Steam, Batch, Still Retorts

Characteristics of these retorts:

- Pressure Vessel
- Batch-type
- Non-agitating
- Vertical or horizontal
- With or without crates

Advantages of using Steam:

- Excellent Medium for Heat Transfer
- Temperature Easily Regulated
- Pressure Can Counter-balance Internal Can Pressure
- Easy to Produce and Stored for Instant Use

Three different models:

- **Vertical** – Equipment sits vertically, loaded from the top in baskets or similar
- **Horizontal** – Equipment sits horizontally, loaded from the end in crates or similar
- **Craterless** – Equipment sits vertically but is loaded from the top using gravity with containers dropping inside the retort in no definite order (jumbled or mixed up)
Instrumentation needed:

- Temperature indicating device (Mercury-in-Glass - MIG) or equivalent device (e.g., Resistance Temperature Device – RTD or Digital Temperature Gauge-DTG)  Item #4
- Temperature/time recording device - Item #6

Requirements:

**External well:**

- Must be connected through at least a 3/4” opening
- Must have at least a 1/16” bleeder opening

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**Steam Inlet:** Must be large enough for proper operation; Must facilitate air removal; Must be located opposite the vent.

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Steam Spreaders – Vertical Retorts: Not required for vertical retorts. If used, usually in form of a cross and perforations along the top or side. All others: Total cross-sectional area should be equal to 1.5 to 2 times the cross-sectional area of the smallest part of the steam inlet line.

Vents: Large valve-controlled openings to remove air from the retort; Located opposite steam inlet; Controlled by a full flow valve or equivalent; Atmospheric break between vent and closed drain required.

Construction of Crates, Carts and Divider Plates: Constructed of suitable materials; Perforations shall be 1” holes on 2” centers or equivalent (27% open area).

Bleeders: Small openings, normally 1/16 to 1/8 inch in diameter used to remove air from steam retorts and circulate the steam while they are in operation; Open during come up and processing; Bleeders must be within 1 foot of outermost containers and no more than 8 feet apart along the top of the horizontal retort.

Mufflers: Used on bleeders and vents to decrease noise; Must not impede normal operation.