Physical Laboratory

NBSM physical laboratory is part of NBSM laboratory. NBSM physical laboratory is responsible to provide testing services related to physical materials. It provides testing services to formulate national standards and for product certification. Similarly, it also provides testing service to general public, regulatory bodies and private sectors. Following labs are under physical laboratory.

-Building Materials Laboratory

-Mechanical Testing Laboratory

-Electrical Laboratory

-Pipe Laboratory

Building Materials Lab

Compressive strength:

The most common strength test, compressive strength, is carried out on a 50 cm^2 cube cement mortar test specimen. The test specimen is subjected to a compressive load by Compressive Strength Testing Machine until its failure and the Strength is noted.
Test Method: **NS 123**

Fig. Compressive Strength Testing Machine

Fineness:

The fineness of cement has an important bearing on the rate of hydration and hence on the rate of gain of strength and also on the rate of evolution of heat. Greater fineness increases the surface available for hydration, causing greater early strength and more rapid generation of heat. Fineness of cement affects the place ability, workability, and water content of a concrete mixture.
Test Method: **NS: 123**

Fig. Blaine Air Permeability Apparatus for Fineness of Cement

Setting Time:

Initial setting time is the time that elapsed from the instance of adding water until the paste ceases to behave as fluid or plastic. Whereas final setting time referred to the required for the cement paste to reach certain state of hardness to sustain some load.
Test Method: **NS: 123**

Fig. Vicat Apparatus for Setting Time

Soundness:

Soundness refers to the ability of a hardened cement paste to retain its volume after setting. Lack of soundness is observed in the cement samples containing excessive amount of hard burnt free lime or magnesia.

Test Method: **NS: 123**

Fig. Le-Chatlier Mould for Soundness

Fig. Vibration Machine

Fig. Mortar Mixing Machine

Fig. Humidity Chamber

Mechanical Testing Lab

Iron Bar Lab

0.2% Proof stress / Yield stress:

Yield strength is the lowest stress that produces a permanent deformation in a material. In some materials, the point of yielding is hard to define, thus it is usually given as the stress required causing 0.2% plastic strain. This is called a 0.2% proof stress.
Test Method: **NS 191**

Ultimate Tensile Strength:

This test helps in determining the maximum stress that a material can withstand while being stretched or pulled before necking, which is when the specimen's cross-section starts to significantly contract.
Test Method: **NS 191**

Elongation:

The elongation is the increase in length of the gage length, expressed as a percentage of the original gage length.
Test Method: **NS 191**

Fig. Universal Tensile Testing Machine-1000kN

Fig. Universal Tensile Testing Machine-600kN

Bend Test:

This test helps in determining the ductility, but it cannot be considered as a quantitative means. These conditions are varied according to location and orientation of the test specimen and the chemical composition, tensile properties, hardness, type, and quality of the steel specified.
Test Method: **NS 191**

Re-bend Test:

The purpose of re-bend test is to measure the effect of strain ageing on steel.
Test Method: **NS 191**

Fig. Bend/Rebend Testing Machine

LPG Valve/Regulator/Cylinder Lab

a.) Valve Testing

Pneumatic Test:

This test is performed to check leakage by pressurized air. Test Method: **NS 374**

Tightness Test:

This test is done to check the tightness of valve spindle, valve housing and Joint packing and joint housing. Test Method: **NS 374**

