

**CALCULATION OF FIRE RESISTANCE OF OUR BRICKS
THE EQUIVALENT THICKNESS CALCULATION TO RESIST THE DESTRUCTION TEST OF FIRE WITHIN 3:00
HOURS CLASSIFICATION FOR GLAZED PARTITIONS "T6" (20x14x10).**



Accordinging * **ASTM-E119-05a Standards Test Methods for Fire Tests of Building Construction and Materials.**
* **Standard Method for Determining Fire Resistance of Concrete and masonry buildings.**
(informed by the Committee ACI216.1/TMS 0216.1-97)

1.- **Calculation of equivalent thickness for partition "T6" (current production):**

Nominal size	20 x 14 x 10 cms
Long	20,00 cms
Wide	14,00 cms
Height	10,00 cms
Wall thickness	2,20 cms
Bridge thickness	1,80 cms

Resistance to fire partitions
. Masonry and clay.

Table 4.1.-

Type de Matériau	Minimum épaisseur équivalente requise (en) pour la résistance au feu			
	1 hr	2 hr	3 hr	4 hr
Brique pleine d'argile ou de schiste	1,7	3,8	4,9	6,0
Briques creuses en céramique ou de l'argile ou de schiste, non chargé	2,3	3,4	4,3	5,0
Briques creuses en céramique ou de l'argile ou de schiste, chargé par mortier ou matériaux visés en 4.2.3	3,0	4,4	5,5	6,6

According to equation (4-1), the fire resistance for our septum is:

$$T_E = Vn / LH$$

Where:

- $T_E =$ equivalent thickness of the clay masonry (in).
- $Vn =$ net volume of clay masonry (in³)
(net volume equals the total volume minus void volume)
- $L =$ length of the specified clay masonry (in)
- $H =$ Height specific masonry clay

Length	7,87	in	Length (holes)	4,72	in
Width	5,51	in	Width (open)	3,78	in
Height	3,94	in	Height (open)	3,94	in
Total volume:	170,87	in ³	Vol. (Holes):	70,30	in ³

We are in our table specifying only 1:00 hr, which we extrapolate to predict a resistance of 2:00 hrs.

$$T_E = (170.87 - 70.30) / (7.87 \times 3.94)$$

$$T_E = 3,24 \text{ in}$$

NOTE: With the result of 3.24 in, meet our specified Specifications Table "Extruded - use structural partition" where this ensures 1:00 hr of exposure to fire, even when we asked NORMA equivalent thickness of 2.3 in.

2.- If the customer requires a specification for fire resistance of 3:00 hrs is needed to manufacture the same wall with a thickness equivalent of:

Nominal dimension	20 x 14 x 10 cms
Long	20,00 cms
Width	14,00 cms

These dimensions must be set as indicated compared against the current.

Height	10,00 cms
Wall thickness	3,50 cms
Bridge Thickness	2,20 cms

Lenght	7,87 in	Lenght(holes)	3,39 in
Width	5,51 in	Wide (open)	2,76 in
Height	3,94 in	Height (open)	3,94 in
Total volume:	170,87 in ³	Vol. (holes):	36,74 in ³

With this true equivalent thickness one reaches the STANDARD

$$T_E = (170.87 - 36.74) / (7.87 \times 3.94)$$

$$T_E = 4,33 \text{ in}$$