Chemical Composition of Tata Nirman :

- Silica: 10-12 %
- Alumina: 3-5 %
- CaO: 32-36 %
- Mgo: 0-4 %
- Sulphur: 0.1-0-15 %
- Iron: 20-22 %

SOP

1.1. Selection of Raw Materials

A. Fly Ash: The fly ash required for manufacturing of bricks should have following physical and chemical properties and to be tested in a regular frequency.

Physical Properties:

a) Sp. Gravity: 2.54 to 2.65

b) Bulk Density: 1.12 gm/cc

c) Fineness: 350 to 450 m2 /kg

Chemical Properties:

a) Silica: 35 - 70 %

b) Alumina: 10 - 35 %

c) CaO: 0.2 - 2.0 %

d) MgO: 0.1 - 3.8 %

e) Sulphur: 0.5 - 1.5 %

f) Iron: 2 - 7 % B.

B. Tata Nirman: Tata Nirman is a by-product of the steelmaking process and is generated in oxygen converters (Linz–Donawitz process) in Tata Steel. Physically, it is like sand and the average size fraction not exceeding 6 mm is used for fly-ash brick making.

Physical Properties:

a) Sp. Gravity: 3.2 to 3.6

b) Bulk Density: 1.7 to 2.0

Chemical Properties:

a) Silica: 10 - 12 %

b) Alumina: 3 - 5 %

c) CaO: 32 - 36 %

d) MgO: 4 - %

e) Sulphur: 0.1 – 0.15 %

f) Iron: 20 - 22 %

C. Lime: Class-C hydrated lime with CaO **85 %** minimum is used for the purpose

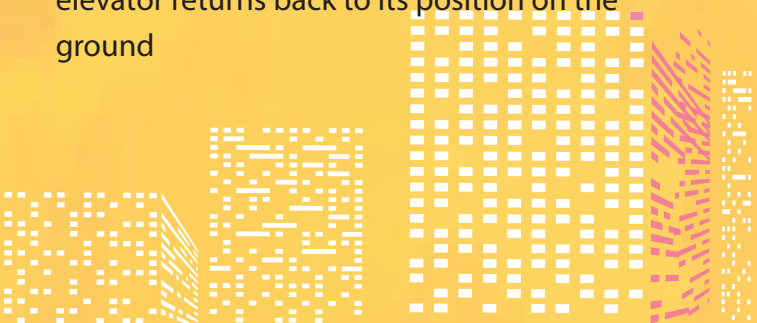
1.2. RM Handling, preparation and feeding

1) Before using Tata Nirman in to the raw mix, that sample has to be sprinkled with water and to be kept for at least 10 days.

2) (65-75) % of fly ash, (20-25) % of Tata Nirman, Gypsum (0- 5) % and (5–10) % of lime meeting the above specifications are weighed in the above proportions and to be poured in to the mixer. Water is sprinkled on the raw mix to check the flying of dust in the surroundings.

All operators are strictly advised and ensured to use of appropriate PPEs while operating the plant.

3) After emptying out the charge-mix, the bucket elevator returns back to its position on the ground



4) The PAN mixer is switched ON where depending upon the requirement, water is mixed into the charge for making a homogeneous mixer. Ideally about 4 to 5% of water is added to the charge mix.

5) The material mix is then conveyed to the batch hopper for feeding into the brick pressing machine.

6) The hydraulic press is started after the moulds are filled with material. Once the pressing operation is completed, the moulds are released from the press.

1.3. Brick Removal, Stacking and Curing:

1) The wet bricks so manufactured are placed on a wooden pallet and accumulated one above the other at the receiving end of the pressing machine.

2) Bricks are kept for air drying under the shed for 3 to 4 days depending upon the season.

3) After 4 days of air curing, the green bricks are moved to an open area under the sun and water cured for about 10 days. After 10 days of water curing, the quality of the bricks to be checked and are again left for air curing and on attaining 30th day, the bricks become ready for sale.

4) Compressive strength to be checked after 7 days, 14 days, 21 days and 28 days of air curing (after completion of water curing as mentioned above in point no. 3).

5) Water absorption properties of the bricks to be tested after 21 days and 28 days of air curing

(after completion of water curing as mentioned above in point no. 3).

2. Brick Testing and Quality Assurance:

The brick samples are tested on a regular basis to ensure the compressive strength which should be more than 100 kgf/ cm2 , below which the bricks are rejected and recycled.
Brick Dimensions: L 230 × W110 × H 75 mm, Weight: 3.2 – 3.4 Kg/Brick The compressive strength and water absorption properties of these bricks were tested in accordance with the procedure laid down in IS-3495 (Part 1 & Part 2 respectively), 1992

3. Safety and Environmental Care:

Safety and environment policies to be strictly followed based on brick manufacturing company's own terms and conditions.
Indian Standard – IS 12894: 2002 is applicable for bricks specification, manufacturing and testing methods.

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Imarat Ki Taaqat

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TATA STEEL
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PRODUCT OVERVIEW