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| MATERIALS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                        | THERMAL INSULATION<br>STANDARD ENGINEERING SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                    |                         |
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| MATERIAL SPECIFICATION<br>- SERIES 100<br>PREFORMED BLOCK AND PIPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                        | ISSUED<br>OCT 1954<br>THIS PAGE REVISED<br>JULY 1970                                                                                                                                                                                                                                                                                                                                                                        | SN 100 M<br>Page 1 of 7 |
| Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 102*                                                                                                                                                                   | 102.1                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |
| Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Calcium silicate                                                                                                                                                       | Calcium silicate - inhibited                                                                                                                                                                                                                                                                                                                                                                                                |                         |
| Material Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Reconstituted hydrous calcium silicate reinforced with mineral fibers.                                                                                                 | Reconstituted hydrous calcium silicate with inhibitor for chloride stress corrosion cracking and reinforced with mineral fibers.                                                                                                                                                                                                                                                                                            |                         |
| Temperature Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1200 F max                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |
| K Factor<br>Btu/(hr) (sq ft) (°F/in.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.60 max at 500 F mean                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |
| Density                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 14 lb per cu ft max                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |
| Compressive Strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 60 lb per sq in. min at 5% deformation                                                                                                                                 | 50 lb per sq in. min at 5% deformation                                                                                                                                                                                                                                                                                                                                                                                      |                         |
| Resistance to Breakage in Handling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Block must average 2" or greater in drop test per ASTM C 487.                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |
| Dimensions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | See SN30                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |
| Other Qualifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Not recommended for use on austenitic stainless steel, see SN102D. Where used on aluminum, coat the latter with Code 709, fibrous asphalt curbcoat (300 F temp limit). | Recommended for use on austenitic stainless steel. (See also Code 106). Where used on aluminum, coat the latter with Code 709, fibrous asphalt curbcoat (300 F temp limit). Stressed Type 304 stainless steel U-bend specimens at 100 C, when in contact with this insulating material in the Du Pont test, rest with 1500 ppm chloride or NaCl in the test water, shall show no cracking at the end of 144 hours exposure. |                         |
| The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their products meet the above specifications. These manufacturers' materials also are acceptable under other vendor's labels upon certification as to their identity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |
| For 12" IPS and larger, there is an additional charge for 2-in. convex cover. Material should be specified "without 2-in. convex" to avoid extra charge.<br>Codes 104 and 106 are acceptable alternatives unless noted on the Project Specifications.<br>Expanded Perlite insulation. Molded two-piece fitting covers are available in screwed, welded, and sweat types.<br>** Available only as fittings.                                                                                                                                                                                                                                                                                                                                                                                                                                          | Thermal Insul Div., Keene Corp                                                                                                                                         | Thermal Insul Div., Keene Corp                                                                                                                                                                                                                                                                                                                                                                                              | (1)                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Thermobestos Johnson-Manville Sales Corp                                                                                                                               | Silicated Thermobestos Johnson-Manville Sales Corp                                                                                                                                                                                                                                                                                                                                                                          | (2)                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Kaylo Owens-Corning Corp                                                                                                                                               | Kaylo STS Owens-Corning Corp                                                                                                                                                                                                                                                                                                                                                                                                | (3)                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Calasilite GAF Corp                                                                                                                                                    | Calasilite 35 GAF Corp                                                                                                                                                                                                                                                                                                                                                                                                      | (4)                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Caltrane Fiberglass Paper Products                                                                                                                                     | Super Caltrane Fiberglass Paper Products                                                                                                                                                                                                                                                                                                                                                                                    | (5)                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Caltemp Philco Corp Mfg Co                                                                                                                                             | Silipam Fittings -- S and S Eng & Supply Co                                                                                                                                                                                                                                                                                                                                                                                 |                         |
| 1. Thermal is a gray material with longitudinal extrusion marks on block and pipe covering. The ends and no more than one edge of block and the edges and ends of pipe covering will show cutting marks.<br>2. Silicated Thermobestos is a darker material than white Thermobestos. Silicated Thermobestos will appear as the name on all cartons to distinguish it from Thermobestos.<br>3. Kaylo STS is gray-blue in color. Kaylo STS will appear as the name on all cartons to distinguish it from Kaylo. Vendor sometimes refers to Kaylo and Kaylo STS in his literature as Kaylo 10 and Kaylo 10 STS.<br>4. Calasilite is white in color and marked along the length of each piece with broken black line.<br>5. Super Caltrane is light gray in color. Super Caltrane will appear as the name on all cartons to distinguish it from Caltemp. |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |

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Vendors and merchandise designations are given to describe materials and may not include all acceptable products. Substitutions by suppliers are to be made only on approval of the local authority maintaining the use of this specification.

