

ROBATEL	Technical note	<i>File</i>	<i>Document</i>	<i>Seq</i>	<i>Rev.</i>	<i>Page</i>
	Compound No. 21™	N MAT	NTE 12	DCA	0	1/2

File : Materials
Neutron and thermal shielding

SUMMARY

	<u>Page</u>
1. PURPOSE	2
2. USE	2
3. CHEMICAL COMPONENTS	2
4. PROPERTIES	2

Cancels and replaces note N MAT NTE DC 12A rev. 2

2			
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This document is not contractual.

1. PURPOSE

This technical note gives the general characteristics of ROBATEL neutron absorbing material called "compound No. 21".

2. USE

The properties of this neutron absorbing material are independent of any confinement. It is generally molded to suitable shape and dimensions, and it can, if necessary, be machined. It allows to produce neutron shielding equipment with a good thermal and mechanical strength.

This material has been tested by irradiation up to an integrated flux of $1.4 \cdot 10^{18}$ thermal neutrons/cm². No apparent damage has been noted except for graduation of color.

3. CHEMICAL COMPONENTS (elementary composition)

Normal conditions : density = 1.25 kg/dm³

Elements	% mass	g/cm ³	10 ²⁴ atoms/cm ³
Aluminum	10.72	1.340 10 ⁻¹	2.990 10 ⁻³
Boron	0.85	1.060 10 ⁻²	5.900 10 ⁻⁴
Calcium	1.10	1.375 10 ⁻²	2.066 10 ⁻⁴
Carbon	44.28	5.536 10 ⁻¹	2.775 10 ⁻²
Chlorine	7.02	8.775 10 ⁻²	1.490 10 ⁻³
Hydrogen	7.57	9.462 10 ⁻²	5.640 10 ⁻²
Oxygen	27.23	3.403 10 ⁻¹	1.281 10 ⁻²
Miscellaneous	1.23	1.538 10 ⁻²	0

4. PROPERTIES

Density :	1.25 to 1.30	kg/dm ³
Limit temperature	100	°C
Mechanical strength (rupture) :		
- compression	28	MPa
- flexion	6.2	MPa.