

FOUNDRY TECHNOLOGY LAB

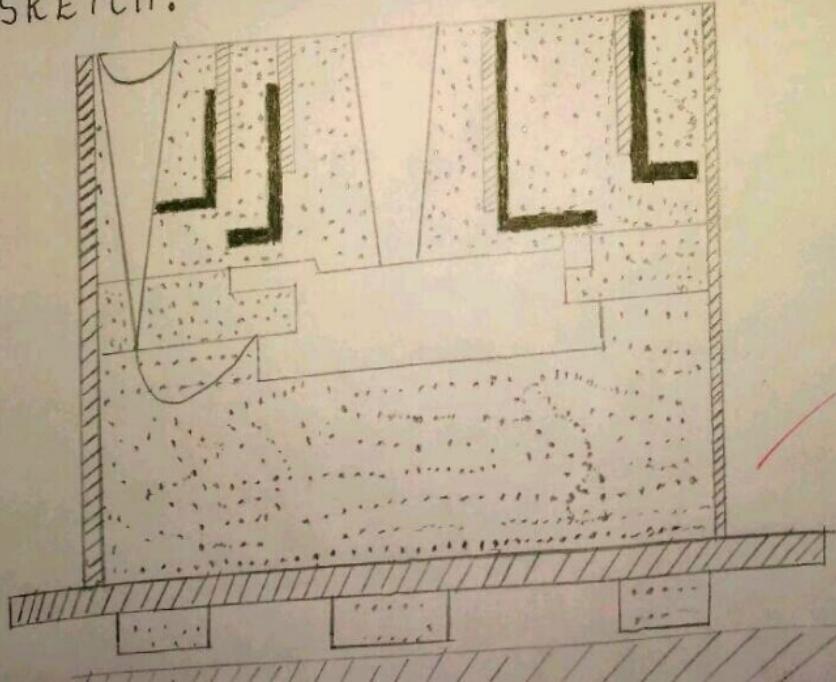
①

Experiment No: 1 Prepare The Mould For Castings

OBJECTIVE: To prepare green sand mould of given pattern

THEORY: Moulding sand with moisture is called green sand. The basic steps involved in green sand moulding process are preparation of pattern making, mould closing and weighing compared to other moulding production process with less cost.

SKETCH:



EQUIPMENT & TOOLS REQUIRED:

- ① Moulding board
- ② Moulding box
- ③ peer and Butt
- ④ Strike and Butt
- ⑤ Vert wire
- ⑥ Trowell
- ⑦ cleaner
- ⑧ Runners and riser
- ⑨ Draw and spike

MATERIALS:

- ① Moulding Sand
- ② petting sand
- ③ Facing sand

PROCEDURE:

- ① place the dry box upside down on moulding sand
- ② place the pattern in the box centrally.

- ③ place some facing sand on the surface of the pattern and suitably
- ④ Fill the moulding sand and ram properly.
- ⑤ Sprinkle the parting sand and bend it. Turn the dry sand upside along with bottom board placed over it.
- ⑥ Smooth the mould surface with help of trowel and Sprinkle the parting sand.
- ⑦ place cope over the drag.
- ⑧ Keep the runner and forming in position.
- ⑨ Fill the cope with moulding sand and ram it.
- ⑩ Cut off the excess sand and prepare the pouring design around the runner and remove runner and riser.
- ⑪ Remove the sand particles with help of hand below on dry surface.
- ⑫ Draw out the pattern from the drag.
- ⑬ The mould is ready for casting of given pattern.

PRECAUTIONS:

- ① Carefully turn the moulding boxes without shifting
- ② cut the runner, riser and pouring basin of appropriate sizes

RESULT:

Given pattern mould is ready for pouring to make casting



Experiment-2. MOISTURE CONTENT TEST

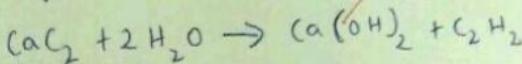
⑤

Aim: To determine moisture content in sand

Apparatus: Moulding sand, Moisture determining machine

THEORY: Moisture content can be determined by following method

- ① Using direct reading moisture meter; this makes use of react



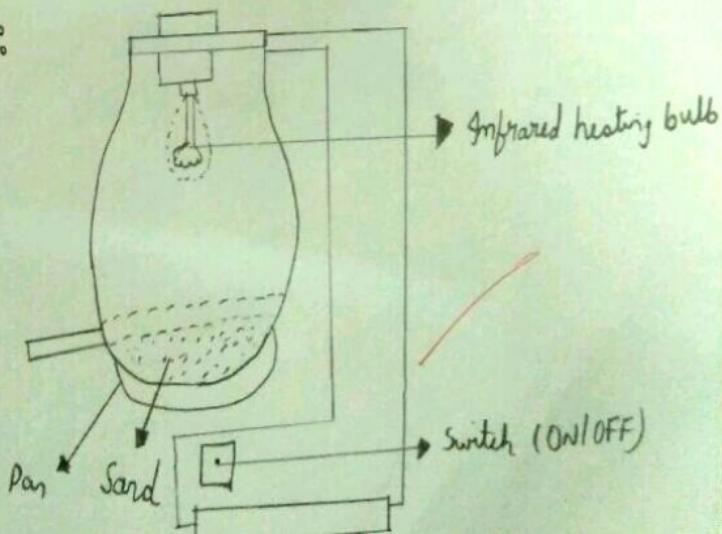
Calcium carbide reacts with moisture content of moulding sand and generates acetylene gas.

- ② using Electrode probe devices

- ③ Employing measurement of microwave absorption in Sand Samples

- ④ Using Infrared heating

SKETCH:



procedure:

- ① 20 to 50 grams of prepared sand is placed in the pan and is heated by an Infrared heater bulb for 2 to 3 minutes.
- ② moulding sand is taken out of the pan and reweighed.
- ③ the percentage of moisture can be calculated from the difference in the weights of the original moist and consequently dried sand sample.

RESULT:

the sand should contain 10-15% of moisture content.

EXPERIMENT 3: CLAY CONTENT TEST

7

AIM: To determine clay content in the sand

Apparatus: Distilled water, sand stirrer, wash bottle, 25cc of 3% NaOH

Theory: Clay content of moulding sand is determined as follows:

- ① Dry thoroughly small quantity of prepared moulding sand
- ② Separate 50 gms of dry moulding sand and transfer the same to wash bottle.

PROCEDURE:

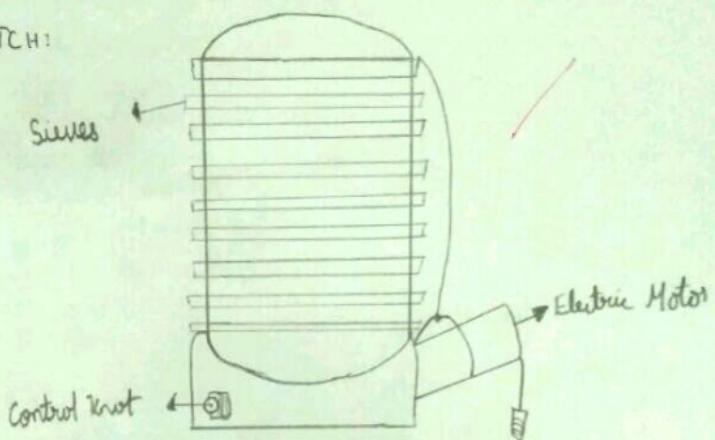
- ① Add 475cc of distilled water and 25cc of 3% NaOH solution
- ② Fill wash bottle with water upto indication marker.
- ③ After sand has settled for about 10 minutes, siphon out the water from wash bottle
- ④ Repeat the step till the water over the settled sand is clear. This assumes that clay is removed from sand
- ⑤ Dry the settled down sand
- ⑥ The clay content can be determined from the difference in weights of initial and the final sand samples.

Experiment No: 4. GRAIN FINENESS TEST

Aim: To determine grain fineness in sand

Apparatus: Standard Sieves, Screens, Moulding Sand, Power-driven Shaker

SKETCH:



PROCEDURE:

- ① There are 11 standard Sieves mounted one-another.
- ② The top Sieve is coarsest and bottom Sieve is finest of all.
- ③ The in-between Sieves are placed in order of fineness from top to bottom.
- ④ A sample of dry sand out of which clay has been removed is vibrated for a definite period of time and amount of sand retained on each Sieve is weighed and percentage distribution of grains is computed.
- ⑤ To obtain the AFS grain fineness number, each percentage is multiplied by a multiplier, the resulting products are added and divided by total percentage of sand grains retained.

