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PITTSBURGH OFFICE - 3 WPH

PLAINTIFF'S
EXHIBIT
AL-919

March 26, 1979 APR 6 1979

SUBJECT: ALCOA ENGINEERING STANDARD 33.7.9

Concern has been expressed regarding the use of asbestos-impregnated insulating materials as specified in Alcoa Engineering Standard 33.7.9 titled "Piping, Vessel and Tank Insulation Materials" dated April 1976.

The general trend in Australia is to move away from materials containing the mineral and it would be appreciated if references to asbestos were deleted from the above standard.

Particular sections under the standard, which mention asbestos are 2.3.1 and 2.8. + 2.7

Enclosed is literature showing the calcium silicate pipe and block insulation which has been used on Units IV & V and which will become the standard in future. The material is readily available through the local agent Bains Harding (Insulations) Pty. Ltd.

Thanking you for your co-operation in this matter.

G.A. Zanotti
G.A. ZANOTTI

GAZ:mah

Encl.

cc: N.G. Bennett
W.R. Cook

cc - { E. BAKKE
T. BONNEY

EX/ THIS IS IN YOUR AREA.
WOULD YOU PLEASE ANSWER THIS?
DANED.

1979 APR 02



With Compliments

BAINS HARDING (INSULATIONS)
PTY. LTD.

45 ROBERTS STREET,
OSBORNE PARK, W.A., 6017.

Newalls

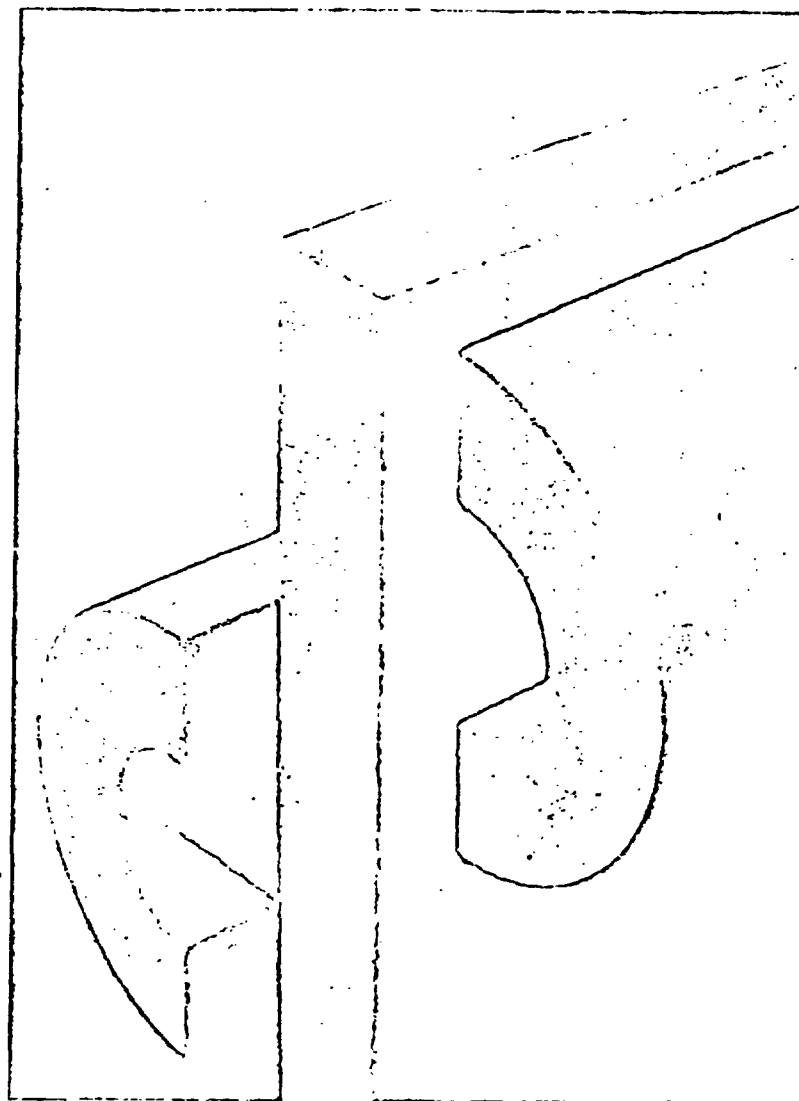
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NEWTHERM 800 is a tough, highly efficient calcium silicate insulant in which the traditional asbestos fibre reinforcement has been replaced by specially developed binders enabling the material to be used

at service temperatures up to 800°C (1470°F). In conformity with clause 12 of B.S. 3938: Part 2: 1970 the product is identified as being entirely free from asbestos by its distinctive yellow colouring.