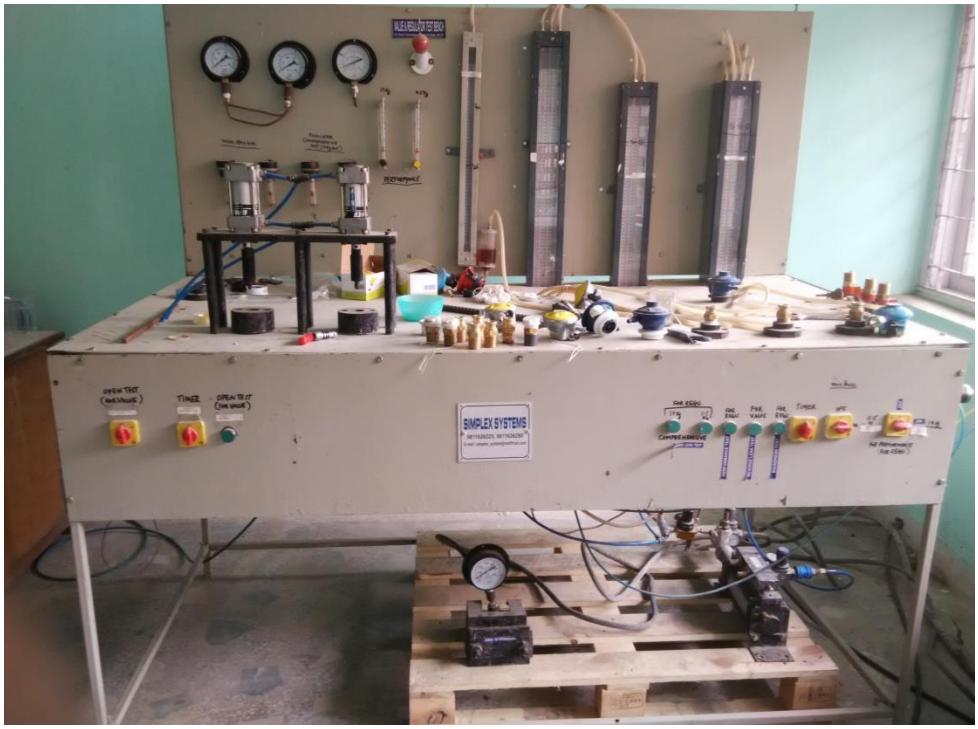

Fig. LPG valve/regulator Test Bench

Fig. LPG Valve/Regulator Cycle Testing Equipment

b.) Regulator Testing

Soundness Test:

This test is performed to check leakage of LPG regulator by using pressurized air and manometer. Test Method **NS:530**

Performance Test:

This test is performed to check satisfactory performance of regulator at high and low pressure in the condition of high temperature, low temperature and room temperature. Test Method **NS:530**

Chatter Test:

This test is performed to test machining quality like vibration etc. of the LPG regulator. Test Method **NS: 530**

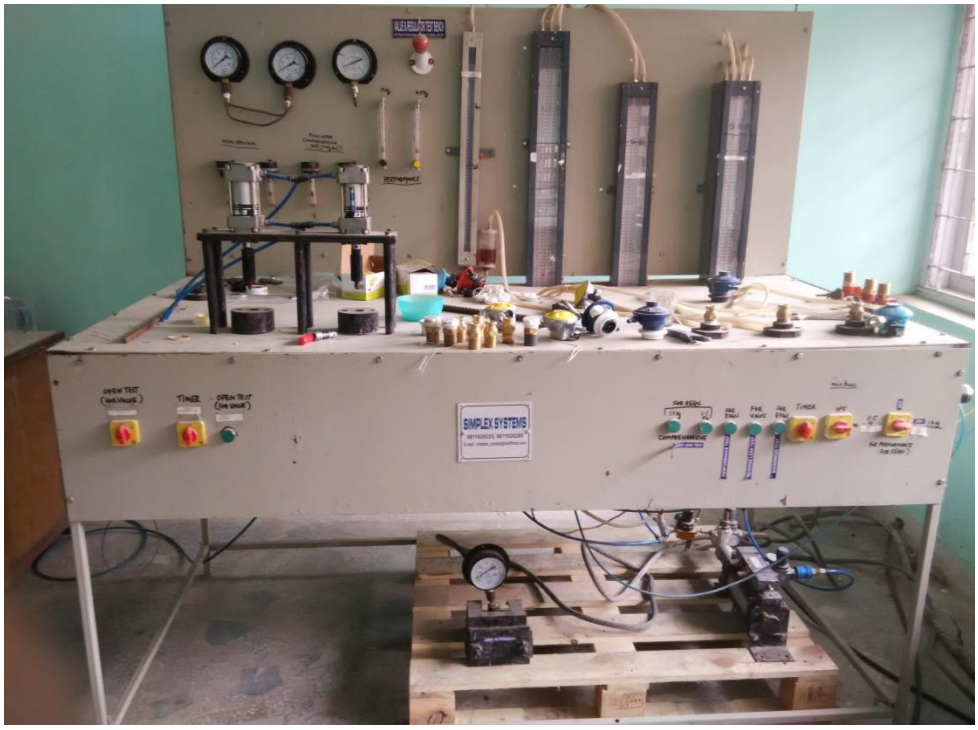

Fig. LPG Valve/ Regulator Test Bench

Fig. LPG Valve/Regulator Cycle Testing

Fig. Heating /Cooling Chamber

c.) Cylinder Testing

Capacity Test:

This test is carried out to check the rated capacity of the cylinder. Test Method **NS: 369**

Hydrostatic Test:

This test is carried out at At 25.3 Kgf/cm^2 pressure to test any leakage or not in the cylinder. Test Method **NS: 369**

Pneumatic Test:

This test is carried out at full LPG gas pressure to check any leakage or not in the cylinder. Test Method **NS: 369**

Burst Test:

This test is carried out until the cylinder bursts and to find out its maximum pressure bearing capacity. Test Method **NS: 369**

Fig. LPG Cylinder Burst Testing Machine

GI Wire Lab

Tensile Strength:

This test is performed to find out tensile strength of GI wire. Test Method **NS: 163**

Elongation Percentage:

This test is performed to find out elongation percentage of GI Wire. Test Method **NS: 163**

Fig. Universal Tensile Testing Machine- 100 kN