

PROCESSING IN STEAM IN STILL RETORTS
(Retort Survey)

INSTRUCTIONS

Complete the question blocks below. Narrative responses to each item can be entered in the item's "comments" area or where otherwise prompted. Draw a diagram of the retort or obtain one from the firm and attach it to the EIR as an exhibit. Report all pipe sizes as inside diameter (ID). Cross-sectional area = $3.14r^2$ ($r = \frac{1}{2}$ diameter).

If problems are found with the firm's retort equipment or processing system, refer the reader to the narrative Turbo EIR under "Objectionable Conditions and Management's Response," and include a narrative explanation of specific problems and evidence under the subheading "Supporting Evidence and Relevance." Submit the completed form as an EIR attachment.

RETORT DESCRIPTION

RETORT NO.	TYPE OF RETORT	LENGTH OR HEIGHT	DIAMETER
	Vertical <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical (Crateless) <input type="checkbox"/>		

FOR VERTICAL RETORTS, BOTTOM CRATE SUPPORTS ARE PRESENT. Yes No
(SHALL REQUIREMENT)

COMMENTS:

ARE BAFFLE PLATES PRESENT IN THE BOTTOM OF RETORT? Yes No
(SHALL NOT BE USED IN THE BOTTOM OF STEAM STILL RETORTS (113.40(a)(6)) – BAFFLE PLATES ARE UNDESIRABLE IN THE BOTTOM OF STILL STEAM RETORTS BECAUSE THEY CAN IMPEDE THE FLOW OF STEAM FROM STEAM INLETS OR PERFORATED STEAM DISTRIBUTOR PIPES.)

COMMENTS:

ARE THERE ANY PROTRUSIONS INSIDE THE RETORT OR THE RETORT DOOR CASING WHICH COULD DAMAGE CONTAINERS DURING LOADING/UNLOADING OF CRATES? Yes No

COMMENTS:

COMPUTER CONTROLS

DOES A COMPUTER CONTROL ANY OF THE RETORT FUNCTIONS? Yes No

COMMENTS:

DOES THE FIRM HAVE DOCUMENTATION ON HAND THAT INDICATES THAT THE COMPUTER SYSTEM HAS BEEN VALIDATED? Yes No

EXPLAIN:

IS RECORD KEEPING PART OF THE COMPUTER FUNCTION? Yes No

IF YES, DOES THE RECORD KEEPING COMPLY WITH 21CFR PART 11? Yes No

IF CRATE POSITION HAS BEEN DETERMINED CRITICAL TO THE PROCESS, WHAT IS THE RECOMMENDED POSITION AND HOW WAS IT DETERMINED? (FOR EXAMPLE, PROCESS ESTABLISHMENT TESTS MAY HAVE DETERMINED THAT AN ANGLED CRATE POSITION RESULTS IN FASTER HEAT PENETRATION.)

PROCESSING WATER

METHOD USED TO HEAT PROCESS WATER:

- A. Steam Injection Into Process Water B. Heat Exchanger C. Steam Spreader D. Other

IF OTHER, EXPLAIN:

WATER DRAINS

ARE SCREENS USED OVER ALL DRAIN OPENINGS TO PREVENT CLOGGING OF DRAINS? Yes No

COMMENTS:

IS THE DRAIN LINE VALVE WATER TIGHT AND NON-CLOGGING Yes No

COMMENTS:

WATER DISTRIBUTION

WATER DISTRIBUTION SYSTEM:

- Manifold Plate? Yes No
Spray Nozzle Heads? Yes No
Manifold Pipe? Yes No
Other? Yes

IF OTHER, EXPLAIN:

DESCRIBE HOLE SIZE AND DISTRIBUTION IN MANIFOLD/SPRAY NOZZLES:

HAVE HOLE SIZES BEEN ALTERED BY PRODUCT OR MINERAL BUILD-UP? Yes No

COMMENTS:

DOES THE FIRM HAVE A CLEANING PROGRAM FOR THE WATER DISTRIBUTION SYSTEM? Yes No

COMMENTS:

HOW DOES THE FIRM INSURE THAT WATER FLOW IS CONSTANT?

- Visual Checks Yes No
Water Flow Measurement Yes No
Flow Meter Yes No

COMMENTS:

HOW OFTEN IS WATER FLOW CHECKED?

WHAT IS THE WATER FLOW RATE?