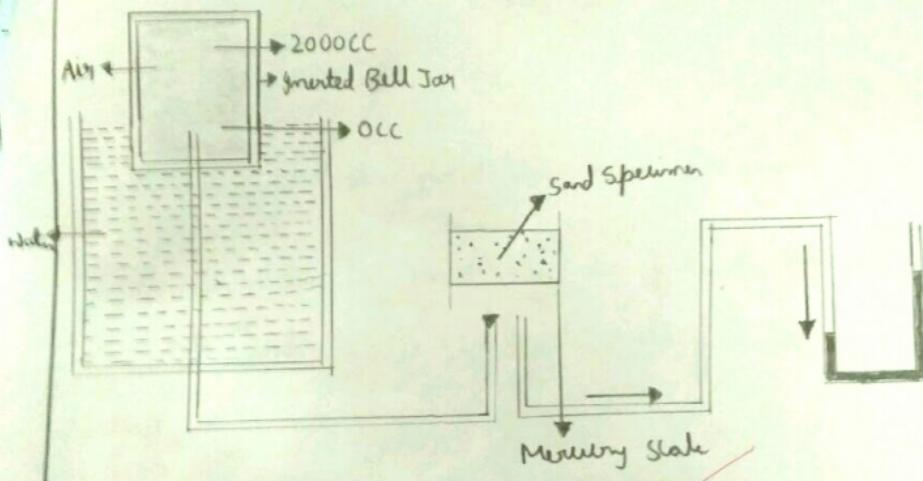
Experiment - 5. Permeability Test

(9)

Aim: To determine permeability of moulding sand

Apparatus: Sand Specimen, Manometer, Mercury scale, permeability tester

SKETCH:



PROCEDURE:

- ① Since permeability is the property of rammed sand a standard sized specimen is the first rammed by a specified rammer and then is used in permeability tester to find its permeability.

Permeability of Sand specimen prepared by passing a given volume of air through the sand

- ③ The permeability tester consists of inverted bell jar which floats in a water seal and can permit 2000cc of air to flow.
- ④ Specimen tube to hold the sand Specimen
- ⑤ A manometer to read the air pressure. It can be determined by: ① Standard Method ② Rapid Method.
- ⑥ Most commonly rapid method is used for less time consumption of process.

RESULT:

The permeability test is conducted in this way.

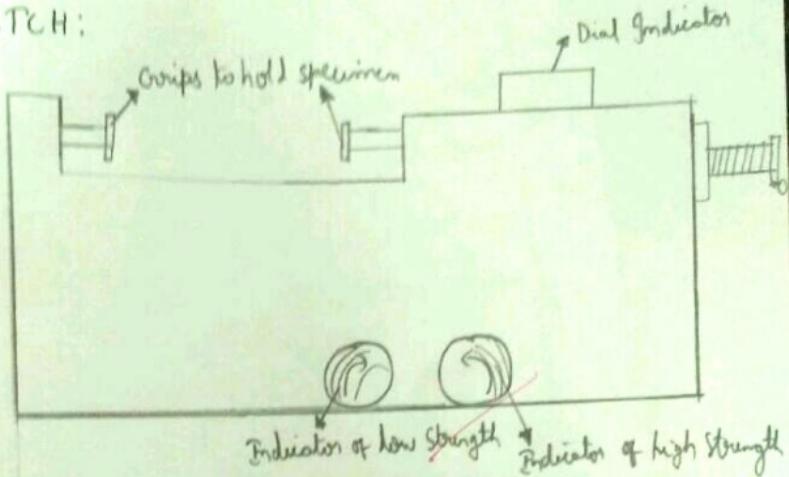
EXPERIMENT NO: 6. STRENGTH TEST

⑪

Aim: To determine the Strength of given Specimen

Apparatus: Sand Specimens, Dial Indicator, Sand Strength Machine

SKETCH:



PROCEDURE:

- ① Specimen is held between grips
- ② Hand wheel rotates to apply hydraulic pressure on Specimen
- ③ Dial indicator measures deformation occurring in Specimen
- ④ There are two indicators, one is meant for use when testing low strength sands & other for high strength sands.
- ⑤ Each indicator has 3 scales, one for reading compressive strength and remaining two for reading tensile and shear strength respectively.

By