

FORMALDEHYDE PLANT

TYPE OF PLANT: Formaldehyde

CAPACITY: 200 MT/D @ 37%

TECHNOLOGY: SILVER CATALYST

YEAR BUILT: 2001

RAW MATERIALS:



METHANOL

Appearance	: Colorless, transparent
Odor	: Free from foreign odor
Specific gravity (15/4°C)	: 0.7965, max.
Purity (wt. %)	: 99.70, min.
Distillation (vol. %)	: To distill out not less than 99.0 between 64°C and 66°C
Free acid (consumption of alkali) (N/100 NaOH ml/50 ml)	: 0.7, max.
Evaporation residue (wt. %)	: 0.001, max.
Substance darkened by sulfuric acid	: Lighter than the color of standard solutions
Potassium permanganate consuming substances (minute)	: 80, min.
Iodoform producing substances (wt. % as acetone)	: 0.01, max.
Water (wt. %)	: 0.1, max.
Total iron (ppm)	: 0.05, max.
Chloride	: Non-detectable

Remark : JIS K-1501-1969

UTILITY CONSUMPTION:

1. STEAM

1) HIGH PRESSURE STEAM : NONE

- 2) INTERMEDIATE PRESSURE STEAM : 7 kg/Cm² G
- 3) LOW PRESSURE STEAM : 2.5 kg/ Cm² G
- 4) CONDENSATE : NONE

2. WATER

- 1) POTABLE
 - PRESSURE : 4.0 kg/ Cm² G
 - MIN. 3 kg/ Cm² G
- 2) FIRE WATER
 - PRESSURE : 7 kg/ Cm² G
- 3) PROCESS WATER
 - PRESSURE : 7 kg/ Cm² G
 - MIN. 4 kg/ Cm² G
 - QUANTITY : 10 MT/HR
- 4) COOLING TOWER WATER
 - PRESSURE : 5 v
 - QUANTITY : (670+220) MT/HR
 - QUANTITY AVAILABLE : 1900 MT/HR
- 5) COOLING TOWER WATER RETURN
 - PRESSURE : 2.0 – 2.5 kg/ Cm²
 - PURE WATER CONDITION
 - Specific conductivity (µs/cm) : 1.0, max.
 - PH : 6.8 – 7.6
 - Hardness (ppm as CaCO₃) : 1, max.
 - Cl- (ppm) : 0.1, max.
 - Total iron (ppm) : 0.03, max.
 - Oil (ppm) : 0
 - Pressure (kg/ Cm² G) : 3.0 = 0.2
 - Temperature (°C) : 30

3. COMPRESSED AIR

- 1) PLANT AIR
 - PRESSURE : NONE
 - DEW POINT : 4°C
 - QUANTITY
 - QUANTITY AVAILABLE
- 2) INSTRUMENT AIR
 - PRESSURE : 7.0 KG/Cm² G (PSIG)
 - DEW POINT : - 20°C
- 3) NITROGEN
 - PRESSURE : NONE

TEMPERATURE : NONE
DEW POINT : NONE
OXYGEN CONTENT : NONE
QUANTITY : NONE

4. ELECTRICAL

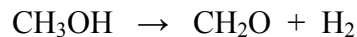
- 1) ROUTING: UNDER GROUND LINE
- 2) SUPPLY : 3 PHASE 60 CYCLE 2000 KVA, 440V, 110V, 220V
1000 KVA x 2 set x 440V
200V x 1 set
110V x 1 set
- 3) DISTRIBUTION : 2 MCC – A/B (440V)
- 4) LIGHTING : 110V, 60 HZ, 3 PHASE
- 5) EMERGENCY GENERATOR : NONE
- 6) HAZARDOUS AREA : CLASS I, DIVISION II

5. OTHERS

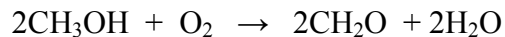
- 1) FOULING FACTOR (HR FT² F/BTU)
C.T.W : 0.001
STEAM : 0.0005

BRIEF PROCESS DESCRIPTION:

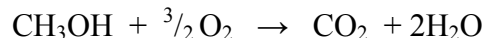
1) DEHYDROGENATION REACTION



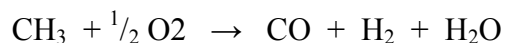
2) OXIDATION REACTION



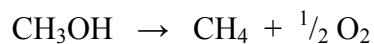
3) COMBUSTION REACTION



4) DECOMPOSITION REACTION (CO)



5) DECOMPOSITION REACTION (CH₄)



EQUIPMENT LIST:

HOT OIL HEATER, ABSORBER, REACTOR, METHANOL VAPORIZER,
REACTOR FEED EFFLUENT EXCHANGER, DILUTE FORMALIN COOLER,
INTERMEDIATE FORMALIN COOLER, CONCENTRATED FORMALIN COOLER
HOT OIL STEAM GENERATOR, AIR PREHEATER, HOT OIL DRUM, AIR FILTER
STEAM DRUM, HOT OIL STORAGE TANK, METHANOL STORAGE, AIR BLOWER

FORMALIN STORAGE, RECYCLE GAS SEPARATOR, METHANOL SEPARATOR
METHANOL FEED PUMP, DILUTE FORMALIN PUMP, TEMPERED WATER PUMP
INTERMEDIATE FORMALIN PUMP, CONCENTRATED FORMALIN PUMP,
FORMALIN RUNDOWN TANK TRANSFER PUMP, FORMALIN RUNDOWN TANK
AGITATOR