DESCRIBE THE PROCEDURE TO INSURE WATER FLOW IS MAINTAINED:

PROVIDE THE WATER FLOW METER MODEL NUMBER AND LOCATION:

AT WHAT POINT DOES WATER ENTER THE RETORT WATER DISTRIBUTION SYSTEM?

- Back Top Yes No
- Back Bottom Yes No
- Front Top Yes No
- Front Bottom Yes No
- Center Yes No
- Multiple Yes No

COMMENTS:

EXPLAIN THE WATER DISTRIBUTION SYSTEM:

DESCRIBE THE WATER RETURN SYSTEM:

ARE WATER RETURN INLETS SCREENED? Yes No

EXPLAIN, IF NECESSARY:

IS THE PROCESSING WATER REUSED? Yes No

EXPLAIN, IF NECESSARY:

IF WATER IS REUSED DURING THERMAL PROCESSING, WHAT IS THE RECIRCULATION RATE?

WHAT IS THE CAPACITY OF THE WATER PUMP (GPM/LPM)?

IS WATER FLOW IDENTIFIED AND CONTROLLED AS A FACTOR CRITICAL TO THE THERMAL PROCESS? Yes No

COMMENTS:

ARE WATER FLOW PROBLEMS HANDLED AS PROCESS DEVIATIONS? Yes No

COMMENTS:

DURING THE INSPECTION, WAS THERE ANY EVIDENCE OF LOW WATER FLOW? Yes No

COMMENTS:

COOLING WATER SUPPLY

IS PROCESSING WATER USED TO COOL CONTAINERS DURING THE COOLING CYCLE? Yes No

COMMENTS:

IF WATER IS INTRODUCED FROM AN EXTERIOR SOURCE DURING COOLING, IS THE WATER COOLING LINE EQUIPPED WITH A CHECK VALVE? Yes No N/A

COMMENTS:

INDICATING MERCURY IN-GLASS THERMOMETERS (113.40(e)(1))

IS THE RETORT EQUIPPED WITH AT LEAST ONE MERCURY-IN-GLASS (MIG) THERMOMETER? Yes No

COMMENTS:

IS THE RETORT EQUIPPED WITH A TEMPERATURE INDICATING DEVICE OTHER THAN A MERCURY-IN-GLASS THERMOMETER? Yes No

IF YES, DESCRIBE THE INDICATOR:

ARE SCALE DIVISIONS EASILY READABLE TO 1°F (.5°C)? Yes No

NO. OF DEGREES F OR C/IN. OF GRADUATED SCALE: _____. (TEMP. RANGE MUST NOT EXCEED 17°F (8°C) PER INCH (4°C PER CM) OF GRADUATED SCALE. SEE LACF GUIDE, P. 14.)

DATE LAST TESTED FOR ACCURACY:

COMMENTS:

STANDARD USED FOR THE TEST:

NAME AND TITLE OF PERSON WHO PERFORMED TEST:

IS THE LAST TEST DATE IDENTIFIED ON THE THERMOMETER? Yes No

WERE CALIBRATING TEST RECORDS PREPARED AND MAINTAINED? Yes No

COMMENTS:

DESCRIBE THE FIRM'S ACTIONS REGARDING MIG THERMOMETERS THAT WERE OUT OF CALIBRATION:

IS THE MERCURY UNDIVIDED? Yes No

(A THERMOMETER THAT HAS A DIVIDED MERCURY COLUMN OR THAT CANNOT BE ADJUSTED TO THE STANDARD **SHALL** BE REPAIRED OR REPLACED.)

COMMENTS:

WHEN MIG THERMOMETERS ARE FOUND TO BE PROVIDING READINGS ABOVE THE ACTUAL TEMPERATURES, DOES THE FIRM EVALUATE PRODUCTS PRODUCED USING THOSE THERMOMETERS? Yes No

DESCRIBE THE FIRM'S PROCEDURES:

IS THE THERMOMETER LOCATED WHERE IT IS EASY TO READ ACCURATELY? Yes No

(**SHALL** REQUIREMENT)

COMMENTS:

THE SENSOR BULB IS LOCATED IN THE Retort Shell , or External Well

(**SHALL** REQUIREMENT)

COMMENTS:

IS THE MERCURY THERMOMETER USED AS THE REFERENCED INSTRUMENT DURING PROCESSING? Yes No

(**SHALL** REQUIREMENT)

COMMENTS:

TEMPERATURE RECORDER (113.40(e)(2))

TYPE OF TEMPERATURE RECORDER Round Circular Chart Strip Chart Other

IF OTHER, EXPLAIN:

DO THE CHART SPECIFICATIONS MEET THE REQUIREMENTS OF PART 113.40(e)(2)? Yes No

(GRADUATIONS ON THE TEMPERATURE-RECORDING DEVICE SHALL NOT EXCEED 2°F (1°C) WITHIN A RANGE OF 10°F (5.5°C) OF THE PROCESSING TEMPERATURE. EACH CHART SHALL HAVE A WORKING SCALE OF NOT MORE THAN 55°F/IN (12°C/CM) WITHIN A RANGE OF 20°F (10°C) OF THE PROCESSING TEMPERATURE – 113.40(E)(2)). ALSO, SEE P. 14 OF LACF FIELD GUIDE-PART 2.)