TEMPERATURE RANGE

For hot face temperatures up to 800°C (1470°F).

Maximum Service Temperature

In order to satisfy the requirements of B.S. 3958: Part 2: 1970 in respect of *Heat Resistance*, an insulation material, when tested in accordance with B.S. 2972 at increasing temperatures, shall be deemed suitable for use under conditions of soaking heat up to the temperature at which the following requirements are met:

- (i) Linear shrinkage: 2.0 per cent maximum
- (ii) Loss in weight: 15 per cent maximum
- (iii) Compressive strength, reduction in thickness under a load of 345 kN/m² (50 lbf/in²) 10 per cent maximum.

NEWTHERM 800 is well within the above Specification limits up to the recommended service temperature of 800°C (1470°F).

Under actual conditions of service the maximum temperature at which the material can be used depends largely upon the linear shrinkage which is permissible, the particular conditions of temperature gradient, and upon the degree of mechanical stress imposed on the insulation system as a whole.

LINEAR SHRINKAGE ON HEATING

Values of linear shrinkage tabulated below refer to NEWTHERM 800 without added mechanical loading.

TEMPERATURE		Shrinkage after heating for 24 hours
°C	°F	%
400	750	0.7
500	930	0.8
600	1110	1.0
700	1290	1.3
800	1470	1.9
850	1560	2.3

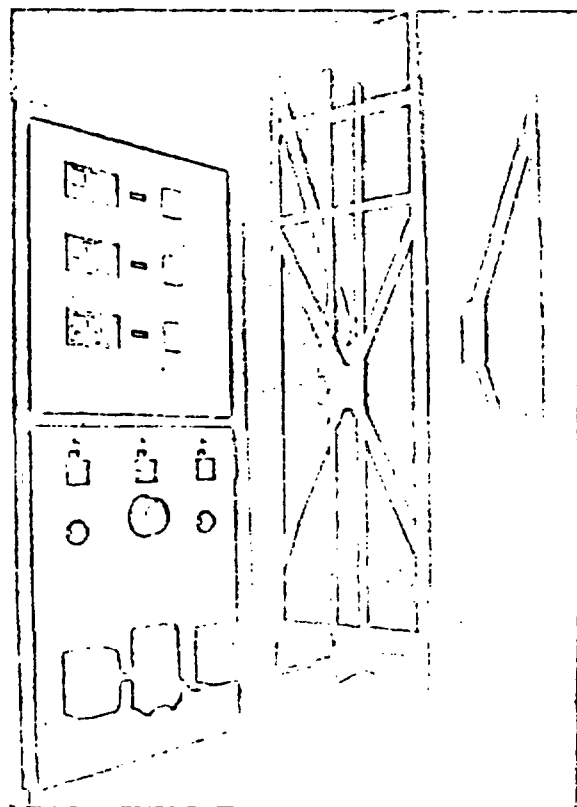
COMPRESSIVE STRENGTH

The compressive strength characteristics of NEWTHERM 800 are expressed in the following table in terms of the reduction in thickness under a load of 345 kN/m² (50 lbf/in²) after heating. Due to the relatively inelastic nature of calcium silicate type insulants, disruption or onset of crushing usually occurs at deformations of less than 5%.

TEMPERATURE		REDUCTION IN THICKNESS	LOAD AT DISRUPTION	
°C	°F	per cent	kN/m ²	lbf/in ²
400	750	1.5	> 690	> 100
500	930	1.6	> 690	> 100
600	1110	1.7	620	90
700	1290	1.9	517	75
800	1470	3.0	414	60
850	1560	3.8	310	45

RESISTANCE TO VIBRATION

One of the many facilities available at our Research Laboratories is a rig designed to simulate the long term effect of service on modern power plant. The photograph shows NEWTHERM 800 being subjected to the accelerated thermal and vibration fatigue test.



AVAILABILITY

Slab Insulation

FINISHES

NEWTHERM 800 slabs are normally supplied plain, but prices would be quoted on request for covered slabs.

SIZES

FLAT SLABS

Standard lengths	915mm 457mm	1000mm 500mm
Widths	152mm 305mm	500mm 250mm

Thicknesses 25, 38, 50, 65, 75, 90, 100mm

GROOVED PANELS 915mm x 305mm
1000mm x 305mm



thickness 38, 50, 65, 75mm

Suitable for applications involving diameters from 610 to 1070mm.

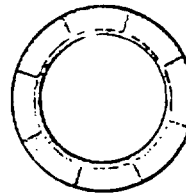
A combination of Type C Lags and Grooved Panels can be used for diameters from 228mm to 1070mm.

