

- ⇒ Concrete shelter walls are providing optimal protection against PRESSURE, RADIATION, HEAT, GASES and PHYSICAL IMPACT.
- ⇒ LUNOR armoured doors provide these excellent characteristics and assure that shelter entrances are “no weak spots”.
- ⇒ LUNOR armoured doors are set in place and poured with concrete simultaneously with the walls, thus forming a fully integral part of the shelter shell.

LUNOR blast resistant and gastight doors are designed for civil defence and military shelters and they also meet industrial requirements. Different types of armour-plated doors, armour-plated covers and pressure doors as well as sliding walls are available. These doors are designed for high and intermediate levels of protection. Lunor blast and gastight shelter closing devices are concreted on site, to ensure an optimum bond with the shelter shell.

## ADVANTAGES / CHARACTERISTICS:

Armoured concrete doors form a coherent unit with the adjacent parts of the shelter walls. The special heavy-duty hinges and closing levers diffuse the incident forces of a blast wave to the supporting structures of the walls.

An explosion shock wave can strike buildings unpolarized. Again, the double hinges and the proven lockings guarantee resistance of the door against the shock load.

To assure impermeability, final plastification of the concrete is assumed.

Concrete provides good radiation shielding. To halve the arriving nuclear radiation, the following thickness of various materials is necessary:

Steel	2 cm
Concrete	6 cm
Soil	10 cm
Wood	26 cm

A concreted armoured door of 20 cm thickness reduces the oncoming radiation to about 10% of the initial value. To achieve the same reduction with a steel door, a thickness of 6 cm is required. These shielding parameters are proportionally valid for the effects of the neutron bomb, too.

The fire resistance of concrete doors is excellent. The radiation into the shelter is retarded and the door leaf is not deformed even under great heat effect. Stressed by fire, they prevent very effectively from smoke penetrating into the shelter.

Heat test on pressure doors (only 10 cm thick) being exposed to a rising temperature up to 1'000 °C over 90 minutes resulted in a temperature measured on the inside of less than 100 °C

Due to its density and homogeneity concrete gives an excellent sound protection. Concrete doors protect the shelter access against the detonation effect, internally they reduce very effectively the sound level of machine rooms, diesels, etc.

# WHY ARMOURED CONCRETE DOORS AND COVERS FOR SHELTERS?

## TEST:

The construction of concrete doors have been successfully tested in full scale, inside a shock tunnel. Test results confirmed the optimum degree of protection of the door system.

## FEATURES:

For rooms being used as warehouses in peace time, doors with removable doorsteps are available. Thus, unrestrained passing with vehicles and fork lifters is possible.

For autoliberation, armoured concrete doors are equipped with a self-rescue device. Even a door blocked by fragments and debris may be opened with ease.

## SPECIFICATION:

Protection degree      1 bar direct (3 bar reflected) wall thickness 25-30 cm  
                                  3 bar direct (11 bar reflected) wall thickness 35-40 cm

Standard dimensions    up to a height of 240 cm and width of 700 cm for single or double wing wall. Other dimensions on request.

Longitudinally tapered sliding wall body with sliding elements. It is moved on a floor rail with little effort with a steel rope tackle.

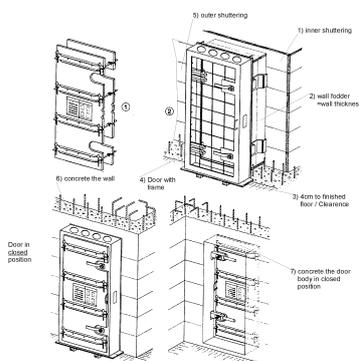
Reinforced concrete sliding wall body with a frame in sheet steel and sliding elements in sintered bronze. The strong, closed steel construction of the floor and ceiling channels constitutes part of the formwork for the shelter and ceiling.

## ACCESSORIES:

Operating equipment box, containing tackle with steel rope and pulling lugs on reel, rope sling, shackles, instruction sheet. Bridge for vehicle driveway in corrugated sheet metal.



Door as delivered



Easy installation on site



Concreted door in use

**Lunor**

Security & Shelter Technology

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