COMMENTS:

IS THE TEMPERATURE CHART ADJUSTED TO AGREE AS NEARLY AS POSSIBLE WITH BUT NOT HIGHER THAN THE KNOWN ACCURATE MERCURY-IN-GLASS THERMOMETER DURING THE PROCESSING PERIOD? Yes No
(SHALL REQUIREMENT; NOTE ANY DIFFERENCE BETWEEN THE RECORDING THERMOMETER AND THE MERCURY-IN-GLASS THERMOMETER AND WHICH READING IS HIGHER.)

COMMENTS:

IS THERE A MEANS FOR PREVENTING UNAUTHORIZED ADJUSTMENTS? Yes No
(A MEANS OF PREVENTING UNAUTHORIZED CHANGES IN ADJUSTMENTS **SHALL BE PROVIDED**. A LOCK OR NOTICE FROM MANAGEMENT STATING "ONLY AUTHORIZED PERSONS ARE PERMITTED TO MAKE ADJUSTMENTS" & POSTED AT OR NEAR THE RECORDING DEVICE IS A SATISFACTORY MEANS FOR PREVENTING UNAUTHORIZED CHANGES.)

COMMENTS:

IS THE CHART DRIVE TIMING MECHANISM ACCURATE? Yes No
IF NO, EXPLAIN:

IS THE RECORDER COMBINED WITH A TEMPERATURE (STEAM) CONTROLLER TO FUNCTION AS A RECORDING/CONTROLLING INSTRUMENT? Yes No

COMMENTS:

TEMPERATURE CONTROLLER

HOW IS TEMPERATURE CONTROLLED IN THE RETORT?

Recorder Controller CAM Controller Manual Switching Computer

COMMENTS:

REPORT THE **MANUFACTURER, MODEL, TYPE AND SIZE** OF THE AUTOMATIC STEAM CONTROL VALVE:

IF THE TEMPERATURE (STEAM) CONTROLLER IS AIR OPERATED, DOES THE SYSTEM HAVE AN ADEQUATE FILTER TO ASSURE A SUPPLY OF CLEAN, DRY AIR? Yes No
(AIR OPERATED TEMPERATURE CONTROLLERS **SHOULD** HAVE ADEQUATE FILTER SYSTEMS TO ASSURE A SUPPLY OF CLEAN, DRY AIR 113.40(E)(2).)

COMMENTS:

COME-UP PROCEDURE

DESCRIBE THE FIRM'S PROCEDURE TO BRING THE RETORT UP TO PROCESSING TEMPERATURE. INCLUDE TIME, TEMPERATURE AND NUMBER OF STEPS:

CAN THE FIRM DOCUMENT ALL STEPS OF THE COME-UP PROCEDURE? Yes No

COMMENTS:

DOES THE FIRM IDENTIFY PROCESS COME-UP STEPS AS CRITICAL ON THE PROCESSING FILING FORMS?

Yes No

(NOTE: PROCESSING STEPS ARE REQUIRED ON THE PROCESS FILING FORM WHEN THEY HAVE BEEN IDENTIFIED AS CRITICAL TO THE THERMAL PROCESS. THIS IS ALWAYS THE CASE WHEN THE GENERAL METHOD IS USED TO CALCULATE THE F_o .)

AIR PURGE

IN SOME SYSTEMS AN AIR PURGE (VENT VALVE) IS USED TO ENHANCE WATER ENTRY INTO THE PROCESSING VESSEL; IS AN AIR PURGE VALVE USED ON THE PROCESSING VESSEL? Yes No

COMMENTS:

HAS TIMING OF THE AIR PURGE VALVE (TIME OPEN) BEEN IDENTIFIED AS CRITICAL TO ADEQUATE TEMPERATURE DISTRIBUTION IN THE RETORT? Yes No

COMMENTS:

HEATED PROCESS WATER

IS WATER PREHEATED IN A SEPARATE VESSEL PRIOR TO PROCESSING? Yes No

IS THE WATER TEMPERATURE OF THE PREHEATED WATER CRITICAL TO TEMPERATURE DISTRIBUTION IN THE RETORT?

