

## TRICHEM™ CHEMICAL DELIVERY SYSTEM

The TriChem™ Chemical delivery system supports the supply of both TEOS and Dopants/Precursors in a single system with up to four (4) independently controlled/maintained outputs. Our unique design utilizes a fixed TEOS reservoir which feeds the outlets and a replacement source tank that refills the fixed reservoir. This allows the system to operate continually without the need to requalify the delivery system when new chemical is added.

### ADVANTAGES:

- Supplies Three (3) Chemicals to up to Four (4) Tools/Chambers with Independent Operation & Maintenance
- Continuous TEOS/Primary Chemical Supply eliminates Process Requalification after Tank Changes
- Compatible with Multiple Tool Types
- Compatible with Multiple Source Containers

### DESIGN & OPERATION:

#### **TEOS/Primary Chemical:**

- 5 gallon source tank feeds 3 gallon fixed tank.
- 3 gallon fixed tank automatically refills to maintain 45% level.
- Source tank exchange does not affect chemical delivery to host tools/chambers. Manual valve control for tank exchanges.

#### **Dopants:**

- Supports 2 Dopant source containers up to 2 gallon
- No fixed tanks. Dopant source tanks are changed when the process is idle. Manual valve control for tank exchange

#### **Level Monitoring & Control:**

- Discrete controller monitors fixed tank levels and automatically refills tank as needed
- Scale monitors and displays source tank weight
- Dopant container levels monitored by level sensor interface or scales (for 1 gal and larger tanks)

#### **Chemical Distribution:**

- Distribution manifolds have dedicated chemical and inert gas purge valves
- Each branch operated independently from the others.
- Each outlet can be fitted with an optional degas module.

#### **Tool & Facility I/O:**

- Controller has DI/DO port for each outlet. DI tool permissive contact signal controls chemical supply from System. DO signals include chemical levels and general system status fault.

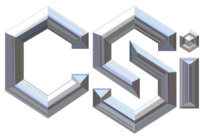


Fixed Tank & Outlet Detail



Distribution & Degas Module Detail

**Since 2000, Critical Systems, Inc. (CSI) has been supporting the breakthrough technologies of our customers with practical, cost effective solutions that “surround the process tool”.**



CONFIGURATION OPTIONS SPECIFIED AT TIME OF ORDER:

- **Undoped TEOS:** 2-outlet (Standard), 4-outlet (Optional). Continuous TEOS dispensing.
- **Doped TEOS:** 2-outlet (Standard), 4-outlet (Optional). Continuous TEOS dispensing. 5-gal TEOS Source (User Supplied). Two source Dopant containers 1.2-liter to 2-gallon (User Supplied). Dopants are not continuously delivered.
- **Degas Module Option:** Each outlet is configurable with a degas module (Added Cost Option)
- Dopant Level Monitoring:
  - Direct interface to float switch level sensors that close on decreasing level.
  - Direct interface to Air Products-Schumacher Type "SSN" Containers with quartz optical level sensor probes (Added Cost Option)
  - Scales (Added Cost Option. Not suitable for containers less than 1 gallon volume.)

**Source Tanks & Ampoules:** Available upon request at additional cost.

SPECIFICATIONS:

**Mechanical**

- Dimensions H x W x D, in. (cm): 78" (198) x 30" (76) x 18" (46)
- Clearances, in. (cm): Front 48" (122), Sides 4" (10), Top 24 (61)
- Spill Containment Volume: 11 gal (41.6 liters)

**Utility Requirements**

- Electrical: 100-240 VAC, 50/60 Hz, 750mA max.
- Enclosure Exhaust: 85 CFM, -0.03 in. H<sub>2</sub>O duct static pressure, (6" duct)
- Process Helium: 85 psig min., 20 slm max flow rate
- CDA: 85 psig min., 2 slm max flow rate
- General N<sub>2</sub> (Vacuum Generator): 80 psig, 20 slm max flow
- Vacuum source for degasser

SD4-C CONTROLLER DETAIL:

**Power:** 100-240 VAC, 50/50 Hz, 750 mA

**Control Inputs:**

- Source Tank Scale/Level switches
- Fixed Tank Leels: (4 Levels)
- Spill Sensor
- CDA Pressure
- Helium Push/Purge Gas Pressure
- Degasser Vacuum
- Degasser Liquid Leak

**Chamber I/O:**

- Source A, B, C Level Empty Output
- TEOS System OK Output
- Chamber OK Input

**Facility I/O:**

- Source A, Level Low & Empty Outputs
- External Shut-Down Input
- System General Warning Output
- System General Fault Output



SD4-C Controller

**Controls:**

- Auto Fill On-Off
- Manual Fill Pushbutton
- Reset Sonic Alarm

**Display:**

- Source A (TEOS) Tank Weight (kg), Color changing display (Grn)
- Source A, B, C Low & Empty
- Fixed Tank Level / Filling Status
- System Status
  - CDA, Inert Gas, Degas Vacuum
  - Chem Spill, Degas Leak, Status (GRN, YEL, RED)
  - Tool (Chamber) 1-4 Permissive Status

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