Alternatively fully machined Radiused and Bevelled Lags can be supplied to customer's specification.

SPECIAL SHAPES can be manufactured, prices subject to quotation.

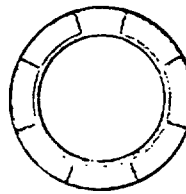
Radiused and Bevelled Lags

TYPE A



Purpose-width moulded segments with machined bevels, ensuring an accurate fit to specific diameters within the range 228 to 2140mm, without necessity for site trimming.

TYPE B



Standard-width moulded segments with machined bevels to fit specific diameters within the range 228 to 2140mm, normally requiring site trimming of closing segment.

TYPE C

Standard-width moulded segments with standardized bevels to fit a range of four "reference" pipe sizes within the range 228 to 790mm as shown in the table, normally requiring site trimming of closing segment. In individual cases bevels may require some adjustment to ensure close fit; alternatively, where necessary, joints may be filled with NEWTHERM SUPER-PLASTIC.

This type of lag has the advantage that it simplifies stock-holding and reduces delivery times.

Reference Size	Standard Arc Width (mm)	Optimum pipe o/d range (mm)	Radial Thickness (mm)	Number of lags per Carton
9	152	228	25	45
	169	to	38	27
	184	275	50	21
			63	17
12	169	276 to 381	75	14
			25	40
			38	25
			50	21
18	169	382 to 560	63	17
			75	13
			25	41
			38	27
24	169	561 to 790	50	21
			63	17
			75	13
			25	38

For diameters between 2140 and 3040mm the use of bevelled-lag is normally preferable. Above 3040mm, flat slabs of 150mm width may be employed, dependent upon the thickness involved.

PACKAGING (all products).

Home: Shrink-wrapped in polythene or packed in cartons.

Exports: Packed in cartons that are shrink-wrapped in polythene.

Pipe Insulation

FINISHES

NEWTHERM 800 pipe sections are available plain or canvas covered. For sizes up to and including 114mm o/d the canvas covered pipe insulation is supplied as a complete section, the canvas forming a hinge, and for larger sizes in half segments each individually wrapped. Black painted metal bands, 3 per 915mm length, can be supplied.

SIZES

In half sections in thicknesses 25, 38, 50, 63, 75mm

Standard length	915mm
Min. O/d pipe size	21mm
Max. o/d pipe size	219mm

Each carton contains standard 915mm lengths plus a small percentage of 457mm half lengths to reduce cutting on site.

For pipe sizes 140mm to 219mm o/d 25mm thick insulation supplied as O/d joints. All other thicknesses, the insulation supplied as half sections (including canvas covered).

For diameters greater than 200mm, the material can be furnished in the form of 915mm long radiused and bevelled lags, of which the following three types are available.

NEWALLS is a trade mark of Newalls Insulation Co Ltd

Printed in Great Britain

Newalls Insulation Co Ltd
Weymouth Type B Wear N438 RJL England

TURNER

Newtherm 800

Asbestos free insulation

DESCRIPTION

NEWTHERM 800 has a low density of 190-230 kg/m³ (12/14 lb/ft³), a low heat capacity, and the material has a uniformly low rate of shrinkage. It is available in slab and pipe sectional form in a wide range of sizes and thicknesses, and is easy to cut to shape.

The wide temperature range and economic price of NEWTHERM 800 makes this an all purpose insulant, obviating the need to specify layers of various insulating materials for boilers, pipework and all ancillary heat equipment.

RECOMMENDED THICKNESSES

A separate series of Design Data Sheets on insulation thicknesses is available on request.

DENSITY

190-230 kg/m³
(12-14 lb/ft³)

SPECIFIC HEAT CAPACITY

0.84 kJ/kgK
(0.20 Btu/lb deg F)

COMPRESSIVE STRENGTH

- (i) Dry under a load of 415 kN/m² (60 lbf/in²): 1 1/2% reduction in thickness
- (ii) Wet (after 18 h. immersion in water under a load of 170 kN/m² (25 lbf/in²)): 1 1/4% reduction in thickness

FLEXURAL STRENGTH

345 kN/m²
50 lbf/in²

THERMAL CONDUCTIVITY

MEAN TEMP °C	W/mK	MEAN TEMP. °F	Btu in/ft ² h degF
50	0.0515	100	0.35
100	0.056	200	0.385
150	0.061	300	0.42
200	0.066	400	0.45
250	0.0715	500	0.50
300	0.0775	600	0.55
350	0.0845	650	0.59