Yes No

COMMENTS:

DESCRIBE THE TEMPERATURE REQUIREMENTS FOR PREHEATED WATER:

DID THE FIRM MEET THE REQUIREMENTS FOR PREHEATING WATER DURING THIS INSPECTION? Yes No

EXPLAIN:

TEMPERATURE DISTRIBUTION

HAVE TEMPERATURE DISTRIBUTION STUDIES BEEN PERFORMED ON THE FIRM'S RETORTS? Yes No

COMMENTS:

DATE OF LAST TEMPERATURE DISTRIBUTION STUDY:

HAS A TEMPERATURE DISTRIBUTION STUDY BEEN PERFORMED ON EACH INDIVIDUAL RETORT? Yes No

COMMENTS:

HAS A TEMPERATURE DISTRIBUTION STUDY BEEN PERFORMED ON EACH CONTAINER SIZE? Yes No
COMMENTS:

HAS A TEMPERATURE DISTRIBUTION STUDY BEEN PERFORMED ON EACH CONTAINER TYPE? (E.G., GLASS, METAL, PLASTIC) Yes No
COMMENTS:

HAS A TEMPERATURE DISTRIBUTION STUDY BEEN PERFORMED ON EACH PRODUCT OR PRODUCT TYPE? Yes No
COMMENTS:

HAVE TEMPERATURE DISTRIBUTION STUDIES BEEN PERFORMED TO DETERMINE THE EFFECTS OF TEMPERATURE DROPS DURING COME-UP AND PROCESSING? Yes No
REPORT RESULTS:

ARE PARTIAL LOADS PROCESSED IN THE FIRM'S RETORTS? Yes No
COMMENTS:

RETORT CRATES & RACKS

DESCRIBE THE RETORT CRATES:

DIMENSIONS:

NUMBER OF HOLES:

SIZE OF HOLES:

LOCATION OF HOLES:

CRATES/BASKETS NOT USED

COMMENTS:

ARE CONTAINERS POSITIONED IN THE RETORT AS SPECIFIED IN THE SCHEDULED PROCESS? Yes No
COMMENTS:

ARE DIVIDERS, TRAYS, RACKS OR OTHER MEANS OF POSITIONING FLEXIBLE CONTAINERS DESIGNED AND EMPLOYED TO INSURE EVEN CIRCULATION OF HEATING MEDIUM AROUND ALL CONTAINERS? Yes No
COMMENTS:

ARE DIVIDER PLATES USED? Yes No

DESCRIBE NUMBER OF HOLES AND DISTRIBUTION IN DIVIDER PLATES:

IS THE SAME TYPE OF DIVIDER PLATE USED FOR ALL CONTAINERS? Yes No N/A

COMMENTS:

ARE CONTAINERS PROCESSED WITHOUT DIVIDER PLATES? Yes No

COMMENTS:

CONTAINER NESTING WHERE ONE CONTAINER OR MORE ARE POSITIONED ONE INSIDE ANOTHER TO REPRESENT A MUCH LARGER CONTAINER MAY OCCUR WITH PRODUCTS DESIGNED TO STACK ON STORE SHELVES E.G. TUNA, SARDINES.

IS CONTAINER NESTING POSSIBLE? Yes No

HOW DOES THE FIRM CONTROL NESTING OF CONTAINERS?

WAS CONTAINER NESTING EVALUATED AS PART OF THE PROCESS ESTABLISHMENT Yes No

COMMENTS:

WHICH OF THE FOLLOWING CONTAINER TYPES ARE PROCESSED?

Metal Cans Glass Jars Pouches Rigid Plastic

COMMENTS:

DOES THE FIRM PROCESS MORE THAN ONE CONTAINER SIZE? Yes No

LIST ALL CONTAINER SIZES:

METAL CANS _____

GLASS JARS _____

POUCHES _____

RIGID PLASTIC _____

IF MORE THAN ONE CONTAINER SIZE OR TYPE IS PROCESSED AT ONE TIME, DESCRIBE PROCEDURES USED:

FOR POUCHES, ARE TRAYS ADEQUATELY DESIGNED WITH POCKETS TO CONTAIN AND RESTRAIN INDIVIDUAL POUCHES DURING PROCESSING? Yes No

COMMENTS:

ARE TRAYS OR DIVIDER PLATES IN GOOD CONDITION WITH NO SHARP OR ROUGH POINTS THAT COULD PUNCTURE CONTAINERS? Yes No

COMMENTS:

PRESSURE CONTROL

ARE PRODUCTS PRODUCED USING OVERPRESSURE? Yes No

IF YES, WHAT OVERPRESSURE IS ACHIEVED?

