the lack of control and contaminating liquid “flinging” inherent in roller-type systems.) Helping produce high vacuum capability are high quality components like the mechanical rotary seal, state-of-the-art fittings and materials, and total quality control during all phases of fabrication.

In addition to its superior processing efficiency, extra production capacity, and increased versatility, the new 12" Pope Wiped-Film Still offers limitless scale-up potential. This is a continuous (not batch) process with operational characteristics identical throughout the size range of equipment.

Keys to the superiority of this high vacuum process include short residence time of the feed liquid, a significantly lowered temperature due to high vacuum capability, and optimal efficiency in mixing, and mass and heat transfer.

[Image]
POPE 12" WIPEDE-FILM MOLECULAR STILL DELIVERS HIGH QUALITY PRODUCT

UNEXCELLED FOR MOLECULAR DISTILLATION, CONCENTRATION, EVAPORATION, AND STRIPPING

PROVEN IN WIDE RANGE OF APPLICATIONS — FROM BENCH-TOP OR PILOT MODELS TO COMPLEX MULTI-STAGE PRODUCTION SYSTEMS

Adaptable To Many Processing Requirements.

Although all Pope Wiped-Film Stills utilize the proven thin film-wiped process, the overall design can vary greatly between systems. Pope turnkey plants generally are multistage and include molecular still(s), degassers or pre-evaporator units, vacuum pumps, feed and discharge pumps, vapor traps, instrumentation, plus other equipment essential to the system. A typical variation reconfigures the molecular still with internal condenser to a wiped-film evaporator (WFE) with external condenser for high percentage solvent removal. Another option substitutes a packed column still for the external condenser, providing continuous multi-plate fractionation for heat sensitive materials.

Proven In Many Applications Worldwide.

- Pharmaceutical, Biomedical Concentration
- Polymer Devolatilization
- Molecular Distillations Of Esters, Fatty Acids, Mono, Di, Triglycerides
- Residue Removal/Decolorization
- Vitamin, Essential Oil Isolation
- Wax Fractionation
- Oil Deodorization
- PCB, Insecticide Removal
- Water Removal - ppm Level
- Food, Flavor Purification
- Solvent Recovery

A sampling of Pope Wiped-Film Still customers includes: ADM, Air Products, BASF, Ciba Geigy, Conoco, Dow, Du Pont, Glaxo, Merck, SM, Nabisco, P&G, Union Carbide. Extensive global customer list is available on request.

Applications Assistance Addresses Your Needs.

Whatever your requirements might be, the engineering professionals at Pope Scientific can design the Wiped-Film Still system best suited for optimum results. Feasibility studies can be performed before the system is specified and a complete estimate of costs is provided.

Basic process shown in schematic. Feed liquid is admitted into still under vacuum, immediately spread into a very thin film and forced quickly down the evaporation surface. Heated walls (orange) and high vacuum (yellow) drive the more volatile components (distillate) to the closely positioned internal condenser as the less volatile components (residue) continue down the cylinder. The resulting fractions, thus separated, exit through individual discharge outlets.

Depending on application, the desired product is either the distillate or the residue fraction. Condensable low MW compounds collect in cold trap upstream of vacuum system. For high solvent loads, an optional external condenser may be installed immediately downstream of still. (With external condenser incorporated, the internal condenser may be removed to provide a typical “WFE” or Wiped-Film Evaporator configuration.)

SPECIFICATIONS: 12” WIPEDE-FILM MOLECULAR STILL

Critical Dimensions
ID: 12"/2400
Heated Surface Area: 10.5 ft²
Internal Condenser Surface Area: 27 ft²

Typical Feed Rates
High Molecular Weight Distillation: 30-200 lb/hr (14-90 kg/hr)
Low Molecular Weight Distillation (or Evaporation): 50-500 lb/hr (23-230 kg/hr) or greater

Vacuum Range
Temperature Range
Vacuum: Ambient to better than 1 x 10⁻³ torr
Vacuum: 30 - 400°C

Materials Of Construction
Drive: 316L ss (Hospital, others available)
Body, Internal Condenser: 316L ss (glass, Hastelloy, others available)
Tubing (Flex, others available)

Miscellaneous
Rotary Seal: Case type 8 single mechanical, oil lubricated
Finish Of Wiped Surface: 16 micrinh ("pharmaceutical grade")
Motor: Variable speed DC TENV (explosion-proof optional)

Basic System Dimensions
6 ft. x 6 ft. x 14 ft. high (180 x 180 x 430 cm) Footprint may be larger for particular applications. Height stated for maintenance clearance.