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**MATERIAL SPECIFICATION - SERIES 100  
PREFORMED BLOCK AND PIPE**

OCTOBER 1954

132

Page 2

This Page Rev July '970

| Code                                                                                                                                                                                                                                                                                         | 104                                                                                                                                                                                                                                                                                  | 106                                                                                                                                                                                                                                                                                                                                                                                                                  | 111                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Material                                                                                                                                                                                                                                                                                     | Inorganic silicates                                                                                                                                                                                                                                                                  | Asbestos fiber and sodium silicate                                                                                                                                                                                                                                                                                                                                                                                   | Cellular glass                                        |
| Material Description                                                                                                                                                                                                                                                                         | Inorganic silicates and asbestos fibers, normally used on hot surfaces operating in the temperature range shown below                                                                                                                                                                | Compressed fluffy asbestos asbestos fiber sprayed with sodium silicate to form a mat containing a minimum of 20% sodium silicate by weight. Asbestos mat is then sprinkled with diatomaceous earth to provide an integral refractory coating                                                                                                                                                                         | Cellular glass foamed and fused into unicellular form |
| Temperature Range                                                                                                                                                                                                                                                                            | 110 F to 1800 F                                                                                                                                                                                                                                                                      | 1200 F max                                                                                                                                                                                                                                                                                                                                                                                                           | -200 F to +100 F<br>(* 300 F for dual temp)           |
| K Factor<br>Btu/hr (sq ft) (°F in.)                                                                                                                                                                                                                                                          | Block, 0.38 max at 300 F mean                                                                                                                                                                                                                                                        | 0.34 max at 400 F mean<br>0.63 max at 600 F mean                                                                                                                                                                                                                                                                                                                                                                     | 0.43 max at 100 F mean                                |
| Density                                                                                                                                                                                                                                                                                      | Block - 14 lb per cu ft                                                                                                                                                                                                                                                              | 14 lb per cu ft nom                                                                                                                                                                                                                                                                                                                                                                                                  | 9 lb per cu ft                                        |
| Compressive Strength                                                                                                                                                                                                                                                                         | 45 lb per sq in. min at 5% deformation                                                                                                                                                                                                                                               | 10 lb per sq in. at 10% deformation - dry                                                                                                                                                                                                                                                                                                                                                                            | 30 lb per sq in. min at 5% deformation                |
| Resistance to Breakage in Handling                                                                                                                                                                                                                                                           | Block must average 3 or greater in drop test per ASTM C 467, tentative method of test for resistance to dropping of preformed block thermal insulation.                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |
| Dimensions                                                                                                                                                                                                                                                                                   | See 3N30                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |
| Other Qualifications                                                                                                                                                                                                                                                                         | Good mechanical strength. Shrinkage less than 2% at 1600 F. Minimum thickness available 1 1/2", also available in pipe covering on special order. Colored pink for identification. Where used on aluminum, coat the latter with Code 709, fibred asphalt cutback (300 F temp limit). | Approved for use on austenitic stainless steel, (see also Code 102.1). Stressed Type 304 stainless steel U-bend specimens at 100 C, when in contact with this insulating material in the Cu Pant test with 1500 ppm chloride (as NaCl) in the test water, shall show no cracking at the end of 144 hours exposure. Where used on aluminum, coat the latter with Code 709, fibred asphalt cutback (300 F temp limit). |                                                       |
| The following materials have proven satisfactory in field tests and proof has been furnished by the manufacturers that their products meet the above specifications. These manufacturers' materials also are acceptable under other vendor's labels upon certification as to their identity. |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |
| • Pipe covering only<br>Molded fitting covers are not available in Code 106. They are available in Code 102.1 which is satisfactory for use on austenitic stainless steel.                                                                                                                   | Kevlar 30<br>Crescent-Corning Corp                                                                                                                                                                                                                                                   | Unibestos 6<br>Pittsburgh Corning Corp                                                                                                                                                                                                                                                                                                                                                                               | Fenoglas<br>Pittsburgh Corning Corp                   |
|                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |
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