IS THE RETORT EQUIPPED WITH A PRESSURE GAGE? Yes No

COMMENTS:

IS A MEANS PROVIDED FOR INTRODUCING COMPRESSED AIR OR STEAM AT THE PROPER PRESSURE AND RATE?

Yes No

COMMENTS:

IS THE PRESSURE IN THE RETORT CONTROLLED BY AN AUTOMATIC PRESSURE CONTROL UNIT? Yes No

(**SHALL** REQUIREMENT)

COMMENTS:

IF A PRESSURE GAGE IS PRESENT ON THE RETORT COOKER SHELL, IS IT GRADUATED IN DIVISIONS OF 2 LBS. OR LESS?

Yes No

(NOTE: THIS IS A RECOMMENDATION – **"SHOULD"** REQUIREMENT – 113.40(e)(3).)

COMMENTS:

DESCRIBE THE LOCATION WHERE COMPRESSED AIR OR STEAM ENTERS THE RETORT:

IS COMPRESSED AIR USED FOR OVERPRESSURE HEATED PRIOR TO INTRODUCTION INTO THE RETORT?

Yes No N/A

COMMENTS:

IS A DIFFUSER USED ON THE COMPRESSED AIR ENTRY LINE TO INSURE RAPID MIXING OF THE AIR IN THE RETORT ATMOSPHERE? Yes No

COMMENTS:

HAS THE POINT WHERE AIR ENTERS THE RETORT BEEN IDENTIFIED AS A COLD SPOT IN THE RETORT?

Yes No N/A

COMMENTS:

EXPLAIN HOW PRESSURE IS CONTROLLED IN THE RETORT:

HAS OVERPRESSURE BEEN IDENTIFIED AS CRITICAL TO THE THERMAL PROCESS? Yes No
COMMENTS:

ARE PRESSURE DROPS CONSIDERED PROCESS DEVIATIONS? Yes No
WHY OR WHY NOT? (AND ANY OTHER COMMENTS)

RETORT SPEED TIMING (113.40(e)(5))

IS THE ROTATIONAL SPEED OF THE RETORT SPECIFIED IN THE SCHEDULED PROCESS? Yes No
(SHALL REQUIREMENT)
COMMENTS:

IS THE ROTATIONAL SPEED OF THE RETORT ADJUSTED, AS NECESSARY, TO ENSURE THAT THE SPEED IS AS SPECIFIED
IN THE SCHEDULED PROCESS? Yes No
(SHALL REQUIREMENT)
COMMENTS:

IS THE ROTATIONAL SPEED OF THE RETORT AND THE PROCESS TIME RECORDED FOR EACH RETORT LOAD PROCESSED?
PROCESS TIME Yes No
ROTATIONAL SPEED Yes No
(SHALL REQUIREMENT)

IF NO, IS A RECORDING TACHOMETER USED TO PROVIDE A CONTINUOUS RECORD OF THE SPEED? Yes No
(SHALL REQUIREMENT)

IF NO TO THE ABOVE 2 QUESTIONS, HOW DOES THE FIRM MONITOR AND RECORD THE RETORT SPEED AND PROCESS
TIME OF EACH RETORT LOAD PROCESSED?

OTHER COMMENTS:

DOES THE FIRM HAVE A MEANS OF PREVENTING UNAUTHORIZED SPEED CHANGES ON THE RETORT? ... Yes No
*(SHALL REQUIREMENT; A LOCK OR NOTICE FROM MANAGEMENT POSTED AT OR NEAR THE SPEED ADJUSTMENT DEVICE
THAT PROVIDES A WARNING THAT ONLY AUTHORIZED PERSONS ARE PERMITTED TO MAKE ADJUSTMENTS, IS A
SATISFACTORY MEANS OF PREVENTING UNAUTHORIZED CHANGES.)*
COMMENTS:

EXPLAIN HOW THE RETORT ROTATIONAL SPEED IS MONITORED AND RECORDED:

OTHER CONCERNS AND OBSERVATIONS

EXPLAIN ANY OTHER CONCERNS WITH THE OPERATION OF THIS RETORT SYSTEM: